

CONTINUED FROM PART- 1

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066622 A

(19) INDIA

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(54) Title of the invention : GENERATIVE AI-INTEGRATED SYSTEM FOR REAL-TIME ANALYSIS AND PREDICTION OF CONSUMER SHOPPING TRENDS AND PREFERENCES

(51) International classification :G06Q0030060100, G06Q0030025100, G06Q0050000000, G06Q0030020100, G06Q0030020000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA	(71)Name of Applicant : 1)RVS Praveen Address of Applicant :Director/ Utilities Americas, LTMindtree, Houston, Fort Bend, Texas, 77478, United States of America. ----- 2)Dr. Arvind Tripathy 3)Dr.S.Karunakaran 4)Dr S. Chand Basha 5)Kalidas P 6)Ujwal Prakash 7)Dr. Jay Prakash Verma 8)Dr.P.AnnanNaidu 9)Dr Meenachi.T 10)Dr. P. Poornima 11)Billa Vamsi Krishna 12)Dr. Soubache. I. D Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)RVS Praveen Address of Applicant :Director/ Utilities Americas, LTMindtree, Houston, Fort Bend, Texas, 77478, United States of America. ----- 2)Dr. Arvind Tripathy Address of Applicant :Associate Professor of Marketing, KIIT School of Management, KIIT Deemed to be University, Bhubaneswar, Khurda, Odisha, 751024, India. Bhubaneswar ----- 3)Dr.S.Karunakaran Address of Applicant :Associate Professor, Management Studies, St.Joseph's Institute of Management, OMR, Chennai, Tamil Nadu, 603119, India. Chennai ----- 4)Dr S. Chand Basha Address of Applicant :Professor, Department of Business Administration, St.Anns College of Engineering and Technology, Chirala, Bapatla, Andhra Pradesh, 523187, India. Chirala ----- 5)Kalidas P Address of Applicant :Assistant Professor, Department Of Artificial Intelligence And Data Science, Erode Sengunthar Engineering College, Perundurai, Erode, Tamil Nadu, 638057, India. Perundurai ----- 6)Ujwal Prakash Address of Applicant :Assistant Professor, Department of Management, Arka Jain University, Gambaria, Saraikela Kharsawa, Jharkhand, 832108, India. Gambaria ----- 7)Dr. Jay Prakash Verma Address of Applicant :Associate Professor and Associate Dean, IIEBM Indus Business School, Pune, Maharashtra, 411057, India. Pune ----- 8)Dr.P.AnnanNaidu Address of Applicant :Associate Professor, Department of Information Technology, GMR Institute of Technology, Rajam, Vizianagaram, Andhra Pradesh, 532127, India. Rajam ----- 9)Dr Meenachi.T Address of Applicant :Assistant professor, Department of Commerce IT, Dr SNS Rajalakshmi college of arts and science, Coimbatore, Tamil Nadu, 641049, India. Coimbatore ----- 10)Dr. P. Poornima Address of Applicant :Assistant Professor, School of Applied Commerce, A.V.P. College of Arts and Science, Tirupur, Tamil Nadu, 641652, India. Tirupur ----- 11)Billa Vamsi Krishna Address of Applicant :Assistant Professor, Department of Computer Science & Engineering, Avanthi's Scientific Technological & Research Academy, Hyderabad, Ranga Reddy, Telangana, 501512, India. Hyderabad ----- 12)Dr. Soubache. I. D Address of Applicant :Professor, Post Doctoral Fellow, Eudoxia University, New Castle, USA. -----

(57) Abstract :
GENERATIVE AI-INTEGRATED SYSTEM FOR REAL-TIME ANALYSIS AND PREDICTION OF CONSUMER SHOPPING TRENDS AND PREFERENCES The method for the development of the swift change in customer behaviour in the online marketplace calls for sophisticated technologies for precise purchasing trend forecast and real-time analysis. This study introduces a Generative AI-Integrated System that uses natural language processing and deep learning methods to investigate and predict consumer preferences. Through the utilization of extensive datasets from social media, online reviews, and e-commerce platforms, the system is able to dynamically identify new trends, seasonal demands, and individual client preferences. Generative AI integration makes it possible to create predictive models that adjust to changes in the market and give marketers and retailers useful information. This strategy improves decision-making in product suggestions, inventory management, and targeted advertising by providing real-time response, in contrast to typical analytics systems. In addition to streamlining consumer contact tactics, the suggested structure makes buying easier and more customized. The system architecture, predictive modelling methods, and possible commercial applications within the retail ecosystem are described in this study. FIG.1

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(54) Title of the invention : Numerical Solution Framework for Solving Nonlinear Differential Equations in Engineering Applications

(51) International classification :G06F0030230000, G06F0017130000, G06F0111100000, G06F0030280000, G06F0017100000

(86) International Application No :NA
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(57) Abstract :

Numerical Solution Framework for Solving Nonlinear Differential Equations in Engineering Applications The increasing complexity of engineering systems and the prevalence of nonlinear phenomena in real-world scenarios necessitate robust and accurate methods for solving nonlinear differential equations (NDEs). This paper presents a comprehensive numerical solution framework tailored specifically for addressing nonlinear differential equations encountered in diverse engineering applications such as fluid dynamics, structural mechanics, thermal processes, control systems, and electromagnetic field modeling. The proposed framework integrates advanced numerical techniques including finite difference methods (FDM), finite element methods (FEM), spectral methods, and adaptive time-stepping schemes to ensure stability, convergence, and computational efficiency. Central to the framework is the implementation of iterative solvers like the Newton-Raphson method, coupled with relaxation techniques and automatic mesh refinement strategies that enhance solution accuracy and reduce computational cost. The approach also incorporates sensitivity analysis and parametric studies to assess the influence of system parameters on the solution behavior. This framework is supported by a modular architecture, enabling the integration of symbolic computation tools for automatic equation discretization and code generation.

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(22) Date of filing of Application :12/07/2025

(21) Application No.202541066629 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : BIFUNCTIONAL HYBRID ELECTROCATALYST AND METHOD OF FABRICATION THEREOF

(51) International classification :C25B1/04, C25B11/051, C25B11/054, C25B11/055, C25B11/065, C25B11/069, C25B11/073, C25B11/081

(86) International Application No :NA
Filing Date :NA

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(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

The present disclosure relates to a bifunctional hybrid electrocatalyst (100) for electrochemical water splitting. The bifunctional hybrid electrocatalyst (100) comprises an electrically conductive substrate (10) coated with a bifunctional hybrid electrocatalyst layer (20). The layer (20) includes binary transition metal selenide particles (FeMoSe₂) (21) having rectangular elongated cuboid morphology intercalated with surface-texturized nitrogen-doped MXene nanosheets (Ti₃CNT_x) (22). The Ti₃CNT_x nanosheets (22) enhance charge transfer kinetics and stability via Ti–N bonding. The hybrid layer (20) further includes a polymeric binder (23) and conductive carbon (24). A water-splitting electrochemical cell (200) integrates the electrocatalyst (100) on both electrodes (A, C) and operates in an alkaline or seawater electrolyte (30). The present disclosure also relates to a method (300) of fabricating the electrocatalyst (100) via hydrothermal assembly. The electrocatalyst (100) exhibits low HER and OER overpotentials and high stability under long-term operation.

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(12) PATENT APPLICATION PUBLICATION

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(54) Title of the invention : A NANOCOMPOSITE AND A PROCESS FOR ITS PREPARATION

(51) International classification :H02J0007340000, C07D0209480000, C07D0241040000, C07D0237080000, A61K0031501000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

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Filing Date :NA

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(57) Abstract :

ABSTRACT A NANOCOMPOSITE AND A PROCESS FOR ITS PREPARATION The present disclosure relates to a nanocomposite and a process for its preparation. The nanocomposite of the present disclosure exhibits longer stability and high recyclability, thereby making it a promising material for energy storage applications such as super-capacitor, battery and the like. The nanocomposite of the present disclosure demonstrates excellent catalytic activity, and can efficiently reduce nitro-aromatics to amines. The process for the preparation of the nanocomposite is simple and environment friendly. The present disclosure also relates to an electrochemical electrode comprising the nanocomposite.

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(12) PATENT APPLICATION PUBLICATION

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(21) Application No.202541066637 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SUPPLY CHAIN RESILIENCE AND RISK MANAGEMENT: STRATEGIES FOR MITIGATING GLOBAL SUPPLY CHAIN DISRUPTIONS

(51) International classification :G06Q0010063500, H04L0009000000, G06Q0010063700, G16H0010600000, G06Q0010063100

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Filing Date :NA

(87) International Publication No : NA

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(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses a system and method for enhancing supply chain resilience and managing global disruption risks using integrated technologies including artificial intelligence, blockchain, and dynamic decision frameworks. The system comprises a risk sensing engine for real-time disruption prediction, a resilience dashboard for visualizing supply chain health, a dynamic contingency planner for generating mitigation strategies, a blockchain-based traceability layer for transaction integrity, and a decentralized collaboration portal for stakeholder communication. The invention enables proactive risk management, transparent operations, and rapid response to ensure continuity and adaptability in complex global supply chains.

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :12/07/2025

(21) Application No.202541066638 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AUTOMATED COMPLIANCE MONITORING FRAMEWORK FOR OPERATIONAL MANAGEMENT SYSTEMS

(51) International classification :G06N0020000000, G06Q0010063900, G06Q0010100000, G06F0016250000, G06Q0010063700
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

[037] The present invention discloses an Automated Compliance Monitoring Framework for Operational Management Systems that enables real-time, intelligent detection and management of compliance violations across diverse organizational processes. The framework integrates multi-source data aggregation, a configurable and adaptive compliance rule engine, violation classification, and an action recommendation system supported by machine learning and user feedback. A centralized dashboard provides real-time visualization and alerts, while secure logging ensures full auditability. This modular and scalable system improves accuracy, responsiveness, and transparency in compliance enforcement, applicable across multiple industries such as healthcare, finance, manufacturing, and governance. Accompanied Drawing [FIGS. 1-2]

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(54) Title of the invention : A SYSTEM AND METHOD FOR EVALUATING AND SELECTING GREEN SUPPLIERS USING A FUZZY ANALYTICAL HIERARCHY PROCESS (FAHP) APPROACH

(51) International classification :G06Q0010063700, G06F0003048450, G06Q0010063100, G06Q0010063500, G06Q0010087000

(86) International Application No :NA
Filing Date :NA

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Filing Date :NA

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(57) Abstract :

[040] The present invention discloses a system and method for evaluating and selecting green suppliers using a Fuzzy Analytical Hierarchy Process (FAHP) approach. The system incorporates a hierarchical evaluation structure, fuzzy logic-based computation modules, supplier data integration, and collaborative decision-making interfaces to assess suppliers based on environmental and operational criteria. Linguistic judgments provided by experts are converted into fuzzy numbers, normalized, and defuzzified to calculate weighted scores for each supplier. The system outputs a ranked list of suppliers, along with sensitivity analysis and graphical reports, enabling organizations to make transparent, data-driven, and environmentally responsible procurement decisions. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 20 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

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(54) Title of the invention : SELF-HEALING CONCRETE WITH NANO-ENCAPSULATED BACTERIA FOR SUSTAINABLE INFRASTRUCTURE

(51) International classification :A61K0009480000, E21B0047010000, B64C0039020000, H02G0003040000, C04B0040060000

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(57) Abstract :

The present invention discloses a self-healing concrete composition incorporating nano-encapsulated bacterial spores and nutrients capable of autonomously repairing microcracks through biomineralization. The bacterial spores, protected within nano-scale capsules made of silica or biodegradable polymers, remain dormant during mixing and activate upon exposure to moisture from crack formation. Once activated, the bacteria metabolize the embedded nutrients and precipitate calcium carbonate, effectively sealing the cracks and restoring structural integrity. This system enhances durability, reduces maintenance costs, and supports sustainable infrastructure development.

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(54) Title of the invention : FINANCIAL PLANNING TOOL WITH PREDICTIVE CASH FLOW MODELING AND REAL-TIME BUDGET OPTIMIZATION

(51) International classification :G06N0020000000, G06Q0040060000, G06Q0040000000, G06Q0010040000, G06Q0040020000

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(57) Abstract :

The present invention discloses an intelligent financial planning tool that integrates predictive cash flow modeling with real-time budget optimization. By leveraging machine learning algorithms and secure data integration from multiple financial sources, the system forecasts future income and expenses, dynamically reallocates budgets, and provides personalized financial recommendations. The tool includes a user-friendly interface for scenario simulations, real-time alerts, and adaptive goal management, thereby enhancing financial decision-making for individuals and enterprises in a proactive and data-driven manner.

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(54) Title of the invention : DOUGH EXTRUDER DEVICE

(51) International classification :A21C11/16, A21C9/00,
A23P30/20, A23L7/17
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to
Application Number :NA
Filing Date :NA
(62) Divisional to Application
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(57) Abstract :

The present invention relates to a dough extruder device (1, 31) for preparing paratha bases using hand held gun type food product extrusion machines. The device features interchangeable die assemblies connected via a threaded interface (25). A T-shaped die (11) comprises a tubular body (12) with a longitudinal slot (13), end caps (15, 17), and a base mount (20) with a conduit (24) for directing dough into the slot (13) to form sheet-like paratha bases. Alternatively, a circular-type die (31) includes an internal die tool (51) with inlet holes (55) and a conical portion (52) housed within an external cover (41), forming an outlet slot (35) for extruding tubular paratha bases.

No. of Pages : 26 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066649 A

(19) INDIA

(22) Date of filing of Application :12/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A PROCESS FOR THE PREPARATION OF MAGNETIC NANOPARTICLES

(51) International classification :B82Y30/00, B82Y40/00, B82Y25/00,
C01G49/02, C01G49/08

(86) International Application :NA
No :NA

Filing Date :NA
(87) International Publication : NA
No

(61) Patent of Addition to :NA
Application Number :NA
Filing Date

(62) Divisional to Application :NA
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(57) Abstract :

ABSTRACT A PROCESS FOR THE PREPARATION OF MAGNETIC NANOPARTICLES The present disclosure relates to a process for the preparation of magnetic nanoparticles. The magnetic nanoparticles of the present disclosure are highly stable and have prolonged charge-discharge cycles, thereby making them a promising material for energy storage applications such as super-capacitors, batteries and the like. The process for the preparation of the magnetic nanoparticles of the present disclosure is simple, environment-friendly, organic solvent free, and time-saving. The process for the preparation of the magnetic nanoparticles of the present disclosure eliminates the need for solvents.

No. of Pages : 26 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :12/07/2025

(21) Application No.202541066655 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Smart wearable framework for early detection of chronic diseases using multi-sensor fusion and predictive modelling

(51) International classification :A61B0005000000, A61B0005024000, A61B0005020500, G16H0050200000, A61B0005053300
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT The present invention is a smart wearable framework for early detection of chronic diseases using multi-sensor fusion and predictive modelling. A small wearable gadget that has environmental and physiological sensors built into it, such as motion, temperature, galvanic skin reaction, electrocardiography, and photoplethysmography (PPG and ECG). To guarantee low latency and energy efficiency, the system continually gathers real-time biometric inputs, which are then analyzed on-device utilizing edge AI. Through communication with a smartphone application, the wearable gadget collects data, visualizes it using a health dashboard, and sends out notifications when abnormalities are found. Early warning signs of chronic illnesses including diabetes, respiratory ailments, and cardiovascular disorders are predicted using a customized machine learning model.

No. of Pages : 6 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :12/07/2025

(21) Application No.202541066660 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR AUTOMATED MATHEMATICAL PROOF VERIFICATION IN ARTIFICIAL INTELLIGENCE ENVIRONMENTS

(51) International classification :G06F0030332300, G06N0005010000, G06N0005045000, G06N0003006000, G06N0005046000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention relates to a system and method for automated mathematical proof verification using a hybrid architecture that integrates artificial intelligence, formal logic engines, and a dedicated hardware processing unit. The system accepts mathematical proof inputs in formal, semi-formal, or natural language form and processes them using a language-aware parsing model to extract logical constructs. These constructs are transformed into an internal directed acyclic graph representation that preserves the logical structure of the argument. A hybrid inference engine, comprising a symbolic rule-based logic core and an AI-guided heuristic predictor, validates each step in the proof by applying formal inference rules and retrieving context-specific axioms from a memory-mapped theorem database. A specialized hardware accelerator, referred to as the Proof Verification Processing Unit (PVPVU), executes symbolic logic operations and graph traversal functions to achieve high-throughput, deterministic proof evaluation. The system further generates a tamper-proof cryptographic audit trail for each verified proof, enabling transparency, reproducibility, and integration with formal publication and educational platforms. The invention provides a scalable, explainable, and domain-adaptable platform for rigorously verifying mathematical arguments across diverse fields with minimal human intervention.

No. of Pages : 29 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :12/07/2025

(21) Application No.202541066661 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-DRIVEN VR PLATFORM FOR SMART CITY PLANNING USING GEOSPATIAL DATA

(51) International classification :G06Q0050260000, G06N0003080000, H04L0009320000, G06F0003010000, G06T0017050000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

AI-Driven VR Platform for Smart City Planning Using Geospatial Data is the proposed invention. Rapid urbanization has made city planning increasingly complex, with challenges like traffic congestion, air pollution, and infrastructure management surpassing the capabilities of traditional tools. This project proposes an AI-Driven Virtual Reality (VR) Platform for Smart City Planning Using Geospatial Data to address these issues through intelligent, immersive, and interactive simulations. The platform integrates satellite imagery, DEMs, and OpenStreetMap data with AI models such as LSTM networks for traffic forecasting and CNNs for pollution analysis. Built using Unity3D and CesiumJS, it offers an immersive 3D environment where users can visualize city models, simulate urban scenarios, and analyze the impact of planned developments in real time. Key features include automated geospatial data processing, AI-powered analytics, dynamic pathfinding, multilingual reporting, and a modular, scalable architecture for future integration. This solution bridges the gap between conventional methods and modern smart city demands, supporting data-driven, sustainable, and inclusive urban planning.

No. of Pages : 17 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :12/07/2025

(21) Application No.202541066664 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : PREDICTIVE CUSTOMER BEHAVIOR MODELING SYSTEM BASED ON IOT SENSOR DATA AND METHOD THEREOF

(51) International classification :G06N0003080000, G06N0003045000, G16H0050200000, G06F0018250000, G06N0003044000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention relates to a predictive customer behavior modeling system and method that leverages real-time multimodal data collected from a distributed network of Internet-of-Things (IoT) sensors deployed in physical environments such as retail stores, airports, and public venues. The system comprises a combination of sensor modalities including motion detectors, facial expression analyzers, biometric signal processors, and environmental monitors, all integrated with an edge-based computing device referred to as the Behavioral Intelligence Node (BIN). The BIN is configured to perform on-device preprocessing, feature extraction, and short-term behavior inference using deep learning models, while a cloud-based orchestration engine performs long-term pattern analysis and federated model updates. The invention enables dynamic, context-aware prediction of customer intent and decision-making behavior by unifying diverse sensor data streams into a cohesive behavior modeling framework. Additionally, it incorporates a privacy-preserving learning protocol to ensure compliance with data protection standards while maintaining high model adaptability.

No. of Pages : 29 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :12/07/2025

(21) Application No.202541066665 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : INTELLIGENT HRM FRAMEWORK FOR FACULTY HIRING IN HIGHER EDUCATION INSTITUTIONS USING MACHINE LEARNING

(51) International classification :G06Q0010105300, A61B0005000000, G06Q0050200000, H04L0041160000, G06N0020000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :
Intelligent HRM Framework for Faculty Hiring in Higher Education Institutions Using Machine Learning is the proposed invention. The proposed invention focuses on understanding the functions of Intelligent HRM (Human Resource Management). The invention focuses on analyzing the parameters of Faculty Hiring in Higher Education Institutions using algorithms of Machine Learning Approach.

No. of Pages : 13 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066666 A

(19) INDIA

(22) Date of filing of Application :12/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : APPARATUS AND PROCESS FOR THERMOCHEMICAL CONVERSION OF SOLID WASTE

(51) International classification :C10G0001000000, C10B0053020000, C10G0001020000, B09B0003400000, C10B0053000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT APPARATUS AND PROCESS FOR THERMOCHEMICAL CONVERSION OF SOLID WASTE The present disclosure relates to an integrated apparatus and process for thermochemical conversion of solid waste into value-added products. The apparatus comprises a dual-zone heated reaction chamber, inert gas inlet, catalytic secondary chamber, and multistage condensation and collection units, supported by a vacuum pump and a control system with sensors and display. The apparatus enables multiple thermochemical pathways, including slow pyrolysis, fast pyrolysis, gasification, and hydrothermal liquefaction under controlled conditions. The process enables flexible operation, catalyst integration, and real-time monitoring, allowing optimization of product yields such as biochar, bio-oil, and syngas. The apparatus is modular, scalable, and also suitable for laboratory and pilot-scale studies. FIGURE 1

No. of Pages : 33 No. of Claims : 14

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :12/07/2025

(21) Application No.202541066706 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : MACHINE LEARNING-BASED FRAUD PREVENTION SYSTEM IN ONLINE TRANSACTIONS AND METHOD THEREOF

(51) International classification :G06N0020000000, G06N0020200000, G06N0003088000, G06F0021620000, G06Q0020400000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
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(57) Abstract :

The invention discloses a machine learning-based fraud prevention system and method for securing online transactions by analyzing behavioral, contextual, and device-level metadata in real time. The system includes a data acquisition module to ingest multi-source transactional data, a feature engineering engine to extract high-dimensional features, and an ensemble of AI models comprising supervised classifiers, unsupervised anomaly detectors, and sequential behavior models. These models generate a composite fraud risk score, which is dynamically compared against a threshold optimized using reinforcement learning based on feedback from confirmed transaction outcomes. An intervention module actuates risk mitigation strategies such as blocking, escalation, or alerting. The system also features a secure hardware device for edge-based low-latency inference and federated learning capability to ensure distributed, privacy-preserving model updates.

No. of Pages : 27 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066669 A

(19) INDIA

(22) Date of filing of Application :12/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM FOR AUTOMATIC DETECTION AND SEGMENTATION OF THYROID NODULES IN ULTRASOUND IMAGES USING ATTENTION-BASED MECHANISMS

(51) International classification :G06N0003045000, G06T0007110000, G06N0003080000, A61B0008080000, G06T0005700000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a system and device for the automatic detection and segmentation of thyroid nodules in ultrasound images using attention-based deep learning mechanisms. The system integrates a real-time image acquisition module with a multi-stage deep neural network architecture embedded within a portable, GPU-accelerated diagnostic device. The architecture comprises an encoder-decoder network enhanced with spatial and channel attention modules that enable the model to selectively focus on diagnostically relevant regions and semantic features within the ultrasound image. A preprocessing engine performs noise suppression and contrast normalization, while a post-processing unit refines the segmentation mask using morphological operations and connected-component analysis. The device includes a high-resolution display interface for real-time visualization, annotation, and diagnostic report generation, along with encryption-enabled storage and secure connectivity to hospital PACS systems.

No. of Pages : 29 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :12/07/2025

(21) Application No.202541066670 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Isolation and characterization of 7-O-methyl kaempferol-3-O-(2''-isobutanoyl) - β -d-glucoside from Adhatoda vasica flowers

(51) International classification :A61K0036190000, A61K0031704800, A01H0005020000, G01N0024080000, A61P0003060000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Isolation and characterization of 7-O-methyl kaempferol-3-O-(2''-isobutanoyl) - β -d-glucoside from Adhatoda vasica flowers Abstract In Indian system of medicine, a large number of drugs of either herbal or mineral origin have been advocated for various types of diseases, India has been one of the pioneers in the development and practice of well-documented original systems of medicine, particularly Ayurveda, Siddha and Unani. A new compound has been isolated from the flowers of Adhatoda vasica. The isolated flavonol glycoside was identified glycoside-7-O-methyl kaempferol-3-O-(2''-isobutanoyl)- β -d-glucoside. The chemical structure of this compound was elucidated based on spectroscopic data like UV, NMR (1H, 13C) and MS. This is the first report of isolation of this compound from Adhatoda vasica flowers.

No. of Pages : 13 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :12/07/2025

(21) Application No.202541066671 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : An Optical and theoretical studies on Fe₃O₄ - imidazole nano composite and clusters

(51) International classification :B82Y30/00, B82Y40/00, B82Y25/00,
C01G49/02, C01G49/08

(86) International Application
No :NA
Filing Date :NA

(87) International Publication
No : NA

(61) Patent of Addition to
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Filing Date :NA

(62) Divisional to Application
Number :NA
Filing Date :NA

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(57) Abstract :

An Optical and theoretical studies on Fe₃O₄ - imidazole nano composite and clusters ABSTRACT: N,N-dimethyl-4-(1-phenyl-1H-phenanthro[9,10-d]imidazol-2-yl)naphthalen-1-amine (DMPPINA) has been synthesised using sol-gel prepared TiO₂ rutile as catalyst under solvent free condition and characterized by NMR spectral studies. The synthesised phenanthrimidazole bound magnetic nanoparticles (Fe₃O₄-DMPPINA composite) have been characterized using scanning electron microscopy (SEM), transmission electron microscopy (TEM), energy dispersive X-ray spectroscopy (EDS), X-ray diffractometry (XRD) and lifetime and Fourier-transform infrared spectroscopies (FT-IR). The intensities of absorption and emission of the Fe₃O₄-DMPPINA composite is higher than DMPPINA. Conductance and VSM measurements were also carried out. The prototropic study of DMPPINA has been made to show the increase of electron density at azomethine nitrogen atom due to charge transfer from N,N-dimethylamino group to azomethine nitrogen atom. The molecular electrostatic potential surface (MEP) has also been employed to show the higher electron density at azomethine nitrogen atom. Theoretical investigation shows that the calculated binding energy and energy gap of the imidazole composite are highly dependent on the nature of the iron oxide cluster. We have studied in detail the site-specific binding nature and the adsorption strength of imidazole with different iron oxide clusters.

No. of Pages : 12 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :12/07/2025

(21) Application No.202541066672 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Inhibition of aluminum corrosion by 2-picolinic acid and synergistic effect of KI in hydrochloric acid solution

(51) International classification :C23F11/04, C23F11/12,
C22F11/18, C22F13/00
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to
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(62) Divisional to Application
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(57) Abstract :

Inhibition of aluminum corrosion by 2-picolinic acid and synergistic effect of KI in hydrochloric acid solution Abstract Aluminium and its alloys are widely used in industry and daily life, including motor vehicles, ships, machinery, construction, decoration, aerospace and household industries. It is well known that aluminium is usually protected by a thin oxide film which has been formed either spontaneously (native film) or deliberately (e.g. anodic films). However, this film is amphoteric and can be dissolved substantially when it is exposed to either acid media or alkaline media. HCl is usually used in industry for acid cleaning, chemical or electrochemical etching and acid pickling of aluminium, but it shows strong corrosiveness on aluminium. Therefore, it is necessary to seek inhibitors for the control of corrosion of aluminium in HCl solution. Organic compounds have been widely used as inhibitors because of its ability to form a protective layer on the metal surface. Many organic inhibitors belonging to different chemical families such as fatty acids, amides, heterocyclic compounds and polymers show excellent performance as corrosion inhibitors due to its ability to form bond with the metal surface. In the present study picolinic acid is chosen as inhibitor for the corrosion prevention of aluminium metal in HCl. Corrosion inhibition of aluminium in 0.3 M hydrochloric acid by 2-picolinic acid has been studied by weight loss technique. The effect of temperature on inhibition efficiency is studied. The inhibition action of picolinic acid on aluminium metal surface obeys Langmuir adsorption isotherm. The inhibition is found to act synergistically with KI in controlling corrosion of aluminium. However the inhibition efficiency in the presence and absence of KI is found to increase with increase in the inhibitor concentration and also decreases with increase in the temperature. The corrosion inhibition is also proved by electrochemical impedance spectroscopy, Tafel polarization and SEM analysis.

No. of Pages : 12 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :12/07/2025

(21) Application No.202541066673 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : COMPREHENSIVE INVESTIGATION ON FABRICATION, SPECTRAL CHARACTERIZATION AND BIOLOGICAL IMPORTANCE OF Co(II) AND Ni(II) HETEROLEPTIC COMPLEXES

(51) International classification :A61P31/04, C07F15/04, C07F15/06, C09K9/02, C09K11/06, C09K11/60
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
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(57) Abstract :
COMPREHENSIVE INVESTIGATION ON FABRICATION, SPECTRAL CHARACTERIZATION AND BIOLOGICAL IMPORTANCE OF Co(II) AND Ni(II) HETEROLEPTIC COMPLEXES Abstract Using the microwave irradiation approach, novel metallic complexes of Cobalt [Co(II)] and Nickel [Ni(II)] complexes of 2-aminothiazole (ATZ) and thiocyanate ligands [IUPAC Name: Di(2-aminothiazole) thiocyanato cobalt(II), Di(2-aminothiazole) thiocyanato nickel(II)] were created. The molecular formulas and the geometry of the complexes have been deduced by elemental analysis, molar conductance, magnetic moment, UV-visible, FT-IR, thermogravimetric analysis, cyclic voltammetry, and powder-XRD techniques. Molar conductance values indicate that the complexes are non-electrolyte (1:0) type. The complexes have octahedral structure is revealed by the magnetic moment and UV-visible spectra. The FT-IR spectra reveal that the 2-aminothiazole and thiocyanate ions are coordinated to the metal ion in a monodentate manner. The antibacterial capabilities of ligands and their Co(II) and Ni(II) compounds were studied against a restricted set of microorganisms utilizing the agar-well diffusion method and varying concentrations. When compared to free 2-aminothiazole ligand, the complexes exhibit possible activity against the fungus than bacteria. By assessing how well the complexes and ligands interact with the stable free radical DPPH, their ability to scavenge free radicals has been established. Comparing the complexes to the free ligand, the complexes exhibit greater antioxidant activity due to the fact that metal complexes are widely recognized for their capacity to accelerate medication action and boost therapeutic agent potency when they coordinate with a metal ion. The primary goal of this research is to develop multimodal medicinal drugs, which include studying the roles of 2-aminothiazole and its transition metal complexes.

No. of Pages : 15 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :12/07/2025

(21) Application No.202541066698 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SMART SPOON DEVICE FOR MONITORING AND PROMOTING A BALANCED DIET

(51) International classification :A61B0005000000, A61B0005145500, H04W0052020000, A61B0005110000, G01N0027333000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present disclosure provides a smart spoon device (100) for monitoring and promoting a balanced diet. The device (100) includes a handle (102) and a head portion (104) embedded with a plurality of sensors (108) and a wireless communication module. The plurality of sensors (108) is embedded within the head portion (104), including detection sensors, near-infrared spectroscopy (NIRS) sensors, biosensors, temperature sensors and the like. The taste detection sensors include a plurality of ion-selective electrodes configured to detect ions such as Na⁺ and H⁺ for determining taste profiles including but not limited to salty, sour, and sweet. The NIRS sensors are configured to analyze macronutrient composition of food. The biosensors are configured for detecting microbial contamination or spoilage in the food. The temperature sensors are configured to measure temperature of the food prior to consumption. The wireless communication module is configured to transmit sensory data to a user device.

No. of Pages : 12 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066700 A

(19) INDIA

(22) Date of filing of Application :12/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ELECTROLYTE COMPOSITION AND PROCESS FOR PRODUCING HYBRID CERAMIC-METAL COMPOSITE COATING ON METALLIC SUBSTRATE

(51) International classification :C25D11/06, C25D11/06, C25D11/024, C25D11/26, C25D11/30

(86) International Application No :NA

Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

An electrolyte composition and process for producing a hybrid ceramic-metal composite coating on a metallic substrate is provided. The process involves a single-step plasma electrolytic oxidation (PEO) method for simultaneously forming a magnesium oxide (MgO) ceramic layer and depositing tellurium nanorods on magnesium or magnesium alloy substrates using a composition including tellurium precursor, pH regulator, and phosphate salt. The process exhibits improved biocompatibility, wear resistance, and corrosion resistance, making the coated hybrid ceramic-metal composite coated metallic substrate suitable for biomedical applications, particularly in orthopedic implants, dental prosthetics, and stents

No. of Pages : 21 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :12/07/2025

(21) Application No.202541066701 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR MANAGING POWER CONSUMPTION IN A NETWORK

(51) International classification :H04W0052020000, H04L0001186700, H04W0072210000, H04W0052140000, G06Q0050060000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present disclosure provides a system 202 and a method 700 for managing power consumption in a network. Conventional solutions lack adaptive mechanisms to dynamically optimize power for both UE and base station during service transitions, often leading to unnecessary energy usage and degraded quality of service. To overcome the existing drawback, the method 700 includes receiving 702 change in service request from UE while communicating with base station and predicting 704 a target power value for UE and base station using tracked power consumption data. Further, the method 700 includes transmitting 706 power configuration request to a candidate base station and receiving 708 positive acknowledgement. Further, the method 700 includes establishing 710 real-time communication between the UE and the candidate base station. The proposed solution enables service-aware, Artificial Intelligence (AI)-based energy control, ensuring optimal power use without compromising performance, thereby reducing energy wastage and supporting sustainable network operations.

No. of Pages : 58 No. of Claims : 19

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :12/07/2025

(21) Application No.202541066702 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : THERMALLY INSULATING FOAM CONCRETE PANEL COMPOSITION WITH RECYCLED AGGREGATES

(51) International classification :C04B0028020000, C04B0111400000, C04B0028060000, C04B0018020000, C04B0028040000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present disclosure provides a thermally insulating foam concrete panel composition for sustainable building construction and a method for forming lightweight insulation panels through waste material incorporation. The composition includes cement and fine aggregate in ratios of 1:0.5 to 1:3, water providing 0.3-0.5 water-cement ratio, foam component including 1-6% by weight, recycled plastic aggregates replacing 10-30% of fine aggregate volume, and natural fibers at 0.1-1% by weight of cement. The composition enables thermal conductivity below 0.082 W/m·K through synergistic interaction of cellular voids, plastic discontinuities, and fiber networks. Unlike energy-intensive autoclaved aerated concrete requiring specialized facilities, this ambient-cured composition achieves comparable insulation while utilizing recycled polypropylene and agricultural waste. The three-dimensional fiber reinforcement reduces shrinkage below 1.5% and water absorption by 72%, ensuring dimensional stability. With demonstrated compressive strength exceeding 3 MPa and density of 800-1000 kg/m³, the composition enables modular panel production for energy-efficient building applications.

No. of Pages : 28 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066710 A

(19) INDIA

(22) Date of filing of Application :12/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : IoT Security System Using Kolmogorov-Arnold Network Detection

(51) International classification :H04L0009400000, G06N0020000000, G06F0021550000, H04W0012122000, G06F0017180000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

The invention discloses an intelligent IoT security system that employs Kolmogorov-Arnold Networks (KANs) for detecting anomalies in network traffic. The system captures traffic data from IoT devices, preprocesses it to extract key statistical and behavioral features, and applies a KAN model to compute an anomaly score. By leveraging the Kolmogorov–Arnold representation theorem, the model efficiently approximates nonlinear relationships in high-dimensional data using univariate transformations. The system classifies traffic as normal or anomalous based on adaptive thresholds and generates real-time alerts. It is lightweight, scalable, and suitable for deployment in resource-constrained environments such as smart homes, healthcare, and industrial IoT networks, offering accurate detection of known and unknown threats with minimal computational overhead.

No. of Pages : 17 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :12/07/2025

(21) Application No.202541066712 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : EDGE-ENABLED DRONE SYSTEM FOR REAL-TIME TREE COUNTING AND ENVIRONMENTAL MONITORING

(51) International classification :G05D0001000000, G06N0003080000, B64U0101300000, B64U0010130000, G06N0003046400

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT The present invention relates to an edge-enabled drone system for real-time tree counting and environmental monitoring. The system includes a multirotor drone equipped with a high-resolution RGB camera, LiDAR sensor, and GPS/IMU unit to capture image, depth, and geolocation data. An onboard edge computing device processes this data in real time using a deep learning-based AI model to detect and count trees while preventing duplicate detections. The system integrates Extended Kalman Filter (EKF) stabilization to enhance geolocation accuracy. By performing all computations onboard, the system eliminates cloud dependency, ensuring low-latency and autonomous tree inventorying. Additionally, an adaptive training module continuously improves the detection model for better accuracy across varied forest conditions. This invention provides a scalable, efficient, and self-improving solution for forestry management, biodiversity monitoring, and carbon sequestration analysis. Figure 1.

No. of Pages : 21 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066715 A

(19) INDIA

(22) Date of filing of Application :12/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A Mask-Aware EffeRS-Net Based Deep Learning Framework for Emotion and Depression Detection During COVID-19

(51) International classification :G06V0040160000, A61B0005160000, A61P0025240000, G10L0025630000, G06T0007110000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses a deep learning-based system called A Mask-Aware EffeRS-Net Based Framework for Emotion and Depression Detection During COVID-19. The system addresses the challenge of emotion recognition from masked facial images, a problem prevalent during the COVID-19 pandemic. It employs a modified EffeRS-Net architecture integrated with a mask segmentation module and attention mechanisms to focus on upper-face features. The framework ensures high accuracy in detecting emotional states and identifying depressive indicators from partially visible facial data. This invention significantly enhances AI-driven mental health assessment tools under constrained visibility conditions such as pandemics.

No. of Pages : 10 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :12/07/2025

(21) Application No.202541066716 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-Driven Public Grievance System: Transforming Petition Analysis with Machine Learning

(51) International classification :G06Q0050260000, G06F0040300000, G06N0020000000, G06V0020100000, G06Q0010100000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

The invention discloses an AI-powered platform for automating public grievance resolution. By combining NLP, ML, and predictive analytics, it categorizes petitions, detects duplicates, prioritizes urgent cases, and forecasts systemic issues. A dynamic dashboard ensures transparency, while multilingual support enhances accessibility. This system reduces manual effort, accelerates resolution, and fosters trust in governance.

No. of Pages : 11 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :12/07/2025

(21) Application No.202541066717 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Trendspotting Advanced Analytics for Stock Market Predictions

(51) International classification :G06N0003045000, G06N0010000000, G06V0020100000, G06N0010600000, G06V0010764000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention relates to a hybrid quantum-classical deep learning system for land cover classification using Sentinel-2 satellite imagery. The system integrates classical convolutional neural networks with quantum variational circuits to extract, compress, and classify spectral-spatial features from multispectral image patches. Preprocessed Sentinel-2 images are divided into patches, which are processed through convolutional layers for feature extraction. The resulting features are encoded into quantum states using parameterized quantum circuits, which perform entanglement and variational transformations to produce a compact quantum-enhanced representation. These quantum features are combined with classical features and passed through fully connected layers to classify the land cover types into categories such as vegetation, water bodies, urban areas, barren land, and clouds. The invention achieves improved classification accuracy, enhanced feature expressiveness, and reduced classical model complexity, offering a scalable and efficient solution for remote sensing applications. The proposed framework is compatible with emerging quantum computing platforms and is adaptable to various satellite-based geospatial analysis tasks.

No. of Pages : 12 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :13/07/2025

(21) Application No.202541066743 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SYSTEM AND METHOD FOR TOKENIZED SUPPLY CHAIN MANAGEMENT USING IOT AND BLOCKCHAIN TECHNOLOGIES

(51) International classification :H04L0009320000, H04L0009000000, G06Q0020060000, G06Q0010087000, G06Q0030018000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

[046] The present invention provides a system and method for tokenized supply chain management utilizing Internet of Things (IoT) devices and blockchain technology. The system enables real-time monitoring of physical goods through IoT sensors and represents each item with a unique digital token stored on a blockchain ledger. These tokens encapsulate metadata including product identity, environmental conditions, ownership history, and compliance status. Smart contracts embedded within the blockchain execute automated actions such as payment release, alert notifications, and regulatory enforcement based on token state and IoT-generated events. The invention ensures transparency, traceability, and security across the entire supply chain, offering a decentralized, tamper-proof, and intelligent platform for managing complex logistics operations. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 21 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :13/07/2025

(21) Application No.202541066744 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : LoRa and MQTT Based Street Light Control and Monitoring System for Smart Cities

(51) International classification :F21S0008080000, F21W0131103000, H05B0047110000, H04L0067120000, G06F0003041000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

This Invention presents a smart street lighting system utilizing LoRa for long-range, low-power communication and MQTT for efficient real-time data transfer. Sensor-integrated nodes detect motion and ambient light, enabling adaptive brightness control and energy optimization. A central controller aggregates data and communicates with a remote dashboard for monitoring and control. The system supports remote diagnostics and integrates image processing for enhanced responsiveness. It offers a scalable, cost-effective solution for intelligent street lighting in smart city infrastructure

No. of Pages : 11 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :13/07/2025

(21) Application No.202541066764 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SYSTEM AND METHOD FOR DETECTING HUMANS ON RAILWAY TRACKS USING IOT AND AI INTEGRATED MONITORING APPLICATION

(51) International classification :G08B0013196000, H04L0009400000, H04W0004029000, H04L0067120000, G06N0020000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

[040] The present invention discloses a smart and automated system for detecting human presence on railway tracks using an integrated framework of Internet of Things (IoT) sensors and Artificial Intelligence (AI)-based analytics. The system comprises a network of optical, thermal, infrared, and ultrasonic sensors connected to edge AI processing units that analyze real-time data to identify unauthorized or accidental human presence. Upon detection, the system evaluates the threat level and transmits alerts—including location, visual evidence, and severity—via secure communication protocols to a centralized cloud-based monitoring platform. The system further supports deterrent mechanisms and integrates with railway control infrastructure for timely intervention. This invention enhances railway safety by enabling proactive monitoring, reducing human error, and preventing accidents through real-time intelligent surveillance. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 19 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :13/07/2025

(21) Application No.202541066765 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : E-Waste & Scrap Collection and Recycle Management

(51) International classification :G06N0003045000, G06N0003080000, H04L0067120000, G06F0018240000, C22B0007000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

The invention introduces DeepSort-E, a smart, AI-driven framework designed to automate and enhance the E-waste recycling process. By integrating Convolutional Neural Networks (CNNs) for high-precision material classification, Internet of Things (IoT) sensors for real-time monitoring, and robotic arms for automated sorting, the system ensures efficient segregation of recyclable components. Advanced model optimization techniques such as transfer learning, quantization, and pruning are incorporated to improve processing speed, reduce energy consumption, and support scalability for industrial deployment. DeepSort-E leverages real-time optimization feedback to dynamically refine sorting operations, achieving high accuracy even in heterogeneous waste environments. The framework not only streamlines recycling workflows but also promotes sustainability by enhancing resource recovery and reducing manual labor dependency. Cloud-based storage solutions and an intuitive dashboard interface further enhance operational efficiency, offering live monitoring and performance evaluation. The system's adaptability ensures long-term viability across diverse recycling scenarios, positioning DeepSort-E as a transformative solution for modern E-waste management and circular economy initiatives.

No. of Pages : 11 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

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(21) Application No.202541066766 A

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(54) Title of the invention : HYBRID SOLAR-BIOMASS POWERED SMART FARMING SYSTEM FOR SUSTAINABLE AGRICULTURAL AUTOMATION

(51) International classification :A01G0009240000, H04L0067120000, G05B0019042000, G06N0020000000, A01G0027000000
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(62) Divisional to Application Number :NA
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(57) Abstract :

This invention discloses a Hybrid Solar-Biomass Powered Smart Farming System designed for sustainable agricultural automation. The system integrates solar photovoltaic panels and a biomass gasifier to power a network of sensors, actuators, and control units that monitor and manage irrigation, fertigation, and climate conditions. It ensures uninterrupted operation through intelligent energy switching and storage, enhancing productivity even in off-grid regions. The system employs IoT-based interfaces for real-time monitoring and supports decision-making using embedded intelligence. The invention addresses energy scarcity, promotes sustainable farming, and reduces labor intensity, making it a robust solution for modern precision agriculture.

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(12) PATENT APPLICATION PUBLICATION

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(21) Application No.202541066780 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : An ML-Driven Framework for Exoplanet Classification and Prediction

(51) International classification :G06N0020000000, G06N0020200000, G01C0021020000, B64G0001100000, B64G0001360000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

Abstract With the rapid advancement of space exploration, accurate exoplanet detection has become essential for understanding planetary systems beyond our solar system. This project focuses on developing a machine learning-based exoplanet detection methodology using data from the Kepler and TESS (Transiting Exoplanet Survey Satellite) missions. As the volume of celestial data continues to grow, distinguishing between genuine exoplanets and false positives presents a significant challenge. This study addresses this issue by leveraging supervised learning algorithms to enhance the accuracy and efficiency of exoplanet classification. A comprehensive dataset comprising planetary and stellar attributes such as orbital period, planetary radius, transit depth, and stellar temperature serves as the foundation for this investigation. Multiple machine learning models, including Logistic Regression, Random Forest, Gradient Boosting, XG Boost, and Light GBM, are systematically explored and evaluated to determine the most effective classification approach. The models are assessed based on key performance metrics such as accuracy, precision, recall, and F1-score to ensure optimal detection of exoplanet candidates. The findings of this research significantly contribute to the advancement of automated exoplanet detection, with implications for astronomy, astrophysics, and future space missions. By harnessing the power of machine learning, this project provides a scalable and efficient approach for identifying exoplanets with high confidence, minimizing human effort and computational costs. Ultimately, this work highlights the potential of integrating advanced data-driven techniques in astronomical research, paving the way for future discoveries in planetary science. Keywords- Exoplanet Detection, Kepler, TESS, Astronomical Data Analysis, Exoplanet Candidates, Planetary Science, Data-Driven Astronomy, Classification Models.

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(12) PATENT APPLICATION PUBLICATION

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(22) Date of filing of Application :13/07/2025

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(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-Powered Automated Attendance System Using Humanoid Robot

(51) International classification :G06V0040160000, B25J0009160000, G06Q0050200000, B25J0011000000, B25J0015000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
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(57) Abstract :

Abstract The increasing demand for automated attendance systems in educational institutions has driven the development of intelligent robotic solutions for faculty management. This paper presents an AI-powered humanoid robot designed for facial recognition-based attendance tracking and interactive faculty greeting, incorporating technologies such as OpenCV, MediaPipe, the face_recognition library, and the Robot Operating System (ROS). A 120° wide-angle camera is used for real-time facial detection, with MediaPipe efficiently detecting facial landmarks and face_recognition generating face encodings for accurate identification. Once a known individual is recognized, the robot logs their attendance into an Excel sheet using pandas and greets them with a personalized voice message via Google Text-to-Speech (gTTS). Gestures such as waving or bowing are executed using AiNex SDK-controlled servo motors, adding a natural human-robot interaction element. To avoid redundant logging, the system records attendance only once per session per person and skips repeated greetings for the same individual. ROS ensures synchronized communication between the robot's sensors, actuators, and software modules. A dedicated mobile application enhances usability, offering real-time camera feeds, system monitoring, and remote control functionalities. By integrating AI-driven face recognition with robotics and natural language processing, this system improves the accuracy, efficiency, and interactivity of faculty attendance processes. Future enhancements could include multi-face recognition, cloud-based storage, and gesture-based user input to further extend the system's capabilities and scalability.

No. of Pages : 11 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :13/07/2025

(21) Application No.202541066769 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Automated Cardiovascular Risk Prediction Using Multimodal Data Fusion and Synthetic Minority Oversampling (SMOTE) in class imbalance datasets

(51) International classification :G16H0050300000, G16H0050200000, G06N0003080000, G16H0010600000, G16H0050700000

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(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Nowadays, the biggest threat to humankind is cardiovascular disease, which increases the death rate. The mortality rate is increasing year by year due to the unpredictable attack rate of CVD. As per global health concerns, CVD prediction at an early alert would reduce the severity that may arise. The avoidance of CVD by making people aware of symptoms, as well as early prediction. One significant factor is the accuracy of the timely prediction of CVD in the very early stage, which requires an automatic CVD prediction approach. In prediction, the Framingham risk score depends on limited clinical parameters and struggles with class imbalance. To overcome the limitations, a hybrid model is used over multimodal fusion and SMOTE to handle minority class datasets (imbalanced). The combination of machine learning and deep learning methods, such as XGBoost, CNN, and LSTM, would process fused attributes, and SMOTE is integral to this process, would improve classification accuracy over imbalanced datasets. To improve the interpretability and understanding of clinical data, SHAP (Shapley Additive Explanations) is preferred. This integrated model ensures robustness and generalizes the CVD prediction in the early diagnosis and recommended healthcare strategy.

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(12) PATENT APPLICATION PUBLICATION

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(21) Application No.202541066770 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : EDGE-CLOUD COLLABORATIVE MACHINE LEARNING ARCHITECTURE FOR REAL-TIME IOT DATA PROCESSING

(51) International classification :G06N0020000000, G06F0009500000, G06N0003045000, G06F0021620000, H04L0009000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention provides an edge-cloud collaborative machine learning architecture for efficient, scalable, and real-time processing of IoT data. It comprises IoT-enabled edge devices performing local inference using lightweight AI models, and a cloud platform responsible for complex model training, long-term analytics, and global decision-making. A dynamic orchestration engine intelligently allocates tasks between edge and cloud based on real-time context, such as latency, bandwidth, and computation load. The system supports federated learning to update models across distributed devices without sharing raw data, preserving privacy and reducing communication overhead. The architecture is applicable across domains including smart cities, healthcare, industry, and energy management, enabling fast, secure, and adaptive AI-driven decision systems. FIG.1

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :13/07/2025

(21) Application No.202541066772 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI DRIVEN PLATFORM FOR PREDICTING REACTION PATHWAYS AND YIELDS

(51) International classification :G06N0003080000, G16C0020700000, G06N0003045000, G06N0020000000, G06N0005040000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses an AI-driven platform for predicting chemical reaction pathways and associated product yields with high accuracy and interpretability. The platform employs advanced machine learning models, including graph neural networks and transformer architectures, to analyze molecular structures input as SMILES or graph formats. It provides both forward synthesis and retrosynthetic planning by learning from extensive reaction datasets. The system allows users to input conditions such as temperature, solvent, and catalyst to generate context-specific reaction outcomes, including side-products and mechanistic steps. Continuous learning from experimental feedback improves prediction reliability, while a green chemistry module suggests environmentally sustainable pathways. The platform also supports integration with robotic synthesis systems and ELNs through APIs, enabling real-time execution and feedback. Furthermore, it incorporates explainable AI techniques to provide reasoning behind each prediction. This intelligent system transforms traditional chemical synthesis planning into a data-driven, scalable, and sustainable process applicable across pharmaceutical, material science, and industrial chemistry domains.

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :13/07/2025

(21) Application No.202541066773 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : ADAPTIVE LEARNING PLATFORM FOR PERSONALIZED ENGLISH LANGUAGE SKILLS DEVELOPMENT

(51) International classification :G06Q0050200000, G06N0020000000, G09B0005060000, G09B0019060000, G10L0015220000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The proposed invention relates to an intelligent adaptive learning platform designed to personalize English language skills development using artificial intelligence, machine learning, and natural language processing. It evaluates users in real time across reading, writing, speaking, and listening, generating dynamic learning paths tailored to individual proficiency levels, learning styles, and pace. The system includes modules for grammar correction, speech recognition, contextual vocabulary training, and immersive conversational practice. It provides real-time feedback, tracks performance trends, and offers gamified motivation tools to sustain engagement. Accessibility is ensured through multi-language support, voice input/output features, and inclusive design for differently abled users. The platform operates both online and offline and supports educators through performance analytics dashboards. It respects ethical AI practices by ensuring user data privacy, transparency in feedback, and bias-free evaluation. This invention redefines English language instruction by delivering scalable, engaging, and inclusive education tailored to learners' needs across academic, professional, and social contexts.

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(19) INDIA

(22) Date of filing of Application :13/07/2025

(21) Application No.202541066775 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : FINTECH DISRUPTION; EVALUATING THE IMPLICATIONS FOR TRADITIONAL FINANCIAL INSTITUTIONS AND REGULATORY FRAMEWORKS

(51) International classification :G06Q0020400000, G06Q0010063000, G06Q0040000000, G16H0050800000, G06Q0040040000
(86) International Application No :NA
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(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses a system and method for evaluating the implications of fintech disruptions on traditional financial institutions and regulatory frameworks. The system comprises integrated modules including a data acquisition engine, disruption classification module, institutional risk simulator, regulatory alignment engine, and decision intelligence dashboard. These components collectively monitor emerging fintech innovations, assess operational and compliance impacts on incumbent institutions, and map evolving regulatory responses. By providing real-time analytics, predictive modeling, and policy simulation, the invention enables financial entities and regulators to proactively adapt to technological advancements and maintain systemic resilience.

No. of Pages : 17 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :13/07/2025

(21) Application No.202541066776 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : BLOCKCHAIN-ENABLED LEDGER FOR TRANSPARENT AND AUDITABLE CORPORATE FINANCIAL RECORD-KEEPING

(51) International classification :H04L0009000000, H04L0009320000, G06Q0040120000, G06Q0020400000, G06F0021640000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention provides a blockchain-enabled ledger system for transparent and auditable corporate financial record-keeping. It leverages a permissioned blockchain network integrated with enterprise financial systems to record immutable, time-stamped financial transactions validated through smart contracts. The system ensures data integrity, real-time auditability, and regulatory compliance through role-based access control, automated validation rules, and secure cryptographic protocols. Embodiments include ERP integration, regulatory audit access, and anomaly detection for fraud prevention, collectively enabling a secure, transparent, and tamper-proof financial management infrastructure for modern enterprises.

No. of Pages : 17 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :13/07/2025

(21) Application No.202541066777 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Artificial intelligence Platform for Skill Gap Analysis and Personalized Employee Training Recommendation

(51) International classification :G06Q0010063900, G06N0020000000, G06Q0010063100, G06Q0050200000, G06Q0010105300

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention discloses an artificial intelligence-based platform for conducting skill gap analysis and providing personalized training recommendations to employees across diverse organizational environments. The system utilizes machine learning, natural language processing, and predictive analytics to evaluate employee capabilities against job role requirements, project expectations, and industry trends. It identifies skill deficiencies and generates individualized learning paths by curating training resources from both internal repositories and external learning platforms. The invention further supports career growth simulations, mentorship recommendations, and dynamic adaptation of training content based on user interaction and business changes. Managers and HR professionals gain insights through dashboards that reflect workforce readiness, training ROI, and team-wide skill trends. The platform emphasizes inclusivity with accessibility features and multilingual support. Scalable and secure, it integrates seamlessly with existing HR and learning systems to offer a future-ready, intelligent workforce development solution that enhances employee performance, career progression, and organizational competitiveness.

No. of Pages : 19 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :13/07/2025

(21) Application No.202541066779 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Cellular-based biosensor for detection of cervical cancer

(51) International classification :G01N0027120000, G01N0033680000, G01N0033000000, G01N0021000000, G01S0007484000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Abstract Cellular-based biosensor for detection of cervical cancer The present invention relates to medical devices. More particularly, the present invention relates to biosensor for cellular based detection of cervical cancer (CC). The present invention describes the chemiresistive biosensor which has the potential to detect cervical cancer at its precancerous stage using cervicovaginal fluid. Alpha actinin-4, a diagnostic and prognostic biomarker is quantified in CVF samples based on the correlation between the biomarker concentration and the corresponding sensor response.

No. of Pages : 32 No. of Claims : 12

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :13/07/2025

(21) Application No.202541066783 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-Powered Security Orchestration and Incident Response System for Proactive Threat Intelligence and Mitigation

(51) International classification :H04L0009400000, G06N0020000000, G06Q0050260000, G06F0021550000, G06F0021600000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
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(57) Abstract :

Disclosed is an autonomous artificial intelligence-powered security orchestration and incident response system configured to monitor, analyze, and mitigate security threats in real time. The system comprises a threat detection module to aggregate and analyze data streams including network traffic and endpoint activity to detect anomalies. A threat intelligence module classifies threat severity using machine learning and predictive modeling. A response orchestration module generates response actions based on severity, while a mitigation module implements actions such as system isolation, data encryption, and patch deployment. A reporting module records response actions and generates incident reports for forensic analysis, and a communication interface transmits incident data to external security operations centers using encryption protocols. The method includes monitoring data streams, classifying threats, generating response actions, implementing mitigation actions, and transmitting incident reports. The system and method provide comprehensive, adaptive threat detection and mitigation to prevent data breaches and minimize operational impact.

No. of Pages : 30 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :13/07/2025

(21) Application No.202541066781 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Swayam: IoT-Based Automated Prawn Farming System

(51) International classification :A01K0063040000, G06Q0050020000, H04W0052020000, C02F0001000000, A01K0061590000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Abstract The present invention discloses an advanced IoT-driven solution designed for automating prawn farming operations, specifically targeting aeration control and water quality management. The system integrates sensors to continuously monitor critical parameters like dissolved oxygen, pH, and salinity, automating aerator activation based on real-time data and predefined thresholds. This minimizes human errors, ensures optimal pond conditions, and enhances yield efficiency. The system's user-centric web application allows farmers to remotely monitor and control operations, with real-time notifications sent via SMS for critical updates. Swayam's alert system also proactively informs farmers about power outages through automated calls, preventing operational disruptions. By reducing power consumption by 20%-23%, Swayam not only improves operational efficiency but also promotes environmental sustainability. This comprehensive, scalable system empowers farmers to enhance productivity, reduce costs, and adopt data-driven prawn farming techniques.

No. of Pages : 10 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066787 A

(19) INDIA

(22) Date of filing of Application :14/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Process for Manufacturing Goethite (α -FeOOH) Combustion Catalyst for HTPB/AP/Al Composite Solid Propellants

(51) International classification :C06B0023000000, C06B0045100000, C08G0063685000, A61K0031704000, C08L0075040000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

In this invention, we developed a process for manufacturing a novel alternate combustion catalyst, goethite (α -FeOOH) form of Ironoxide for HTPB/AP/Al Composite Solid Propellants. To make gothite, FeSO₄, KOH and KNO₃ solutions in a predetermined concentration and mutual ratio are required. KOH+KNO₃ solution is added dropwise, to FeNO₃ solution at room temperature, stirring at 15000 rpm. After allowing the reaction products to settle overnight, the precipitate formed is separated, washed till pH near 7, dried either at 1100C using air oven or at ambient open to atmosphere and ground to de-agglomerate. Drying in ambient results in higher LOI without losing catalytic activity. Testing of Solid propellant incorporating 0.3%wt catalyst resulted in burn rate augmentation to an extent of 30%, and an increase in burn rate index. No change in the propellant slurry viscosity profile and small change in Mechanical properties were

No. of Pages : 36 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066789 A

(19) INDIA

(22) Date of filing of Application :14/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Cloud Blackbox using Super Computing and Artificial Intelligence

(51) International classification :H04B0007185000, G07C0005080000, G07C0005000000, H04L0067109700, B62D0041000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention describes a novel Cloud Blackbox using Supercomputing system and method designed to overcome the limitations of traditional physical flight recorders. The invention proposes a comprehensive architecture for the continuous, real-time capture of all critical flight data and cockpit voice recordings directly from an aircraft, followed by their high-bandwidth transmission via satellite networks to ground-based supercomputing clusters. These supercomputers are configured to perform parallel processing of the live data for immediate analysis, subsequent secure storage in cloud environments, and instant retrieval by authorized entities. This system effectively creates a "virtual black box" in the cloud, offering unparalleled speed, accessibility, and resilience for aviation safety data.

No. of Pages : 13 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541066793 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : IOT BASED UNDERGROUND CROP RIPENING ANALYSIS SYSTEM

(51) International classification :G06Q0050020000, G01N0033240000, A01G0025160000, H04L0067120000, H04W0004380000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The current invention involves a system based on the Internet of Things (IoT) to accurately monitor and analyze underground crop ripeness in order to optimize the time of harvest and minimize crop loss. The system includes an IoT sensor node installed in a particular depth of soil, a dual-lens camera that provides the visible and IR spectrum images with a 45 field of view and a 5cm focal length, and a multi-gas sensor that measures ethylene, CO₂, and CH₄ with ± 2 ppm precision. A magnetic docking system provides watertight sealing and safe positioning of the sensor node, and an automated activation mechanism that is activated when the soil moisture levels have reached a specific level that allows data collection to be initiated. Edge computing will filter the noise, compress the data and transmit efficiently through an IoT gateway via LoRa/ZigBee or LoRaWAN protocol to a cloud server. Machine learning models in the cloud server combine image and gas data to predict ripening levels and identify rot, sending the results back to a farmer in the form of real-time notifications in the mobile dashboard as either the Harvest Now or Rot Detected warnings. The modular approach of the system allows scalability and flexibility to different types of crops in the underground and different field conditions, which fills the gaps in prior art by offering a complete, real-time solution to underground crop management.

No. of Pages : 8 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541066800 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : High-yield hydrothermal based composition and method for preparation of sodium and potassium titanate nano ribbons

(51) International classification :B82Y30/00, B82Y40/00,
C01G23/053
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application :NA
Number :NA
Filing Date :NA
(62) Divisional to Application :NA
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(57) Abstract :

The present invention relates to a nanostructured composition comprising delaminated Ti_3C_2 MXene nanosheets as the precursor material has sodium titanate nanoribbons and/or potassium titanate nanoribbons having a ribbon-like morphology, wherein said nanoribbons are synthesized via hydrothermal treatment of the MXene in the presence of an alkaline agent selected from sodium hydroxide (NaOH) or potassium hydroxide (KOH), an oxidizing agent comprising hydrogen peroxide (H_2O_2 , 30 wt%). Fig 1 to 3

No. of Pages : 16 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066860 A

(19) INDIA

(22) Date of filing of Application :14/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A handheld device and method for health-related risk analysis of Polycystic Ovary Syndrome (PCOS)

(51) International classification :A61B0005000000, G16H0050300000, G16H0050200000, G16H0040630000, G16H0020700000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention relates to a handheld device for health-related risk analysis of Polycystic Ovary Syndrome (PCOS), comprising: (i) a graphical user interface (GUI) configured to collect self-reported data related to menstrual history, lifestyle, physical activity, emotional well-being, diet, sleep, and family medical background; (ii) one or more integrated sensors configured to acquire physiological signals, including at least one of: (i) temperature sensor; (ii) heart rate sensor; (iii) galvanic skin response sensor for stress estimation; (iv) bioimpedance sensor for estimating anthropometric indices such as BMI and waist-to-hip ratio; (iii) a data preprocessing unit adapted to normalize the inputs, resolve missing values, and extract relevant features; (iv) an onboard processor configured to execute a machine learning model trained on PCOS-associated datasets to generate a probabilistic risk score; (v) a classification module configured to categorize the risk score into one of three categories: Low, Moderate, or High; (vi) a user interface display configured to visualize results in the form of charts, bar graphs, and risk indicators; (vii) a recommendation unit adapted to provide personalized lifestyle-related suggestions based on the risk category; (viii) a communication module configured to enable report sharing via wireless protocols or cloud-based services. Fig 1 to 5.

No. of Pages : 19 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541066805 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SMART DEVICE FOR WOMEN'S SECURITY USING IOT, GSM, AND GPS

(51) International classification :H04W0004021000, H04W0004029000, H04W0004900000, G08B0025100000, G08B0025010000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention discloses a smart wearable device for enhancing women's safety using IoT, GPS, and GSM technologies. The device includes a microcontroller, GPS module for real-time location tracking, and a GSM module for sending SMS and voice call alerts to predefined contacts. A dual-button interface allows users to trigger either an emergency call or an SMS alert. The device incorporates a Kalman filter to improve GPS accuracy by reducing location errors caused by environmental interference. It also features a voice activation unit for hands-free triggering and supports fallback communication via LoRaWAN or satellite in low-network areas. An accompanying mobile application enables live tracking, geofencing, push notifications, and integration with emergency services. The system is designed for low power consumption, extended battery life, and easy use, making it suitable for deployment in both urban and rural environments. The invention ensures rapid emergency response and broad usability in real-world scenarios.

No. of Pages : 12 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541066807 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : EVALUATION OF TURKEY BERRY (SOLANUM TORVUM SW.) GENOTYPES WITH HIGH CONTENT OF SOLASODINE AND SAPONIN FOR PHARMACEUTICAL AND NUTRACEUTICAL USES

(51) International classification :E21B0049080000, G06F0111100000, G06F0018214000, G06F0030200000, G06N0020000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

In the framework of $f(R,T)$ gravity theory proposed by Harko et al., a spatially homogeneous and anisotropic Bianchi type-V-I0 cosmological model is examined, where the energy-momentum tensor describes a bulk viscous fluid embedded with one-dimensional cosmic strings. To obtain exact solutions of the field equations, three specific assumptions are made: (i) the expansion scalar is assumed to be proportional to the shear scalar, following the condition proposed by Collins, establishing a relationship between the metric potentials; (ii) Berman's law of variation of the Hubble parameter is applied, resulting in a constant deceleration parameter; and (iii) a barotropic equation of state is adopted to achieve a determinate solution. Additionally, the bulk viscous pressure is taken to be proportional to the energy density. The physical and dynamical behaviour of the resulting model is thoroughly analyzed, and the variation of key cosmological parameters is illustrated through graphical representations to interpret the model's evolution.

No. of Pages : 13 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541066819 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : INTERACTIVE FRAMEWORK FOR ANALYZING COMMUNITY SOCIAL NETWORKS

(51) International classification :G16H0050200000, G06Q0050000000, G06N0020000000, G06Q0010063000, G16H0020100000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

INTERACTIVE FRAMEWORK FOR ANALYZING COMMUNITY SOCIAL NETWORKS ABSTRACT The invention Interactive Framework for Analyzing Community Social Networks presents a dynamic, user-centric system designed to collect, process, and visualize complex social interactions within communities. By integrating data from various digital and real-world sources, the framework employs advanced analytics, machine learning, and graph theory to uncover hidden patterns, identify influential actors, and monitor evolving group dynamics. Its modular architecture supports real-time data updates, interactive dashboards, and customizable visualizations, enabling stakeholders to explore relationships and behaviors at multiple levels. Applications span public health, urban planning, education, marketing, and civic engagement, offering valuable insights for decision-makers and researchers. Emphasis on data privacy, scalability, and interoperability ensures wide adaptability and ethical compliance. The framework not only facilitates retrospective analysis but also supports predictive modeling and strategic planning. This invention represents a powerful tool for understanding and influencing social networks in an increasingly interconnected and data-driven world.

No. of Pages : 12 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541066828 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Oral Protein Drug Formulation with Enhanced Protease Resistance and Therapeutic Bioavailability

(51) International classification :A61P0035000000, A61P0003000000, A61P0001160000, A61K0038270000, A61K0009280000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT: Title: Oral Protein Drug Formulation with Enhanced Protease Resistance and Therapeutic Bioavailability The present disclosure proposes an oral protein drug formulation that treats a wide range of diseases, including viral infections, cancers, fibrotic disorders, growth deficiencies, and metabolic conditions. The invention features modified therapeutic polypeptides incorporating specific amino acid substitutions that confer enhanced resistance to proteolytic enzymes while preserving biological activity. The modified polypeptides include, but are not limited to, interferon- α 2b, interferon- α 2a, and human growth hormone, with representative sequence modifications such as E41Q and Y42I. The oral dosage formulation comprises 10 to 100 times the subcutaneous dose of the unmodified polypeptide and may be delivered in the form of tablets, capsules, or other oral dosage units, optionally protected by an enteric coating. The invention enables effective treatment of conditions such as viral infections, cancers, fibrotic disorders, growth hormone deficiencies, and metabolic diseases through oral delivery of stabilized, protease-resistant polypeptides.

No. of Pages : 14 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541066838 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR LOCATION-BASED INFORMATION DELIVERY WITHOUT MOBILE APPLICATIONS USING LOCAL WIRELESS INFRASTRUCTURE

(51) International classification :H04W0004020000, H04W0004800000, H04W0004029000, G06Q0030025100, H04W0004021000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention relates to a system and method for delivering location-based digital content to user devices without requiring the installation of mobile applications, active GPS usage, or an internet connection. The invention makes use of local wireless infrastructure—such as Wi-Fi routers with captive portal capability, Bluetooth Low Energy (BLE) beacons, or Near Field Communication (NFC) tags—to detect user presence in a predefined physical area and automatically deliver relevant, context-aware content. Once a wireless-enabled user device enters the coverage area, it connects to a local network or receives a short-range signal. The system then initiates a redirection to a local server or hosted page, allowing the user to access targeted content such as alerts, information pages, schedules, multimedia messages, or location-specific notifications directly through their browser, without requiring a mobile app. The content is stored locally and mapped to specific zones, ensuring that the system can operate in offline environments, particularly in areas with limited or no internet access. The architecture supports real-time user interaction, optional feedback capture, and full modular scalability for deployment across multiple zones or locations. This invention is especially suited for environments such as: • Smart campuses and schools, to deliver classroom-based or lab-specific instructions. • Public transportation hubs, for broadcasting schedules and route maps. • Rural clinics or government service centers, for guiding citizens without requiring smart phone literacy. • Emergency sites, where fast and app-less communication is critical. The system is low-cost, privacy-friendly, scalable, and inclusive, making it ideal for wide-scale public deployment, especially in underserved or connectivity-challenged regions. It bridges the digital gap by removing barriers such as app downloads, cloud dependencies, or data usage charges—thereby expanding the accessibility of location-based services to all types of users, including those with basic devices or limited digital literacy.

No. of Pages : 17 No. of Claims : 2

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541066899 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI DRIVEN AUTONOMOUS WHEELCHAIR

(51) International classification :G06N0020000000, G06F0003010000, G06V0020520000, G05D0001000000, G16H0050200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The integration of Artificial Intelligence (AI) into assistive mobility technologies has greatly improved autonomy and quality of life for individuals with physical impairments. This paper provides an in-depth analysis of AI applications in autonomous wheelchair navigation systems. By combining machine learning, sensor fusion, and computer vision, these systems enable intelligent perception, decision-making, and navigation with minimal user input. The research investigates core AI techniques such as path planning, obstacle detection and avoidance, environmental mapping, and user intent recognition. It also evaluates the performance of various AI models and sensor combinations across simulated and real-world environments. Special attention is given to the system's safety, adaptability, and ease of use. Results show that AI-driven navigation significantly enhances user independence and operational efficiency, while improving safety in complex environments. This study highlights AI's transformative potential in assistive mobility and lays the groundwork for future advancements in smart healthcare and human-centered robotic systems.

No. of Pages : 18 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541066848 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A System and Method for Quantitative Assessment, Classification, and Enhancement of Customer Loyalty Using a Multi-Dimensional Secured Customer Index (SCI) Based on Expectation-Realization Analysis, Brand Power, Competitive Influence, and Tiered Loyalty Evaluation

(51) International classification :G06Q0030020000, G06Q0030020100, G06Q0010063900, G06Q0010063700, A61B0005110000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The invention discloses a comprehensive model and system for assessing, quantifying, and enhancing customer loyalty through the computation of a Secured Customer Index (SCI). The model systematically integrates a multi-dimensional analysis of customer expectations and realizations across key performance factors including product features, quality, price, service (pre- and post-sales), and brand image. A comparative evaluation is conducted between the Expectation Index and Realization Index, supported by brand perception and competitive positioning, to generate a Loyalty Index. This index encompasses variables such as price sensitivity, competitive influence, service lapses, and customer advocacy (suggestions and referrals). The invention further classifies loyalty into three distinct orders first, second, and third allowing for stratified strategy development. Through GAP analysis and real-time feedback loops, the model enables enterprises to identify loyalty deficiencies, devise customized customer retention strategies, and dynamically improve engagement. The proposed SCI framework facilitates a structured, quantifiable, and scalable approach to building long-term customer relationships and competitive differentiation.

No. of Pages : 8 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066881 A

(19) INDIA

(22) Date of filing of Application :14/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : FILTRATION SYSTEM FOR ENGINE OF VEHICLE AND VEHICLE INCLUDING THE SAME

(51) International classification :F01M0013040000, F01M0001160000, B01D0021260000, B01J0020260000, C01B0003500000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A filtration system (10) comprising an upper column (110) that receives blowby gases (12) from an engine. The upper column comprises a first thermal conductivity mesh (122) that separates oil (20) from water vapor (42), and a second thermal conductivity mesh (132) that receives water vapor (42) through a super oleophobic membrane (114) and condenses water vapor (42) into water (40). Further, a lower column (150) is fluidly coupled with the upper column and comprises a water collection chamber (160) containing a superabsorbent polymer (162) that receives water (40) through a permeable membrane (116) and oil channels (170) that receive engine oil (20) from the upper column. The filtration system (10) prevents water (40) mixing with engine oil (20), condensation of water vapor (42) to water (40) in engine oil (20) to form emulsion, engine oil (20) dilution with water (40), and/ or separate water (40) from engine oil (20). [Fig. 2]

No. of Pages : 29 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541066907 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A multi-phase nano-cluster design system for pH-responsive drug delivery

(51) International classification :G06F0030200000, A61K0049000000, B82Y0040000000, G01N0021640000, G06F0111100000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a multi-phase nano-cluster design system (100) for pH-responsive drug delivery, comprising: a dataset synthesis unit (101) configured to: identify nanoparticle components and design parameters (102); generate a variety of nano-cluster configurations using randomized attributes (103); and detect and correct errors (104) during generation to ensure valid dataset output; a candidate generation and evaluation unit (105) configured to: receive the synthetic dataset (106) and assess nano-cluster candidates for self-assembly and stability (107) based on binding energy, structural resilience, and assembly feasibility; eliminate candidates that fail physical criteria (108); and pass structurally stable configurations (109) to a simulation module; a simulation and visualization unit (110) configured to: simulate the behavior of validated nano-cluster candidates (111) under acidic conditions similar to tumor environments; evaluate responses including morphology and integrity (112); visualize the cluster assembly (113) to confirm successful pH-triggered self-assembly; and an integration logic module (114) configured to assess whether the nano-cluster remains stable in physiological pH (~7.4) and transforms or releases therapeutic agents under acidic tumor pH (~6.5). Fig 1 to 6

No. of Pages : 19 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066953 A

(19) INDIA

(22) Date of filing of Application :14/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Method and System for Solving Singular Boundary-Value Problems Arising in Thermal Explosion via High-Order B-Spline Collocation

(51) International classification :G06F0030230000, G06F0111100000, G06T0017300000, G06F0030367000, G06F0017110000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

This invention presents a novel method and system for accurately solving singular boundary-value problems (SBVPs) arising in thermal explosion models, utilizing a high-order B-spline collocation approach. Thermal explosion problems, characterized by steep gradients and singularities due to chemical reaction kinetics and heat generation in confined reactive media, often pose significant computational challenges. The proposed method employs quintic and higher-order B-spline basis functions within a collocation framework to approximate the solution of highly nonlinear SBVPs with singular behavior at one or both boundaries. By strategically placing collocation points and exploiting the local support and smoothness properties of B-splines, the system ensures high accuracy, numerical stability, and computational efficiency. The system integrates an adaptive mesh refinement algorithm that dynamically adjusts the discretization near singularities to capture sharp solution variations, enhancing convergence and reducing approximation errors. Furthermore, the method incorporates an iterative solver based on Newton-Raphson or quasi-linearization techniques to handle the nonlinear nature of thermal explosion equations effectively. Comparative numerical experiments with existing finite difference and shooting methods demonstrate the superior performance of the proposed technique in terms of accuracy, stability, and robustness.

No. of Pages : 18 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541066909 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-DRIVEN CUSTOMER SENTIMENT ANALYSIS TOOL

(51) International classification :G06F0040300000, G06N0003045000, G06F0016330000, G06N0020000000, G06N0003080000
(86) International Application No :NA
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(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

AI-DRIVEN CUSTOMER SENTIMENT ANALYSIS TOOL ABSTRACT An AI-powered customer sentiment analysis tool is disclosed for processing unstructured textual data across diverse communication platforms. Utilizing transformer-based natural language processing models, the system detects and classifies sentiment with contextual accuracy and supports emotion tagging, sarcasm recognition, and aspect-based opinion mining. The tool includes adaptive learning for continuous improvement based on feedback and evolving language. It features a visual dashboard offering real-time sentiment trends, alerts, and demographic breakdowns. The platform is scalable, multilingual, and compatible with CRM and business intelligence systems. Designed for high accuracy and automation, this invention enables businesses to derive meaningful insights from customer interactions and make data-driven decisions that enhance user experience and operational responsiveness.

No. of Pages : 20 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541066910 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Neutral Network Driven Recipe Generator for Personalized Dietary Nutrition

(51) International classification :G16H0020600000, G16H0010600000, G06N0003045000, A61B0005000000, G16H0050200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

Neural Network Driven Recipe Generator for Personalized Dietary Nutrition" is an AI-powered system designed to revolutionize the way individuals approach healthy eating by leveraging advanced machine learning techniques. This innovative platform integrates user-specific health data—such as age, gender, weight, height, activity level, medical history, and dietary preferences—with nutritional science to generate personalized, nutritionally balanced meal recipes in real-time. At its core, the system utilizes deep neural networks trained on extensive culinary and nutritional datasets to model complex relationships between ingredients, nutritional needs, and personal health goals. The generator not only creates tailored recipes but also adapts them dynamically based on changing user inputs, biometric feedback (e.g., wearable health data), or medical recommendations. Furthermore, it considers cultural food preferences, seasonal ingredient availability, and cooking skill levels to ensure practicality and user satisfaction. This solution holds significant promise in combating modern dietary challenges such as obesity, diabetes, cardiovascular conditions, and nutrient deficiencies by offering sustainable, individualized dietary planning. The platform also integrates with grocery and meal delivery systems for seamless implementation. By empowering users with intelligent, automated, and customized food planning, this neural network-based system has the potential to promote long-term healthy eating habits, reduce healthcare costs, and enhance quality of life.

No. of Pages : 18 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066924 A

(19) INDIA

(22) Date of filing of Application :14/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A heterobifunctional PROteolysis TArgeting Chimers (PROTACs) compound for selective degradation of KRAS G12C and KRAS G12D mutant proteins

(51) International classification :A61P0035000000, C07D0519000000, C12N0015100000, C07D0417140000, C07D0487040000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a heterobifunctional PROteolysis TArgeting Chimers (PROTACs) compound for selective degradation of KRAS G12C and KRAS G12D mutant proteins, which comprises: (i) a target ligand moiety comprising 1,3-diphenyl-1H-pyrazole-4-carboxamide functional group adapted to bind KRAS G12C/D mutated proteins; (ii) an E3 ligase ligand moiety comprising N-(1-(4-hydroxy-2-((4-(4-methylthiazol-5-yl)benzyl)carbamoyl)pyrrolidin-1-yl)-3,3-dimethyl-1-oxobutan-2-yl); and (c) an amide linker chemically connecting the target ligand and the E3 ligase ligand to form a single molecule. Fig 1 to 9

No. of Pages : 20 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541066968 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Design of Low Power 8T SRAM cell using enhanced MCML Technique

(51) International classification :G11C0011412000, H04W0052360000, G11C0011417000, G11C0011413000, G11C0011410000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The ever-growing demand for high-speed and low-power memory solutions in modern portable and embedded systems has intensified research into optimized Static Random Access Memory (SRAM) architectures. Conventional 6-transistor (6T) SRAM cells, while compact, suffer from significant leakage power and limited read stability at nanoscale technology nodes. This project presents the design and analysis of an 8-transistor (8T) SRAM cell that leverages an enhanced Multiple-Controlled Current Mode Logic (MCML) technique to improve power efficiency and stability. The proposed design decouples the read and write paths, thereby enhancing read static noise margin (RSNM) and allowing for more reliable data retrieval under low-voltage operations. The MCML technique, known for its constant current operation and reduced voltage swings, is modified in this work to further suppress static and dynamic power dissipation without compromising speed. By integrating current steering logic with carefully optimized transistor sizing and bias current control, the enhanced MCML-based 8T SRAM achieves substantial reductions in both standby and active power. Simulation results using a 45nm CMOS process demonstrate a power reduction of up to 40% compared to conventional CMOS-based 8T SRAM designs, along with improved noise margins and write ability.

No. of Pages : 10 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541067126 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A Method for Exploring the Synergy between Machine Learning and Graph Theory for Advanced Mathematical Applications

(51) International classification :G06N0020000000, G06N0003088000, G06F0016901000, G06N0005022000, H04L0043045000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention discloses novel methods and systems integrating machine learning and graph theory for solving complex mathematical problems involving graph-structured data. By embedding graph representations into adaptive learning models, the invention preserves relational structures while enabling efficient pattern recognition and prediction. Dynamic graph learning algorithms infer latent relationships from raw data, while temporal modules capture evolving connections over time. Scalability is achieved through graph sparsification and distributed computing, supporting large-scale graphs without compromising accuracy. Graph-theoretic principles such as spectral properties guide learning objectives, enhancing interpretability and stability. The invention supports supervised, unsupervised, and semi-supervised learning, and enables domain transfer through reusable graph embeddings. Provided as a flexible software framework with interfaces for graph construction, embedding computation, training, and visualization, the system integrates with modern hardware acceleration. This unified approach offers robust, interpretable, and scalable solutions for extracting insights from complex relational data, applicable across multiple scientific, engineering, and industrial domains.

No. of Pages : 24 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541066982 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Disease Prediction by machine learning over big data from healthcare communities

(51) International classification :G16H0050200000, G16H0010600000, G16H0050700000, G16H0050800000, G06Q0040080000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Disease Prediction by machine learning over big data from healthcare communities ABSTRACT: The advancements in big data within biomedical and healthcare sectors enhance the precise analysis of medical data, facilitating early disease detection, patient care, and community services. Incomplete medical data diminishes the accuracy of the study. Prescription and pharmaceutical services are undergoing substantial transformations. Analysts can not only forecast the probability of disease development in the human body but also, utilizing social insurance data, provide solutions. The aggregation of massive data, facilitated by Machine Learning, enables early disease prediction, patient care, and community services. This research optimizes machine learning methods for the accurate prediction of chronic illness outbreaks in populations with high disease prevalence.

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541066983 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : ANALYSIS OF PLANT LEAF DISEASES BY USING GRU ALGORITHM IN IMAGE FILTERING

(51) International classification :G06T0007130000, G06T0007000000, G01N0021359000, G06V0010300000, G06T0005700000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ANALYSIS OF PLANT LEAF DISEASES BY USING GRU ALGORITHM IN IMAGE FILTERING ABSTRACT For millennia, agriculture has been the bedrock of human civilization, sustaining life across the globe. Evolving from its humble origins, it has transformed into an advanced science continually exploring innovative solutions to enhance productivity and tackle challenges. Among these challenges is the burgeoning field of plant leaf detection, which is revolutionizing how we monitor and manage plant health—addressing threats ranging from pests and diseases to climate change. Healthy plants are vital to achieving bountiful harvests in the delicate ecosystem of agriculture. Traditional methods of detecting plant diseases often rely on manual scouting, which can be labor-intensive, time-consuming, and susceptible to human errors. This is where image processing steps in, offering a groundbreaking approach for accurate and early disease detection. Plant leaf diseases not only mar the visual appeal of crops but also diminish the yield that sustains us. Caused by various bacterial, viral, and fungal pathogens, these diseases severely impact agricultural landscapes, posing a significant threat to global food security. Early detection serves as the frontline defense in this silent battle. Identifying subtle changes in a leaf's color, texture, or shape—like wilting, browning, spots, or lesions—can reveal the onset of disease before it spreads. Conventional visual inspections are often inadequate, being both time-consuming and prone to mistakes. Image filtering algorithms offer a promising alternative by automating the detection process and improving precision. These algorithms analyze leaf images, enhancing subtle disease indicators such as color variations, texture irregularities, and lesion patterns. Techniques like noise reduction, edge detection, and thresholding isolate and quantify affected regions, which aids in diagnosing specific diseases or predicting their spread. This enables timely interventions such as targeted pesticide or fungicide applications. As a result, image filtering algorithms pave the way for rapid, consistent, and objective disease detection, empowering farmers and agronomists to protect crops and secure yields. The use of such algorithms for detecting plant leaf diseases is rapidly gaining traction, with the potential to significantly transform modern agriculture. In this study, we focus on pre-processing and identifying plant leaf diseases using filtering algorithms. The diseased leaf images undergo processing through filters such as the Canny, Roberts, and Prewitt operators. The primary diseases analyzed include leaf blight, leaf scorch, and leaf spot. The filtered outputs are evaluated using MSE (Mean Squared Error) and PSNR (Peak Signal-to-Noise Ratio) values, and the diseased areas are also pinpointed. Integrating this with data mining techniques can enhance the system's effectiveness.

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541067100 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : RECYCLABLE POLYMER AND METHOD OF PRODUCTION OF RECYCLABLE POLYMER

(51) International classification :C08F0255020000, C08L0051060000, C08L0023060000, C08J0003240000, C08K0005140000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

RECYCLABLE POLYMER AND METHOD OF PRODUCTION OF RECYCLABLE POLYMER ABSTRACT A method (100) for producing a recyclable polymer is disclosed, involving the chemical modification of recycled polyolefins to create a dual crosslinked network. The method includes melt mixing a recycled polyolefin with a monomer containing an anhydride group in the presence of an initiator, co-agent, and antioxidant to form a grafted polyolefin with grafted anhydride moieties. The grafted polyolefin is then melt-blended with an ionic crosslinker comprising multivalent metal ions and hydroxyl groups. The hydroxyl groups react with the anhydride moieties to form ester bonds capable of dynamic bond exchange, while the metal ions establish reversible ionic crosslinks. FIG. 1

No. of Pages : 39 No. of Claims : 12

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541066985 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Investigating Ethical Challenges in Autonomous Decision-Making: Policy Implications of Algorithmic Governance

(51) International classification :G06N0005045000, G06N0020000000, G06Q0010063700, G06Q0050260000, H04L0041089300

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Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

The rapid integration of autonomous decision-making systems, powered by artificial intelligence (AI) and machine learning (ML), into sectors such as healthcare, criminal justice, and public administration has raised significant ethical concerns. These systems, while efficient, often lack transparency, fairness, and accountability, posing risks to individual rights and societal trust. This invention investigates the ethical challenges of autonomous decision-making and explores their implications for algorithmic governance policies. The research examines key ethical issues, including bias and discrimination, lack of explainability, accountability gaps, and erosion of human agency. It analyzes case studies across multiple domains (e.g., predictive policing, autonomous vehicles, and healthcare diagnostics) to identify common ethical dilemmas and their societal impacts. This is also evaluates existing governance frameworks and proposes policy recommendations to ensure ethical, transparent, and equitable use of autonomous systems. A mixed-methods approach is employed, combining qualitative analysis of case studies, stakeholder interviews, and policy reviews with quantitative surveys of public perceptions of algorithmic decision-making. Ethical frameworks, such as utilitarianism, deontology, and virtue ethics, are applied to assess the moral implications of autonomous systems. Comparative analysis of global governance models (e.g., EU, US, and China) informs the development of policy recommendations.

No. of Pages : 11 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541066986 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : System and Method for Analyzing Opinion Dynamics Through Higher-Order Hypergraph Models

(51) International classification :G06Q0050000000, C12Q0001680600, G06Q0030020100, G06N0005022000, G06T0019000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Understanding opinion dynamics in social systems is critical for modeling collective behavior, yet traditional approaches often rely on pairwise interactions that fail to capture the complexity of group-based social influence. This paper presents a novel system and method for analyzing opinion dynamics through higher-order hypergraph models, which represent polyadic interactions via hyperedges connecting multiple agents. We extend the bounded-confidence model to hypergraphs, enabling agents to update their opinions based on group consensus within a specified confidence bound. Our framework leverages higher-order random walks and spectral graph theory to characterize long-range interactions and convergence properties.

No. of Pages : 9 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541066987 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Technique for Stability Characterization of Distributed Networks Using Large-Dimensional Random Matrix Models

(51) International classification :G06F0016220000, H04L0009000000, H04L0069329000, G06Q0010100000, G06F0017160000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

Distributed networks are inherently high-dimensional, with the number of nodes (N) potentially in the thousands or millions, and interactions that may be partially random or unpredictable. Traditional deterministic models struggle to capture this complexity, especially as N grows large. The abstract would highlight the need for a scalable, mathematical framework to analyse stability in such systems, noting that instability can lead to cascading failures, reduced performance, or system collapse. The technique leverages RMT, a branch of mathematics that studies the properties of large random matrices, to model and analyse network interactions. It involves representing the network as an $N \times N$ interaction matrix A , where each entry A_{ij} represents the strength or nature of interaction between nodes i and j . For large N , A is treated as a random matrix, with entries drawn from a specified distribution (e.g., Gaussian with mean 0 and variance σ^2). Stability is then characterized by analysing the eigenvalue distribution of A or a related matrix, such as the community matrix $S = DA$, where D is a diagonal matrix accounting for node-specific properties. The method's applicability to real-world distributed networks is a key highlight, offering a scalable framework for assessing stability in systems like internet backbones, power grids, or distributed antenna systems.

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541066988 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Method for Securing Computer Vision Systems from Adversarial Perturbations via Ensemble Model Integration

(51) International classification :G06N0003045000, G06N0003080000, G06N0020200000, G06V0010820000, G06F0018214000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

Adversarial perturbations subtle, often imperceptible alterations to input images pose a significant threat to the reliability of computer vision systems, causing misclassifications with potentially catastrophic consequences in applications like autonomous driving, medical imaging, and security surveillance. This study proposes a novel method to enhance the robustness of computer vision systems against adversarial perturbations through ensemble model integration, leveraging diverse model architectures to mitigate vulnerabilities. The research focuses on developing and evaluating an ensemble-based defense mechanism that combines multiple convolutional neural network (CNN) models with distinct architectures and training strategies to counteract adversarial attacks, including both white-box and black-box scenarios. The study tests the method on standard computer vision datasets (e.g., ImageNet, CIFAR-10) and common attack types (e.g., Fast Gradient Sign Method [FGSM], Projected Gradient Descent [PGD], and DeepFool). The approach emphasizes computational efficiency, scalability, and practical applicability in real-world systems.

No. of Pages : 10 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067010 A

(19) INDIA

(22) Date of filing of Application :14/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A two-part epoxy adhesive composition and the method for preparation thereof

(51) International classification :C09J0163000000, C09D0163000000, C08L0063000000, C08G0059440000, C08G0059500000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a two-part epoxy adhesive composition comprising: (i) a general-purpose epoxy resin containing at least one epoxy group in the range of 50% to 55%; (ii) a polyamide curing agent in the range of 40% to 45%; and (iii) an additive comprising tissue paper waste in the range of 2% to 3%. The method for preparing a fast-curing two-part epoxy adhesive composition, comprising the steps of: (i) mixing a polyamide curing agent with tissue paper waste to form a uniform hardener mixture; (ii) adding the hardener mixture to a general-purpose epoxy resin in a predetermined ratio; and (iii) stirring the resulting mixture for 2 to 5 minutes to form the adhesive composition. Fig 1 to 8.

No. of Pages : 17 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067011 A

(19) INDIA

(22) Date of filing of Application :14/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : "A reinforcement learning-enhanced prosthetic limb system for adaptive gait optimization"

(51) International classification :A61B0005389000, A61B0005000000, A61F0002760000, A61F0002700000, A61B0005110000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention relates to a reinforcement learning-enhanced prosthetic limb system (100) for adaptive gait optimization, comprising: i) a modular mechanical structure (101) simulating human lower-limb anatomy including a thigh portion, a knee joint (102), a shank, and a foot section (103); at least one actuator (104) comprising a brushless DC motor operatively coupled to said knee joint (102) and foot section (103) for joint actuation, a plurality of embedded sensors including: (i) at least one inertial measurement unit (IMU) (105) configured to detect orientation and angular acceleration of the limb; (ii) at least one surface electromyography (EMG) sensor (106) configured to monitor muscle activity at the residual limb; and (iii) at least one force-sensitive resistor array (107) embedded in the foot section (103) for detecting ground reaction forces during gait; an embedded microcontroller unit (108) operatively connected to the sensors and actuators; a reinforcement learning (RL) controller (109) housed within the microcontroller unit (108), configured to receive real-time input data from the IMU (105), EMG sensor (106), and force-sensitive resistor array (107), and generate adaptive torque commands for said actuator (104) based on a reward function optimizing gait symmetry, energy efficiency, and terrain adaptability; a feedback loop comprising actuator response and real-time sensor feedback for continuous refinement of the control policy; a mobile or desktop-based user interface (110) for clinical monitoring and manual override; a cloud-based federated learning module (111) configured to anonymously synchronize gait data across multiple devices for model updates without compromising user privacy; a passive support fallback mechanism (112) configured to engage when system anomalies are detected to ensure user safety. Fig 1 to 6.

No. of Pages : 21 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541067081 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Optimization using Ant Colony Optimization Algorithm for finding coaxial feed position to improve the VSWR and Return loss value of patch antenna

(51) International classification :G06N0003006000, G06F0030230000, G01R0027060000, H04B0017100000, G01R0029100000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

This paper presents the design, simulation, optimization, fabrication and testing of an equilateral shaped antenna for medical applications, Ant colony optimization (ACO) Algorithm was chosen for antenna optimization. The antenna considered here was fed by a 1.59mm diameter coaxial cable, the location of feeding and the side length of star shaped antenna was varied by Ant colony optimization Algorithm (ACO). Finding a set of settings that would enhance the antenna's performance was the optimization's goal. We have made use of MATLAB software to implement ACO Algorithm. The Ansys HFSS software was used to design antenna. Ansys HFSS software allows MATLAB to be interfaced with it for optimization purpose. The parameters considered were return loss (reflection coefficient S11) and the Voltage Standing Wave Ratio (VSWR). The ACO yielded a design with return loss (S11) of -25.55 and VSWR of 1.11 at 2.48 GHz. The entire antenna dimensions were approximately (5cm x 5cm). The substrate used was FR4 (flame retardant) epoxy. The fabricated antenna was tested in Anechoic chamber using network analyzer. There was strong good agreement between the measurements from the antenna's fabrication and simulation, for the operational frequency of 2.48 GHz and desirable performance in return loss, and VSWR (Voltage Standing Wave Ratio) parameters.

No. of Pages : 17 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541067082 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A Novel Technical assistance to avoid suicide approach

(51) International classification :H04W0004900000, H04L0051020000, G08B0025010000, H04W0076500000, H04W0004140000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The proposed system uses a weight sensor to immediately weigh the person once they try to hang themselves. As soon as the reading in the sensor changes, the fan will drop down to a level where the person cannot get hurt and is saved. The rod that holds the fan is internally connected to a spring, which expands when the load extends a certain limit. To alert this situation, the system uses an alarm sound that goes off as soon as the weight sensor reading is changed. Simultaneously an emergency message will be sent to the registered emergency contacts so that they are aware of the situation and can take the necessary action. The health department will be alerted about the situation and the location will be shared. A chat bot is created so that the victim can express themselves and overcome the stress.

No. of Pages : 28 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541067083 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Utilizing Particle Swarm Optimization (PSO) to Enhance Resource Allocation in Device-to-Device (D2D) Communication: An Analysis of its impact on throughput and Resource Efficiency

(51) International classification :H04W0072541000, G06N0003006000, H04W0076140000, H04W0084040000, H04W0072542000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

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(57) Abstract :

This invention presents a novel optimized resource-sharing mechanism for Device-to-Device (D2D) communications utilizing Particle Swarm Optimization (PSO). The proposed mechanism efficiently allocates resources, such as power and spectrum, among D2D pairs and cellular users, maximizing system throughput while minimizing interference. By leveraging PSO's adaptive optimization capabilities, the mechanism ensures fair resource allocation, improved network performance, and enhanced user experience, thereby advancing the efficiency and reliability of D2D communications in cellular networks.

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541067084 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Automated machine Learning methods for Leukemia Identification and Categorization from Blood Smear Images

(51) International classification :A61B0005000000, G16H0050200000, G06N0020000000, G01N0015140000, G16H0050700000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

Leukemia early detection and identification is a major problem in disease diagnosis because it requires low- cost, precise differentiation of malignant leukocytes in the early stages of the illness. Despite its high frequency, leukemia is difficult to diagnose because of the restricted availability of flow cytometer equipment and the laborious nature of current laboratory diagnostic procedures. Considering machine learning's (ML) potential for illness diagnosis, the purpose of this systematic review is to look into research that uses ML methods for leukemia detection and classification. Leukemia smear image analysis using machine learning (ML) algorithms can improve diagnostic accuracy, shorten diagnosis times, and provide quicker, safer, and more economical diagnostic services. Clinical and laboratory personnel may also use machine learning techniques into their tools and applications in the lab in addition to their present diagnostic techniques. One method that has been suggested is using a machine learning technique, such artificial neural networks, to diagnose and categorize patients' conditions early on. As a result after collection of data model development should be done then data training and at last model should be tested and ML algorithms should be used to compare results. Tests are conducted on samples from blood images.

No. of Pages : 12 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541067085 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Sustainable Developments in Infrastructural Elements by Utilization of Waste Plastic

(51) International classification :C04B0028020000, G06Q0010060000, B29B0017000000, C04B0028040000, G06Q0010063100
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The country has witnessed rapid Industrialization and Urbanization leading to lot of Infrastructural Development. This process leads to the major problems witnessed in the construction industry are like shortage of constructional materials, increased productivity of waste. Plastic has been used extensively in manufacturing of many materials cardings which on discarding will accumulate as a huge waste. The degradation rate of plastic waste is very slow process & some are non-degradable. This project focuses on the reuse of waste plastic in construction works. Attempt will be made to replace plastic for aggregate by percentages such as 7.5% to coarse aggregates in M20 concrete. The structural elements such as beams and nonstructural elements such as concrete blocks will also be casted with partial replacement of plastic aggregates and subjected to strength test to procure the results.

No. of Pages : 15 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541067086 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : E Commerce for Construction Industry

(51) International classification :G06Q0030060100, G06Q0030060000, G06Q0020120000, G06Q0030020100, H05K0005000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The current trend in the construction industry, raw materials go through a lot of distributors, dealers, and intermediaries, which drives up prices significantly and creates a complicated network that delays delivery. Therefore, it is not always possible to guarantee the material's quality. Like many other industries, the construction business has been greatly impacted by the rise of e-commerce. The term "e-commerce" describes the most typical method of purchasing and selling products and services over the Internet. According to this view, buying building supplies online is quite similar to e-commerce. However, this narrow understanding of online purchasing and selling is not e-commerce's only limitation. Involving every part of an e-business, it also causes fundamental shifts in the distribution and exchange of goods and services.

No. of Pages : 10 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067093 A

(19) INDIA

(22) Date of filing of Application :14/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A DENTAL MEASUREMENT DEVICE AND A METHOD THEREOF

(51) International classification :A61C19/04
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

A dental measurement device and a method thereof is disclosed. A handle (115). A plurality of probes (130) disposed at opposite ends of the handle (115), wherein each of the probes (130) comprises a contra-angled tip (105) to measure a preparation dimension of a tooth. The contra-angled tip comprises a first bend (110) formed at an angle of 135 degrees relative to a longitudinal axis of the handle (115) and a second bend (135) formed at an angle of 90 degrees away from a direction of the first bend (110). The contra-angled tip (105) is cylindrical in shape having a predetermined diameter ranging from 0.8 to 2.0 mm. The contra-angled tip (105) further comprises a measurement marking (205) indicates values selected from a group consisting of 0.5 mm (335), 0.8 mm, 1.0 mm (305), 1.5 mm (325), 2.0 mm, 3.0 mm, and 4.0 mm formed by a laser or engraving. FIG. 1

No. of Pages : 32 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541067034 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A MULTIFUNCTIONAL WOUND HEALING PATCH

(51) International classification :A61L0015440000, A61B0005145000, A61K0045060000, A61L0027540000, A61P0043000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention discloses a multifunctional wound healing patch. The patch includes a nanofibrous scaffold configured to apply on a wound site. The patch also includes at least two therapeutic agents embedded into the nanofibrous scaffold. The at least two therapeutic agents include rosemary extracts (104) to reduce oxidative stress at the wound site by neutralizing reactive oxygen species (ROS) and silver nanoparticles (102) to contribute broad-spectrum antimicrobial activity and reduces bacterial colonization and biofilm formation. The patch further includes a biosensor (106) integrated into the nanofibrous scaffold for monitoring wound microenvironmental changes responsive to glucose and ROS levels, wherein each of the therapeutic agents from the at least two therapeutic agents and the biosensor (106) are co-delivered and functions in parallel without cross activity.

No. of Pages : 30 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067032 A

(19) INDIA

(22) Date of filing of Application :14/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A METHOD FOR DEVELOPING A MULTILAYERED COMPOSITE STRUCTURE

(51) International classification :B33Y0080000000, C23C0028020000, B29L0009000000, B32B0003260000, B29C0041220000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT A METHOD FOR DEVELOPING A MULTILAYERED COMPOSITE STRUCTURE The present disclosure relates to a method (500) for developing a multilayered composite structure (100). The method (500) comprises filling a die (200) with a first metallic alloy composition and compacting it under pressure to form a first layer (10). A cavity is then formed in the first layer (10) and is filled with a second metallic alloy composition different from the first metallic alloy composition and compacted to form a second layer (30). This step can be optionally repeated, each time introducing a new metallic alloy into a cavity formed in the preceding layer, to create a compacted multilayered structure with distinct compositions. The final compacted multilayered structure is sintered at a predetermined temperature to produce a multilayered composite structure (100). The method (500) facilitates the development of multilayered metallic composite structures (100) with distinct physical and chemical properties in different layers and is simple, environment-friendly, durable, and cost-effective.

No. of Pages : 37 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067033 A

(19) INDIA

(22) Date of filing of Application :14/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : MORPHABLE COMPOSITE FAN BLADE FOR TURBOMACHINERY AND METHOD THEREOF

(51) International classification :F01D0005280000, F04D0029320000, F01D0025240000, G06T0019200000, G06T0017000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT MORPHABLE COMPOSITE FAN BLADE FOR TURBOMACHINERY AND METHOD THEREOF The present disclosure relates to a morphable composite fan blade for turbomachinery and a method for the manufacturing of a morphable composite fan blade. The blade comprises a root portion, a leading edge, a trailing edge and a morphable region. The morphable region comprises a plurality of carbon fibre-reinforced composite layers, a plurality of macro-fibre composite (MFC) layers, and a wiring network embedded within said MFC. The morphable composite fan blade changes its shape quickly, has a compact design, is safe and reliable, has minimum corrosion/wear and hence, is maintenance-free. The method for the manufacturing of morphable composite material is easy to perform, economical and is environment-friendly.

No. of Pages : 40 No. of Claims : 14

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2025

(21) Application No.202541067132 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : HYBRID NUMERICAL METHOD FOR SOLVING NONLINEAR FRACTIONAL SHOCK WAVE EQUATIONS USING COUPLED DISCRETIZATION AND ITERATIVE SCHEMES

(51) International classification :G06F0030230000, G06F0111100000, G06F0017130000, G06F0030280000, G06F0017110000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

] The present invention discloses a hybrid numerical method for solving nonlinear fractional shock wave equations by integrating a discretization module with an iterative solver. The discretization module converts the fractional partial differential equation into a semi-discrete or fully discrete form using techniques such as finite difference or spectral methods, while the iterative solver—based on methods like the Adomian Decomposition Method or Homotopy Analysis Method—handles the nonlinear and memory-dependent components of the system. This unconventional combination enables accurate, stable, and efficient resolution of complex fractional dynamics, particularly in scenarios involving steep gradients, singularities, or long-range temporal effects. The method supports various fractional derivative definitions and boundary conditions and is adaptable for use in multi-dimensional and multi-physics simulations across domains such as fluid dynamics, seismology, biomechanics, and material science. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 21 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067133 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Emotion recognition System for text and speech using deep multimodal Fusion

(51) International classification :G06N0003045000, G06F0040300000, G10L0025240000, G06N0003080000, G10L0015260000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention discloses a deep learning-based emotion recognition system that integrates textual and speech modalities through a multimodal fusion framework. The system concurrently processes transcribed text and acoustic signals to enhance emotional comprehension, overcoming limitations of unimodal approaches. Textual input is encoded using transformer-based models such as BERT to capture semantic context, while speech input is transformed into spectrograms and Mel-frequency cepstral coefficients (MFCCs) and analysed via a hybrid CNN-LSTM architecture to extract temporal and spectral features. A cross-modal attention-based fusion layer dynamically aligns and integrates features from both modalities, followed by fully connected layers and a softmax classifier to predict emotion categories including happy, sad, angry, neutral, and fear. The system is trained on benchmark datasets such as IEMOCAP, MELD, and RAVDESS, demonstrating superior accuracy and generalisation. Designed for real-time inference, it supports deployment on edge devices and cloud platforms, enabling applications in healthcare, education, customer service, and human-computer interaction.

No. of Pages : 10 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067139 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Integrated Hospital Digitalization Platform with Video Consultation, Lab Integration, and Emergency Response

(51) International classification :G16H0040670000, G16H0080000000, A61B0005110000, G16H0015000000, G08B0027000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The project's advancement relates to a computerized well-being system that gives blocked-off restorative talk, conclusion, emergency care, and pharmaceutical movement through a web or versatile app. The system enables clients to insinuate to pros utilizing video calls, make courses of action, and get home-based testing organizations, in this way destroying the prerequisite for dishonorable traveling, especially for the elderly and physically crippled individuals. The advancement moreover joins an emergency helpline elective, wherein the closest open pro gives real-time admonishment through a video or voice call and at the same time dispatches the closest available crisis vehicle to the user's zone based on GPS focuses of intrigued. The app livelihoods fabricated experiences (AI) to supply well-being tips, eat-less plans, and courses of action for common healthcare questions to the clients. Medication is remotely embraced and subsequently passed on to the patient's doorstep, with compliance and security guaranteed. The advancement focuses on providing helpful healthcare, decreasing caregivers' burden, and maintaining a strategic distance from treatment-related passings by giving a comprehensive, accessible, and life-saving healthcare choice.

No. of Pages : 10 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067144 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : "Photon-Guided Urban Alchemy: Sustainable Gold Harvesting from E-Waste via Next-Gen Photocatalytic Mining"

(51) International classification :B01J0035390000, C22B0011000000, C22B0007000000, B01J0035300000, C22B0011080000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention provides an eco-friendly, light-assisted method and system for the selective recovery of gold from electronic waste (e-waste) using a photocatalytic process. The invention utilizes a visible-light-responsive photocatalyst, such as doped TiO₂ or ZnO, to reduce dissolved gold ions (Au³⁺) into elemental gold (Au⁰) under solar or artificial light irradiation. E-waste materials are pre-treated using a non-toxic leaching solution, comprising hydrogen peroxide and organic acids, to extract gold into solution without the use of cyanide or aqua regia. Upon exposure to visible light, photogenerated electrons from the photocatalyst selectively reduce gold ions into metallic gold, which is then collected by filtration or sedimentation. The process operates under ambient conditions, is scalable, cost-effective, and enables multiple photocatalyst reuses, making it highly suitable for urban mining, green metallurgy, and sustainable resource recovery. This invention offers a transformative approach to e

No. of Pages : 21 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067145 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : “Smart Functional Materials for Climate-Resilient, Clean Water and Air Solutions Using MOFs, Hydrogels, and Solar-Responsive Polymers”

(51) International classification :E03B0003280000, B01D0053260000, B01J0020280000, C02F0001280000, B01D0005000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention discloses a multifunctional smart material system designed for environmental sustainability through integrated solutions for clean air, clean water, and climate resilience. The system comprises three synergistic layers: (1) a metal-organic framework (MOF)-based air purification layer for selective adsorption of pollutants such as CO₂, VOCs, and particulate matter; (2) a hydrogel-based water harvesting and purification layer capable of absorbing atmospheric humidity and releasing clean water upon solar or thermal stimulation; and (3) a solar-responsive polymer layer that dynamically adjusts optical and thermal properties in response to sunlight or temperature changes to provide passive climate control. These layers can be fabricated individually or assembled into a flexible, modular composite material that operates autonomously or semi-autonomously in response to environmental conditions. The invention supports a wide range of applications, including smart facades, atmospheric water harve

No. of Pages : 22 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067146 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : “A Futuristic Approach to Alzheimer’s Treatment: Integrating AI, Blockchain, and Nanotechnology”

(51) International classification :H04L0009000000, H04L0009320000, G16H0010600000, A61P0025280000, G16H0050200000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
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(57) Abstract :

Visionary and comprehensive approach to solving one of the most urgent problems of modern medicine Alzheimer Disease due to the combination of the potential offered by such exciting developments like the Artificial Intelligence (AI), the Blockchain, and the Nanotechnology. The AI aspect effectively detects the condition at its initial stages by interpreting several examples of input with a high level of accuracy, including genetic, imagery of the brain, and vocal models to intervene promptly using tailored techniques before any major deterioration has occurred. At the same time the blockchain layer guarantees the security and ethical treatment of medical data, employing decentralized storage, smart contracts and controlled access by means of the patient, with emphasis on privacy, transparency and reliability of digital healthcare. To compliment such, nanotechnology will allow accurate drug delivery via bio-compatible nanoparticle to cross the blood-brain barrier and deliver drug to brain areas of concern givi

No. of Pages : 14 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067147 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : “Smart Cost: AI-Based Real-Time Cost Optimization and Workload Placement in Multi-Cloud Serverless Environment”

(51) International classification :G06F0009500000, G06N0020000000, G06Q0010040000, G06F0009480000, G06N0003080000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Serverless computing has transformed how applications are built and deployed by abstracting server management and enabling developers to focus on function logic. However, while serverless solutions offer agility and scalability, managing workload performance and operational costs becomes increasingly challenging in a multi-cloud environment. Factors like vendor-specific pricing, inconsistent cold start behaviors, and unpredictable latency make static scheduling and basic autoscaling methods inadequate. This paper introduces SmartCost, a real-time scheduling framework that combines heuristic scheduling with deep reinforcement learning (DRL) to dynamically allocate workloads across serverless platforms such as AWS Lambda, Azure Functions, and Google Cloud Functions. The architecture includes distinct modules for profiling, cost prediction, orchestration, telemetry analysis, and security enforcement. Unlike black-box AI-based systems, SmartCost emphasizes transparency, interpretability, and enterprise control, e

No. of Pages : 19 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067148 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : "Intelligent Energy Conservation In Air Conditioners Using AI And IOT"

(51) International classification :F24F0120100000, G06N0020000000, F24F0110100000, F24F0011630000, A61K0036730000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

In today's energy-conscious world, optimizing the usage of air conditioning systems is critical for reducing electricity consumption and promoting sustainability. This project introduces a smart energy conservation system for air conditioners that combines the power of Artificial Intelligence (AI) and the Internet of Things (IoT). Using a Raspberry Pi Pico microcontroller, the system monitors room occupancy and receives temperature inputs to determine whether the air conditioner should be turned ON or OFF. The core intelligence of the system is derived from a machine learning model trained on a synthetic dataset that simulates realistic indoor temperature and human presence patterns. A Decision Tree Classifier is used to predict whether the AC needs to operate, balancing energy savings with comfort. The Raspberry Pi Pico collects real-time data from a PIR sensor to detect human presence and takes manual input for temperature (simulating sensor input). These inputs are transmitted via USB serial communica

No. of Pages : 12 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067149 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : “Design of Ergonomic axillary crutch pad, handgrip and tip”

(51) International classification :A61H0003020000, B32B0027400000, B32B0005020000, B32B0005320000, A47C0027150000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to an ergonomic axillary crutch comprising a novel multi-layered design of the axillary pad, handgrip, and crutch tip, aimed at enhancing user comfort, load distribution, and overall usability. Conventional crutch designs often result in discomfort, fatigue, and potential injury due to poor weight distribution and inadequate shock absorption. This invention addresses these issues through the integration of biocompatible and high-performance materials, strategically layered to serve specific functional roles. The axillary pad includes three layers: a top layer of silicone gel providing superior cushioning and skin comfort, a middle layer of Thermoplastic Urethane (TPU) offering flexibility and resilience, and a bottom layer of Aluminium Alloy 6063, ensuring structural integrity and effective load transfer. The handgrip follows a similar multi-layered configuration with a top layer of polyurethane foam, a middle layer of TPU, and a bottom layer of Aluminium Alloy 6063, collectively

No. of Pages : 21 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067150 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : “Integrated RFID and Vision-Based Smart Laundry Management System for Automated Garment Tracking, Classification, and Billing”

(51) International classification :G06Q0010083300, G16H0040200000, G06K0017000000, G16H0010600000, G06Q0010080000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The current invention belongs to a Smart RFID-Based Laundry Management System where the breed, and sometimes track, classification, billing, and communications among customers of garments within a commercial laundry have been automated. The system includes the RFID tags applied on garments separately and selected RFID readers in the chain of the laundry process that can be used to track and monitor the status of every garment in real-time. The numbers of the garments are detected and counted by a vision-based object identification module apparatus that employs the camera and embedded processing unit. Information that is fed through RFID and vision modules is gathered by a centralized control unit that computes an estimate of cost by type and weight of garments and generates computerized billing. They automatically notify the customers via SMS, mobile or even web applications about the garment status and offer them flexible payment options including the weekly/monthly payment options. With the aid of the syste

No. of Pages : 16 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067151 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Hydrophobic-hydrophilic dual interface ZnO/GO/MXene heterojunction integrated CA membranes for oil-water separation

(51) International classification :B01D0067000000, B01D0069120000, B01D0069020000, B01D0071020000, B01D0017020000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The current invention constitutes an innovative membrane composite structure for an efficient oil-water separating system, featuring a hydrophobic-hydrophilic dual-interface ZnO/GO/MXene heterojunction integrated with a CA matrix. Combining the effectiveness of ZnO nanoparticles and that of GO and MXene nanosheets in physicochemical terms, this multifunctional membrane aims at realizing a lateral synergistic interface with better separation efficiency and robustness. An ultra-thin hydrophilic ZnO-GO layer would promote water permeability and good antifouling action, and would yield great separation performances. The MXene topmost layer presents oil repellences with mechanical robustness under rigorous separation operations. Heterojunction formation endows the interface with high compatibility, mechanical strength, and controlled pore-size. Having such unique properties gives the newly developed membrane high flux, exceptional selectivity, and reusability over a wide range of oil-in-water emulsions. Further i

No. of Pages : 13 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067152 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : "Autonomous Self-Sterilizing Medical Curtain Incorporating UV-Active Fibers and Programmable Thermal Disinfection Technology"

(51) International classification :A61L0002100000, A61L0002260000, A61L0002240000, A61L0002070000, A61L0002200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a UV-Thermal Hybrid Sterilization Pad, designed to provide dual-mode disinfection through the integration of ultraviolet-C (UV-C) light and localized thermal energy in a flexible, reusable form factor. The invention comprises a multilayer structure featuring UV-C LEDs (260–280 nm) for photonic sterilization, a thin-film resistive heating layer for mild thermal disinfection (45–60°C), and embedded temperature and light sensors for real-time control and user safety. This compact device is engineered to sterilize medical instruments, wound sites, and contact surfaces, achieving >99.9% microbial inactivation within 2–5 minutes, without the use of chemical disinfectants. The pad is constructed using biocompatible and waterproof materials, allowing for skin contact, reusability (100+ cycles), and battery-powered operation. The invention addresses the limitations of conventional sterilization methods by offering a safe, portable, and contact-compatible solution for clinical, emergenc

No. of Pages : 20 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202441019139 A

(19) INDIA

(22) Date of filing of Application :15/03/2024

(43) Publication Date : 25/07/2025

(54) Title of the invention : WEARABLE DEVICE WITH USER MOVEMENT ANALYSIS AND FALL RISK PREDICTION AND FALL DETECTION CAPABILITY

(51) International classification :G06N3/08, G16H50/30,
G06N20/00, A61B5/11
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to :NA
Application Number :NA
Filing Date :NA
(62) Divisional to Application :NA
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(57) Abstract :

The present invention relates to a method and wearable device for monitoring and analyzing user movements to predict fall risk. The method involves retrieving motion data recorded by an Inertial Measurement Unit (IMU) and a pedometer, followed by processing the data once it exceeds a predefined threshold. A first trained machine learning (ML) model predicts the fall risk based on the processed data. A confidence score is determined from the fall prediction, and a second trained ML model analyzes successive data frames to confirm the fall if the score is above a threshold. If a fall is confirmed, a distress signal is transmitted. The wearable device comprises a processor and memory that stores program instructions to perform the method, including motion data retrieval, processing, fall prediction, confidence scoring, and fall confirmation, along with distress signal transmission. This invention enables timely fall detection and emergency response, improving user safety. (Fig. 1)

No. of Pages : 27 No. of Claims : 23

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/03/2024

(21) Application No.202441019479 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : INTEGRATED SMART RING AND ENVIRONMENT SENSING SYSTEM FOR ENHANCED HVAC EFFICIENCY AND LIFESTYLE IMPROVEMENT

(51) International classification :F24F11/30, F24F11/58, F24F11/64, F24F11/65, F24F11/80, G05B19/042
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present disclosure provides an integrated system designed for the dynamic optimization of HVAC efficiency and lifestyle improvement based on real-time biomarker and environmental data. Incorporating a smart ring with biomarker sensors and an always-plugged-in environment sensing device, the system provides intelligent suggestions for HVAC settings and identifies potential causes of discomfort, enhancing comfort, health, and overall well-being. Figure 1

No. of Pages : 26 No. of Claims : 22

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :20/03/2024

(21) Application No.202441020936 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : COMPOSITION FOR TREATMENT OF ORAL SUBMUCOSAL FIBROSIS

(51) International classification :A61K0036810000, A61K0036185000, A61K0036710000, A61K0036230000, A61K0009000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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2)Padmini D.K.

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(57) Abstract :

COMPOSITION FOR TREATMENT OF ORAL SUBMUCOSAL FIBROSIS The present invention provides a safe dental care composition that provides effective treatment for oral sub-mucosal fibrosis. In particular the present invention provides a topical oral formulation, wherein the formulation comprises of 8% Picrasma quassiodes, 0.8% Caesalpinia bonduc, 1.6% Withania somnifera, 10% Myristica fragrans, 10% Mimosops elengi, and the dental composition comprising of 8% Picrasma quassiodes, 3.2 % (w/w) Carum carvi, 1.6 % (w/w) Piper nigrum, 0.8 % (w/w) Caesalpinia bonduc, 1.6 % (w/w) Withania somnifera or Ashwagandha, 2 % (w/w) Myristica fragrans or Nutmeg, 3 % (w/w) Nigella sativa, 4 % (w/w) Ocimum Sanctum or Tulsi, 10 % (w/w) Mimosops elengi or Bakula, 5 % (w/w) Acacia catechu or Khadira, 5 % (w/w) Cuminum cyminum or Shvetajiraka, and 2 % (w/w) Boerhavia diffusa or Punamava. The combination of the present composition promotes cell death and reduces inflammation.

No. of Pages : 31 No. of Claims : 19

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202441022394 A

(19) INDIA

(22) Date of filing of Application :22/03/2024

(43) Publication Date : 25/07/2025

(54) Title of the invention : COLOR CHANGING WEARABLE DEVICE BASED ON DIFFERENT BIOMARKERS OR WORKOUT ZONES

(51) International classification :A61B0005000000, A61B0005024000, A61B0005110000, A63B0024000000, G16H0020300000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A wearable device (100) to monitor health data of a user comprises an outer layer (102), an inner layer (106), and a middle layer (104) positioned between the outer layer (102) and the inner layer (106). The middle layer (104) is a PCB housing a plurality of sensors (206) configured to measure health data of the user. The PCB also houses a microcontroller (112) for processing the health data measured by the plurality of sensors (206). A portion of the outer layer (102) includes a color changing hardware (108). The microcontroller (112) controls illumination of the color changing hardware (108) when the health data satisfies a predefined condition. (Fig. 1)

No. of Pages : 17 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202441025670 A

(19) INDIA

(22) Date of filing of Application :28/03/2024

(43) Publication Date : 25/07/2025

(54) Title of the invention : WEARABLE DEVICE FOR 3D POSITIONAL TRACKING AND GESTURE RECOGNITION

(51) International classification :G06F3/01, G06F3/0346, G06F1/16, H04W4/029		(71)Name of Applicant : 1)ULTRAHUMAN HEALTHCARE PVT LTD Address of Applicant :4088/799, Third floor, V K Paradise Sector-2, HSR Layout, Bangalore KA 560102, India Bangalore -----
(86) International Application No	:NA	Name of Applicant : NA Address of Applicant : NA
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(87) International Publication No	: NA	(72)Name of Inventor :
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Number	:NA	
Filing Date	:NA	

(57) Abstract :

A device (100) for 3D positional tracking and gesture recognition of a user is described. The device (100) comprising a pair of smart rings (102) designed for spatial computing input. The smart rings (102) include inertial measurement unit (IMU) (106) for real-time 3D positional tracking. The smart rings (102) incorporates a machine learning model (122) for gesture recognition of the user. Further, the smart rings (102) transmit the raw motion data to the user device (104) via the bluetooth communication unit (108) in real-time that may be processed to predict additional gestures for the spatial computing applications. Further, the device (100) provides intuitive and precise control in virtual and augmented reality environments. Further, the smart rings (102) includes a pressure touch (114) or touch-sensitive region to add versatility to the input method. [Fig. 1]

No. of Pages : 20 No. of Claims : 14

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202441031374 A

(19) INDIA

(22) Date of filing of Application :19/04/2024

(43) Publication Date : 25/07/2025

(54) Title of the invention : WEARABLE DEVICE FOR DETECTING ATRIAL FIBRILLATION USING PHOTOPLETHYSMOGRAPHY (PPG) SENSOR

(51) International classification :A61B5/361, A61B5/026, A61B5/352, A61B5/00, G06N20/00, G16H50/20
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A smart ring (104) for detecting atrial fibrillation using photoplethysmography is disclosed. The smart ring (104) includes a PPG sensor for gathering PPG signals corresponding to the blood flow data of the user (102). A user device (106) receives the blood flow data and extracts a plurality of features from the blood flow data including time between heartbeats (RR intervals), variability in RR intervals, absence of P waves, presence of rapid and irregular heartbeat, SpO2, amplitude and width of the peaks, harmonic components of PPG, pulse wave velocity, etc. A weightage is assigned to each of the features. Further, the user device (106) implements a machine learning model (166) to detect a probability of occurrence of AFib based on the blood flow data. The user device (106) may further notify the user (102) about the probability of occurrence of AFib. [To be published with Fig. 1]

No. of Pages : 37 No. of Claims : 16

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :24/04/2024

(21) Application No.202441032535 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SMART RING WITH FLEXIBLE THERMO-ELECTRIC GENERATOR FOR ENERGY HARVESTING AND BATTERY AUGMENTATION

(51) International classification :H02J0050000000, H01L0035300000, H02N0002180000, H01L0035000000, H02J0007020000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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Address of Applicant :c/o ULTRAHUMAN HEALTHCARE PVT LTD, 4088/799, Third floor, V K Paradise Sector-2, HSR Layout, Bangalore KA 560102, India Bangalore -----

(57) Abstract :

The present invention discloses a smart ring equipped with a flexible thermoelectric generator (TEG) designed to efficiently harvest energy from temperature differentials and augment the battery capacity of the device. Unlike traditional energy harvesting mechanisms, the flexible TEG integrated into the smart ring adapts to various ring sizes (hence finger sizes), ensuring optimal contact and enhanced energy conversion regardless of the user's finger circumference. (Fig. 3)

No. of Pages : 29 No. of Claims : 23

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202441033312 A

(19) INDIA

(22) Date of filing of Application :26/04/2024

(43) Publication Date : 25/07/2025

(54) Title of the invention : WEARABLE DEVICE FOR PROJECTING HOLOGRAMS BASED ON DIFFERENT BIOMARKERS OR ACTIVITIES

(51) International classification :A61B5/0205, A61B5/024, A61B5/01, G06F1/16, G06F3/01
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

A smart wearable device 100 to provide user 202 with real-time feedback by projecting holograms based on biomarkers and/or user activities is described. The smart wearable device 100 includes sensors 306 to monitor biomarkers such as heart rate, physical activity, stress levels, and temperature. The smart wearable device 100 includes a hologram projection unit 312 to display holograms corresponding to the biomarkers based on the user preferences and customization. Further, the processing unit 310 fetch the biomarker data from the smart wearable device 100 and fills it onto the hologram projection unit 312 for that particular biomarker or activity in real time. Further, the smart wearable device 100 may be customized by the user 202 to accommodate various biomarker conditions and their corresponding unique holograms via the user device 204 or a touch sensor 110 disposed on an outer layer 102 of the smart wearable device 100. [To be published with Fig. 3]

No. of Pages : 37 No. of Claims : 28

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202441034419 A

(19) INDIA

(22) Date of filing of Application :30/04/2024

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR MONITORING PHYSIOLOGICAL STRESS OF USERS

(51) International classification :A61B5/16, A61B5/00,
A61B5/024
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application
Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A system and method for assessing stress levels in real-time is described. The stress level is assessed based on circadian rhythms, using a wearable device. The wearable device measures Resting Heart Rate (RHR) of a user and correlates changes in the RHR with circadian zones to evaluate the stress. Stress information along with sleep, activity, and nap zones is visually represented on an interface of the wearable device. A scoring mechanism is used for adjusting the user's stress score based on a time of day and physiological data, for enhancing personal management of health and stress. FIG. 3

No. of Pages : 33 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :03/05/2024

(21) Application No.202441035060 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SELF-CLEANING PHOTOVOLTAIC APPARATUS WITH HIGH EFFICIENCY SOLAR ENERGY HARNESS

(51) International classification :F03D9/00, H02S40/10, B08B1/12, F03D80/55, F02D3/00, H02S10/12

(86) International Application No :NA

Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA

Filing Date :NA

(62) Divisional to Application Number :NA

Filing Date :NA

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(57) Abstract :

ABSTRACT The present invention discloses a state of conical photovoltaic system with solar panel mount on a conical base whose height is modular in nature and can be increased or decreased to manipulate the power output. The structural design allows increased solar irradiance, hence increased power output per area on the ground vis-à-vis a conventional flat-bed solar panel. The present invention allows facilitate a self-cleaning assembly with a motion controlled by the motion of a vertical axis wind turbine and hence an efficient maintenance of the solar panel is done without additional costs and any external power consumption. Dated- 3rd Day of May 2025 Signature of the Agent Rajat Chaudhary IN/PA-3136

No. of Pages : 30 No. of Claims : 14

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202441039933 A

(19) INDIA

(22) Date of filing of Application :22/05/2024

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD OF TRACKING AND LOCATING A DEVICE

(51) International classification :A61B5/00, H04W4/029, G08B21/02,
H04W4/80, G06F1/16
(86) International Application :NA
No :NA
Filing Date :NA
(87) International Publication : NA
No : NA
(61) Patent of Addition to :NA
Application Number :NA
Filing Date :NA
(62) Divisional to Application :NA
Number :NA
Filing Date :NA

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(57) Abstract :

A wearable device for location tracking comprises a passive communication module (202), an internal battery (204), and an energy harvesting module (200) integrated within the wearable device. The passive communication module (202) is configured to transmit a signal includes a unique identifier (UID) and location data of the wearable device. When the battery module (204) is discharged, the energy harvesting module (200) activates and powers the passive communication module (202) using ambient energy sources such as radio frequency, thermal, or light energy. One or more proximate devices to the wearable device receive the signal and determine the location of the wearable device, which is then transmitted to a primary device via a server (110) for display. (To be published with FIG. 1)

No. of Pages : 25 No. of Claims : 15

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202441040031 A

(19) INDIA

(22) Date of filing of Application :22/05/2024

(43) Publication Date : 25/07/2025

(54) Title of the invention : AUTOMATICALLY EXTRACTING ANTHROPOMETRY MEASUREMENTS FROM SINGLE VIDEO-CLIP FOR CLASSIFYING BODY SIZE WITHIN CUSTOMIZED SIZE CLASSIFICATION

(51) International classification :G06K0009620000, G06Q0030060000, G06N0020000000, G06T0017000000, G06T0017100000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT A SYSTEM FOR CLASSIFYING BODY SIZE AND A METHOD THEREOF The present disclosure provides a system 100 for classifying body size. The system includes one or more user devices 102a-n configured to receive/record input data provided by a user and a server 104 configured to receive the one or more input data provided by the one or more user devices 102a-n. The server 104 is further configured to extract aggregated anthropometric measurements from the one or input data, generate a multi-class classification model based on the extracted aggregated anthropometric measurements and classify body size by one or more classification machine learning models. The present disclosure also provides a method for classifying body size. FIG. 1

No. of Pages : 34 No. of Claims : 16

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :03/06/2024

(21) Application No.202441035338 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : WEARABLE DEVICE FOR MONITORING PHYSIOLOGICAL PARAMETERS

(51) International classification :A61B5/00, A61B5/25,
A61B5/256, A61B5/28
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to
Application Number :NA
Filing Date :NA
(62) Divisional to Application
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Filing Date :NA

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(57) Abstract :

A wearable device 100, comprising an outer surface 102 providing protective covering to the wearable device 100, wherein one or more electrodes 108 is positioned on the outer surface; an inner surface 106, wherein the inner surface 106 includes a skin-contact electrode 110; and a Printed Circuit Board (PCB) 104 positioned between the outer surface 102 and the inner surface 106; wherein simultaneous electrical signal acquired from a user by the one or more electrodes 108 on the outer surface 102 and the skin-contact electrode 110 is used to determine one or more physiological parameters of the user.. Fig. 1 is the representative figure

No. of Pages : 27 No. of Claims : 17

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :24/06/2024

(21) Application No.202441048378 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR REFRIGERATION IN VEHICLES

(51) International classification :B60H0001000000, F25D0029000000, H05K0007200000, B60H0001320000, A61B0018000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Disclosed is a system (100) for refrigeration in cold logistic vehicles that includes a refrigeration unit (108) disposed on an insulated box (107) on a cold logistic vehicle (106) to maintain a predefined temperature within the insulated box (107). A plurality of sensors (102) disposed on the refrigeration unit (108) sense parameters associated with the refrigeration unit (108). A control unit (110) coupled to the refrigeration unit (108) and plurality of sensors (102) determines data corresponding to the parameters sensed, generates control signals to operate the refrigeration unit (108), and generates real time health status information of the refrigeration unit (108). An information processing apparatus (104) coupled to the control unit (110) and refrigeration unit (108) includes processing circuitry (114) that receives the real time health status information, monitors the real time health status information, and generates information corresponding to predictive maintenance of the refrigeration unit (108). FIG. 1 is selected

No. of Pages : 47 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2024

(21) Application No.202441052898 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : METHOD FOR PREPARING BRIQUETTES AS ORGANIC GROWTH MEDIUM USING SPENT MUSHROOM SUBSTRATE FOR SOILLESS GARDENING

(51) International classification :C05F0005000000, C05F0011000000, C10L0005360000, C05F0017050000, A01G0031000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

“Method for Preparing Briquettes as Organic Growth Medium using Spent Mushroom Substrate for Soilless Gardening” Accordingly, embodiments herein disclose a method for preparing organic growth medium briquettes from fruit and vegetable waste using mushroom cultivation. The method involves collecting, sorting, drying, sterilizing, and combining fruit and vegetable wastes with additives to prepare beds for mushroom cultivation. Different combinations of waste and additives are formulated in polypropylene bags. Followed by, mushroom harvests, the spent mushroom substrate (SMS) is obtained, dried, and ground into a coarse powder. Various binders are consisting of vermiculite, vermicompost, peat moss, and neem cake, which are evaluated for optimizing the physical characteristics and performance of the briquettes. The selected binders are added to the SMS for briquette formation. The resulting briquettes serve as nutrient-rich organic growth medium for plants. The proposed method provides a sustainable solution for waste management and promotes eco-friendly agriculture practices.

No. of Pages : 12 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/07/2024

(21) Application No.202441046252 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR ASSESSING SOCIAL JET LAG AND PROVIDING BEHAVIORAL INSIGHTS THEREOF

(51) International classification :C08G 18/18, G11C 7/04,
H01S 5/50
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application :NA
Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

A system (200) for assessing social jet lag comprises a wearable device (100) to be worn by a user (202), the wearable device (100) including an accelerometer to detect sleep data such as sleep onset time, wake-up time, and restlessness patterns, a physiological temperature sensor (110) to capture body temperature during sleep, an ambient temperature sensor (112) to detect room temperature, and a wireless module (206) to transmit sleep and temperature data. A user device (204) receives the sleep data and temperature, determines sleep midpoints for workdays and weekends, correlates physiological and ambient temperature, calculates a sleep midpoint deviation score, and compares restlessness and temperature data against a personalized thirty-day baseline. The system (200) segments the user (202) into a balanced, socially skewed, or work-life skewed sleep category and generates a notification with personalized, context-aware recommendations to help recognize and manage social jet lag. [To be published with Fig. 2]

No. of Pages : 37 No. of Claims : 19

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2024

(21) Application No.202441054583 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : ARTIFICIAL INTELLIGENCE-BASED (AI-BASED) SYSTEM AND METHOD FOR GENERATING OPTIMISED OPERATION PLANNING AND SCHEDULING OUTPUT

(51) International classification :G06N20/00, G06Q10/06, G06Q10/04, G06Q50/04, G06Q10/0631, G05B19/418, G06N20/00, G06Q10/06

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT ARTIFICIAL INTELLIGENCE-BASED (AI-BASED) SYSTEM AND METHOD FOR GENERATING OPTIMISED OPERATION PLANNING AND SCHEDULING OUTPUT The present invention discloses an artificial intelligence-based (AI-based) system and method for generating optimised operation planning and scheduling output. The AI-based system (102) obtains at least one of: one or more data explanation videos (402), one or more process understanding videos (404), and unconstrained operational planning data, along with one or more prompts as an input. The AI-based system (102) extracts one or more informative image frames and audio data, to train the one or more AI models and generate a planning standard operating procedure (SOP). The AI-based system (102) processes the planning SOP, the constrained operational planning data, and the one or more prompts to generate the optimised operation planning and scheduling output based on an optimised function with a continuous feedback loop in response to at least one of: the one or more prompts, updated planning SOP, and real-time changes in the constrained operational planning data. Figure 2

No. of Pages : 76 No. of Claims : 11

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202441055919 A

(19) INDIA

(22) Date of filing of Application :23/07/2024

(43) Publication Date : 25/07/2025

(54) Title of the invention : A blockchain-integrated management system for electric vehicle charging stations

(51) International classification :G06Q50/06, B60L53/60, G06Q50/30, G06Q10/04, H04L67/12

(86) International Application No :NA

Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA

Filing Date :NA

(62) Divisional to Application Number :NA

Filing Date :NA

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(57) Abstract :

A blockchain-integrated management system for electric vehicle charging stations [0063] The invention discloses a blockchain-integrated system (100) for managing Electric Vehicle (EV) charging stations. The system (100) integrates proprietary hardware and advanced software components to enhance operational efficiency, security, and user interaction. The system (100) comprises a laser QR code engraver unit (101) for station identification, IoT device integration module (104) for real-time data collection, and a blockchain module (107) ensuring secure transaction recording and ownership management. A smart display unit (103) providing a user-friendly interface for station management and data visualization. These components interface with a central server (106) and database for data processing and storage supported by a data analytics engine (105) employing machine learning algorithms to derive actionable insights. GIS (Geographical Information System) module (102) capabilities support spatial analysis and strategic planning.

No. of Pages : 29 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202441059833 A

(19) INDIA

(22) Date of filing of Application :08/08/2024

(43) Publication Date : 25/07/2025

(54) Title of the invention : AVIAN MANAGEMENT SYSTEM AND METHOD FOR AVERTING BIRDS FROM HABITATION IN BUILT ENVIRONMENTS

(51) International classification :A01M0029320000, A01M0029160000, A01M0029060000, A01K0061700000, B64G0001600000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT AVIAN MANAGEMENT SYSTEM AND METHOD FOR AVERTING BIRDS FROM HABITATION IN BUILT ENVIRONMENTS The present invention discloses an avian management system and method for averting birds from habitation in built environments. The avian management system (102) comprises a plurality of wires (104) and a support structure (106). The plurality of wires (104) is positioned above a substratum at pre-determined heights and pre-determined spacings. The support structure (106) comprises one or more spikes (106a) and one or more fixtures (106b). The support structure (106) supports the plurality of wires (104). The one or more spikes (106a) deter the birds from perching, thus effectively averting the habitation in the built environments. Figure 1

No. of Pages : 26 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202441061445 A

(19) INDIA

(22) Date of filing of Application :13/08/2024

(43) Publication Date : 25/07/2025

(54) Title of the invention : REINFORCED ELEVATOR DOOR PANEL WITH SANDWICHED LAMINATED GLASS AND METHOD THEREOF

(51) International classification :B66B13/30,
B66B13/06
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application
Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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INDIA SRIPERUMBUDUR -----

(57) Abstract :

Reinforced elevator door panel with sandwiched laminated glass and method thereof. The invention proposed herein teaches an improved method for bonding sandwiched glass panel with reinforced elevator glass door with a capacity to hold any external impact such as static force up to 1000N & shock impact up to 45kg which acts upon the door and adhesive glue by preventing the misalignment and disengagement of sandwiched glass from the door panel. [FIG. 3]

No. of Pages : 17 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202441077077 A

(19) INDIA

(22) Date of filing of Application :10/10/2024

(43) Publication Date : 25/07/2025

(54) Title of the invention : AN ORGAN-ON-CHIP DEVICE FOR ESTABLISHING A TISSUE OR ORGAN ARCHITECTURE

(51) International classification :C12M3/00, C12M1/00,
B01L3/00
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application
Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

AN ORGAN-ON-CHIP DEVICE FOR ESTABLISHING A TISSUE OR ORGAN ARCHITECTURE An organ-on-chip device (100) is disclosed. The device includes a microfluidic platform (1) adapted for establishing a tissue or organ architecture. The device further includes a vascular channel (2) with an inlet (3) connectable to a first reservoir (6), and an outlet (4) connectable to a second reservoir (7). The vascular channel (2) includes a perfusion path (5) connecting the inlet (3) and the outlet (4), and further includes a cell culture chamber (8) positioned between the inlet (3) and the outlet (4). The vascular channel includes a distensible membrane (9) provided underneath the cell culture chamber (8). The perfusion path (5) is supplied with a culture media from at least one of the first reservoir (6) and the second reservoir . The first reservoir and the second reservoir are configured to regulate supply of cell culture media, to generate a hydrodynamic pressure difference between the inlet and the outlet. Figure 3 is a representative figure.

No. of Pages : 40 No. of Claims : 15

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202441093699 A

(19) INDIA

(22) Date of filing of Application :29/11/2024

(43) Publication Date : 25/07/2025

(54) Title of the invention : A DEVICE AND SYSTEM FOR CONSERVATION OF WATER

(51) International classification :E03B0007070000, H04N0019122000, E03D0001140000, H04N0019182000, F24H0015238000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A DEVICE AND SYSTEM FOR CONSERVATION OF WATER The present invention discloses a device and system for conserving water at domestic and individual level and also spreading awareness among people about water conservation. Present invention utilizes a multi-mode approach to help users to track, manage, and reduce their water usage, bridging the gap between awareness and meaningful action. The present device provide five functioning modes; normal mode, alert mode, regulate mode, eco mode and vacation mode. The device of present invention comprises of ; an ESP 32 deep module wroom microcontroller with wifi and bluetooth connectivity; an OLED display to display flow of water and total amount of water used; a keypad input to set limits for modes and switch between modes; a mechanical turbine flow meter to quantify speed of water flow and total volume of water; atleast two gears , one main and other driving gear; a perforated/printed PCB circuit to give external power supply to components; a valve to be used to regulate speed of water ; a Servo motor- MG995 (6V) to pump water and initiate flow of water ; a buzzer to notify user after there set limit is achieved; 12 V batteries to power device apart from existing power supply given by microcontroller; a voltage booster- MT3608; a lever ; a metal ball bearing; and an IOT remote software; wherein all these components work synergistically to facilitate 5 different functioning modes of device.

No. of Pages : 43 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202441095232 A

(19) INDIA

(22) Date of filing of Application :03/12/2024

(43) Publication Date : 25/07/2025

(54) Title of the invention : AN ADVANCED DRIVE AXLE WITH FLOATING AXLE SUPPORT FOR HYDRAULIC ROUGH TERRAIN CRANES

(51) International classification :B60B0035120000, B60F0003000000, B60T0001060000, F16D0121220000, F16D0065120000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT AN ADVANCED DRIVE AXLE WITH FLOATING AXLE SUPPORT FOR HYDRAULIC ROUGH TERRAIN CRANES The present invention relates to an advanced drive axle with floating axle support for hydraulic rough terrain cranes. This drive axle system specifically designed for 40-ton gross vehicle weight (GVW) hydraulic rough terrain crane with an approach was implemented by introducing novel floating axle shaft support characteristics. This system optimally combines load-carrying capacity and drive torque transmission through an advanced design of the axle shaft and hub interface. The system is full floating, semi-floating, and three-quarter floating by employing a proprietary floating mechanism that enhances both structural integrity and load distribution, thereby reducing stress concentrations and wear. Furthermore, this floating mechanism supports the wet multiple-disc braking system by efficiently providing the necessary drive to the rotational brake discs, ensuring seamless integration of braking and drive functionalities. To be Published with Figure 1

No. of Pages : 27 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202441097825 A

(19) INDIA

(22) Date of filing of Application :11/12/2024

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR SECURELY MANAGING ACADEMIC CREDENTIALS OF ONE OR MORE STUDENTS

(51) International classification :G06Q50/20, G06F21/64,
G06F21/60, G06F16/27

(86) International Application No :NA

Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to :NA

Application Number :NA

Filing Date :NA

(62) Divisional to Application :NA

Number :NA

Filing Date :NA

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(57) Abstract :

A system (112) and method (300) for securely managing academic credentials of one or more students (102). The method (300) includes generating a digital wallet for the one or more students upon registration. The digital wallet comprises a public key and a private key. The method (300) further includes receiving one or more academic certificates uploaded by the one or more students (102). The method (300) further includes verifying the uploaded academic certificates by a verifying module (214) that receives inputs from one or more mentors (106). The method further includes recording the verified academic certificates on blockchain using blockchain module (216). The method (300) includes integrating the blockchain module with a pre-trained artificial intelligence model (218) configured to analyze data associated with the one or more students (102) in real time. <>

No. of Pages : 33 No. of Claims : 12

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :06/03/2025

(21) Application No.202541020370 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A FRONT FRAME ASSEMBLY OF A VEHICLE

(51) International classification :B62K11/02, B62K19/06,
B62K19/18, B62K19/30
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to :NA
Application Number :NA
Filing Date :NA
(62) Divisional to Application :NA
Number :NA
Filing Date :NA

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(57) Abstract :

A FRONT FRAME ASSEMBLY OF A VEHICLE ABSTRACT Embodiments herein disclose a front frame assembly 100 comprising a headtube (102), left and right downtubes (104, 106), left and right front frame members (108, 110), at least one headtube supporting member (112), and one or more horizontal cross members (114). The downtubes (104, 106) extend downward from the headtube (102) and connect to the front frame members (108, 110), each including a variation in cross-sectional area. The front frame members (108, 110) further extend downward from the downtubes and connect to a floorboard frame member (120), each forming a predetermined shape (121) defined by an inner flat surface (122) and an outer flat surface (124) oriented laterally, and a front curved surface (126) and rear curved surface (128) oriented longitudinally. The at least one headtube supporting member (112) projects from the headtube (102) and connects to the cross members (114), which extend between the front frame members (108, 110). FIG. 1A

No. of Pages : 22 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541022122 A

(19) INDIA

(22) Date of filing of Application :12/03/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A Spaceframe Structure

(51) International classification :B62D0023000000, B62D0027020000, B62D0021120000, F03D0080000000, E04B0001190000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT A spaceframe structure A Spaceframe Structure (100) is described in this disclosure. The Spaceframe Structure (100) consists of Structural Members and a Node (105). The Node can be connected to a number of Structural Members and in the periodic form a three dimensional structure is formed. There are three types of Structural Members, first the Primary Structural Member (102), second, the Diagonal Structural Member (110) and the third, The Variable Length Structural Member (115). The Node (105) consists of a Cuboid with five sides formed with welded plates and the sixth side with a separate plate called the Closing Plate (!08). Together with Structural members and number of Nodes it is possible to obtain complex, scalable three-dimensional structures that have aesthetic and structural applications. Ref. Fig 1

No. of Pages : 22 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :14/03/2025

(21) Application No.202541023108 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Mobility aid system and a method thereof

(51) International classification :A61H0003060000, A61H0003000000, G09B0021000000, A61G0007100000, A61H0003040000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention discloses a system and method for a mobility aid system 100. The mobility aid system 100 comprises a mobility device 102 communicating with a gripper 104 over a communication network 106, and can be used by a user to navigate through an environment 214, where the user may be at least one of: visually impaired, differently abled, injured, etc. The mobility device 102 is configured to retrieve data from an environment 214 where the user is using the mobility aid system 100. Further, upon processing the received data, the mobility device 102 is configured to communicate one or more directional instructions to the gripper 104. Thereafter, the gripper 104 is configured to guide and/or alert the user in order to help the user navigate through the environment 214. The mobility aid system 100 aids the user in environments requiring obstacle detection, grocery picking and road navigation.

No. of Pages : 45 No. of Claims : 14

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :28/03/2025

(21) Application No.202541030066 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SECURE LI-FI COMMUNICATION SYSTEM USING QUANTUM KEY DISTRIBUTION

(51) International classification :H04L9/08,
H04B10/116
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a Secure Li-Fi Communication System Using Quantum Key Distribution (QKD), designed to provide high-speed, tamper-proof, and ultra-secure wireless data transmission. By leveraging quantum-entangled photon-based encryption, the system ensures that encryption keys remain unbreakable, preventing eavesdropping, cyber-attacks, and unauthorized access. The integration of Li-Fi transceivers with QKD mechanisms allows for secure key exchange, where any interception attempt alters the quantum state, immediately alerting the system to potential security breaches. The system employs adaptive light modulation to optimize data encoding, real-time key regeneration to ensure continuous encryption, and secure handover mechanisms to enable seamless transitions between multiple Li-Fi access points without compromising security. Additionally, the invention incorporates intrusion detection algorithms, dynamic key refresh rates, and AI-driven threat analysis to safeguard data transmission against evolving cyber threats. Its scalable architecture allows integration with 5G, edge computing, and IoT networks, making it an ideal solution for mission-critical applications such as defense communications, financial transactions, industrial automation, and healthcare data protection. By combining quantum cryptography, high-speed Li-Fi transmission, and real-time security monitoring, this invention establishes a next-generation secure communication framework capable of operating in high-risk environments where data privacy and security are of utmost importance.

No. of Pages : 10 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541032214 A

(19) INDIA

(22) Date of filing of Application :01/04/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : FABRICATION OF CHITOSAN/PECTIN HYDROGEL WITH COLLAGEN AND DEXAMETHASONE AND ITS USES THEREOF

(51) International classification :A61L0027540000, A61L0027560000, A61K0047340000, C08B0037080000, A61L0027520000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The current invention relates to a hydrogel (CH-DEX-PEC-COL) composed of chitosan (CH), pectin (PEC), crosslinked with tripolyphosphate, dexamethasone (DEX), and collagen (COL), conjugated. Two steps are followed in synthesis of the hydrogel. Dissolving chitosan in acetic acid, adding TPP, and pH adjustment to 5.5 produces CH-DEX-PEC hydrogel first. After DEX is added and the mixture is centrifuged to produce a pellet, which is mixed with heat-treated PEC Collagen is then conjugated—that is, broken down in water, activated with EDC and NHS, and mixed with CH-DEX-PEC. Constant stirring, centrifugation, and hydration help to produce the last hydrogel. Because of its biocompatibility, controlled drug release, and improved structural qualities, this hydrogel shows possible uses in tissue engineering, drug delivery, and regenerative medicine.

No. of Pages : 21 No. of Claims : 2

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :01/04/2025

(21) Application No.202541032213 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : DESIGN AND DEVELOPMENT OF PECTIN-FUNCTIONALIZED GOLD NANOPARTICLES FOR MELAMINE DETECTION

(51) International classification :G01N0021552000, G01N0033040000, G01N0021350000, B22F0009240000, G01N0021357700
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

This innovation is based of the preparation of pectin-functionalized gold nanoparticles (GP) for colorimetric sensing of melamine (MEL). Initially, GP was synthesized using different amounts of pectin and 1 mM gold chloride, with 1% pectin is chosen. Characterization by UV-Vis spectroscopy, FTIR, and XRD confirmed molecular interactions of GP@MEL. This sensing indicated a shift in surface plasmon resonance with increasing MEL concentrations (7.929 μ M–2.814 mM) and in milk samples. The method is simple and, cost-effective for detecting melamine contamination.

No. of Pages : 17 No. of Claims : 2

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :01/04/2025

(21) Application No.202541032212 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : FOLATE CONJUGATED GELATIN/INDOMETHACIN NANO-BASED EYE DROPS

(51) International classification :A61K9/08, A61P27/02, A61K31/405, A61K47/54, A61K47/55, B82Y5/00, B82Y30/00, B82Y40/00
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The current invention relates to nanobased eyedrops (G+I+F) made of gelatin (G), indomethacin (I) crosslinked with catechin (C) and conjugated to folate (F). Two steps are followed in synthesis of the nanobased eyedrops. Gelatin, catechin, and indomethacin were added to distilled water, stirred, and centrifuged. The pellet and supernatant were separated, washed, and stored at 4-8 °C. Folic acid, EDC, and NHS were dissolved in distilled water, stirred, and added to G+I pellets. The solution was centrifuged, separated, washed, and stored at 4-8 °C. Because of its biocompatibility, controlled drug release, corneal penetration, sustained release, mucoadhesion properties, this nanobased eyedrops shows promise in ocular application.

No. of Pages : 19 No. of Claims : 2

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :08/04/2025

(21) Application No.202541034129 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SIGNWAVE-INTEGRATED SIGN LANGUAGE TRANSLATION WRISTBAND AND SMART RINGS WITH ON BOARD VOICE OUTPUT

(51) International classification :A61B0005020500, G09B0021000000, H04N0021414000, H05B0047110000, G10L0013000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention is a groundbreaking wearable device designed to translate sign language into spoken language in real-time, fostering inclusive communication. Comprising a smart wristband and rings, it utilizes motion sensors, such as accelerometers and gyroscopes, to detect hand and finger movements with precision. Powered by AI-trained algorithms, the system accurately interprets gestures and provides context-aware translations, supporting multiple sign languages. A key feature of SignWave is its onboard voice output, which vocalizes translated gestures instantly, allowing natural and seamless conversations. The device also integrates with smartphones via Bluetooth, enabling multi-lingual translations and custom gesture-training for personalized use. Its low-latency processing ensures an uninterrupted flow of communication, making it highly effective in various settings. Designed for comfort and usability, Sign Wave is lightweight, ergonomic, and equipped with a long-lasting battery for all-day use. Its modular design allows for adaptability across diverse user needs, making it an ideal solution for individuals with hearing or speech impairments in personal, professional, and public environments. SignWave has wide-ranging applications, from education and healthcare to customer service and public spaces. By bridging communication gaps, it empowers individuals with disabilities, promotes inclusivity, and fosters understanding across communities. This innovative technology exemplifies how wearable solutions can transform lives and create a more accessible world.

No. of Pages : 14 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :25/04/2025

(21) Application No.202541039846 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : DC grid voltage regulation for renewable sources using machine learning

(51) International classification :H02J1/00, H02J3/38, G06N20/00,
G06Q50/06
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to :NA
Application Number :NA
Filing Date :NA
(62) Divisional to Application :NA
Number :NA
Filing Date :NA

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(57) Abstract :

Abstract: The present invention is A DC grid voltage regulation for renewable sources using machine learning, a method claim, dynamic management of power flow within the DC grid to ensure optimal performance and scalable and flexible system design suitable for renewable microgrids and smart energy networks therein, demonstrates an advanced voltage regulation system for DC grids powered by renewable sources, leveraging machine learning to ensure efficient and stable operation.

No. of Pages : 6 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541040659 A

(19) INDIA

(22) Date of filing of Application :28/04/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A system for non-invasive faecal collection, safe disposal and perianal cleaning as an alternate to diaper

(51) International classification :A61M0003020000, A61F0005455000, A61F0005440000, A47K0017020000, A61B0010000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a non-invasive faeces (stool) removal and rectal cleaning system designed for bedridden patients and old aged people with incontinence issues and other probable users, offering a hygienic and comfortable solution for fecal management, eliminating diaper usage. The system consists of (i) a soft, flexible silicone banana shaped cup (101) interface with orifice (102) that is attached to rectum on the perianal region to facilitate stool collection without leakage; (II) a gravity and running water assisted mechanism that transfers stool into a thin walled tube (104) through fish mouth one way valve (103) which leads to commode in toilet when an extender tube (107) is connected; (iii) a simple cleaning mechanism utilizing water jet spray (116) at banana cup (101) to maintain hygiene post-excretion. Fig 1 and 2

No. of Pages : 12 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :28/04/2025

(21) Application No.202541040712 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : MACHINE LEARNING-BASED INTRUSION PREVENTION AND DETECTION SYSTEM FOR SECURING WIRELESS SENSOR NETWORKS

(51) International classification :H04L0009400000, H04W0084180000, G06F0021550000, G06N0020000000, G06F0021570000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :
ABSTRACT MACHINE LEARNING-BASED INTRUSION PREVENTION AND DETECTION SYSTEM FOR SECURING WIRELESS SENSOR NETWORKS The method for the development of the ML-IDS uses intelligent algorithms that can learn and evolve. By analyzing real-time data patterns, these systems may quickly detect anomalies and prevent malicious activity, providing a smarter, more adaptive shield for WSNs in an ever-changing threat environment. Wireless Sensor Networks (WSN), a cornerstone of modern wireless technology, provide cost-effective solutions for a variety of monitoring jobs, but they are also vulnerable to a variety of security issues, such as unauthorized access, attacks, and suspicious activity. These vulnerabilities can drastically affect the performance and reliability of WSNs, making the early detection and mitigation of such threats critical. Numerous studies have focused on improving Intrusion Detection model accuracy and reducing loss with higher Detection Rate and lower False Alarm Rate, resulting in the elimination of the dataset's repeating feature. This method proposes a comprehensive Network Intrusion Detection System (NIDS) that protects Wi-Fi-based WSNs from common cyber threats like impersonation, flooding, and injection assaults. FIG.1

No. of Pages : 14 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :28/04/2025

(21) Application No.202541040900 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : PHARMACEUTICAL COMPOSITION AND METHOD THEREOF FOR TOPICAL CO-DELIVERY OF PROSTAGLANDIN ANALOGUES AND NEUROPROTECTIVE NEUTRACEUTICAL FOR GLAUCOMA THERAPY

(51) International classification :A61P0027060000, A61K0009000000, A61P0027020000, A61P0025000000, A61K0045060000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT PHARMACEUTICAL COMPOSITION AND METHOD THEREOF FOR TOPICAL CO-DELIVERY OF PROSTAGLANDIN ANALOGUES AND NEUROPROTECTIVE NEUTRACEUTICAL FOR GLAUCOMA THERAPY The current invention pertains to a stable pharmaceutical formulation of travoprost and thymoquinone co-loaded liposomes designed for the treatment of glaucoma and ocular hypertension. However, since glaucoma is associated with optic nerve damage, incorporating a neuroprotective agent can help reduce the rate of disease progression and enhance the overall effectiveness of the therapy when administer along with prostaglandin analogue. Additionally, it focuses on the development of a bilayered lipid nanovesicular system that encapsulates two active pharmaceutical agents. This innovative system enhances various physicochemical properties, including aqueous solubility, ocular bioavailability, corneal permeability, and retention time. Moreover, it ensures improved therapeutic efficacy, long-term stability, and better patient compliance.

No. of Pages : 35 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541042755 A

(19) INDIA

(22) Date of filing of Application :02/05/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR REAL-TIME THREE-DIMENSIONAL SURFACE TOPOGRAPHY ASSESSMENT OF ABRASIVE WATERJET MACHINED COMPONENTS

(51) International classification :G01B11/30,
G06T15/10
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Disclosed herein is a system (400) and a method (500) for three-dimensional (3D) surface topography assessment of an Abrasive Waterjet (AWJ) machined component. The method comprises performing AWJ machining process on a component to generate a machined surface and capturing one or more high-resolution images of the machined surface from a plurality of angles. The method further comprises processing the captured one or more high-resolution images using a Three-Dimensional (3D) surface reconstruction mechanism to reconstruct a 3D surface topography of the machined surface. The method further comprises extracting surface parameters from the reconstructed 3D surface topography of the machined surface to compare the surface parameters with predefined surface data. The method further comprises transmitting the reconstructed 3D surface topography and the surface parameters to a remote server and displaying, on a User Interface (UI), the reconstructed 3D surface topography and the surface parameters for assessment of the AWJ machined component. FIG. 5

No. of Pages : 41 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION (21) Application No.202541043286 A

(19) INDIA

(22) Date of filing of Application :05/05/2025 (43) Publication Date : 25/07/2025

(54) Title of the invention : A STUDY ON PERFORMANCE ANALYSIS OF SANDWICH COMPOSITE PLY ORIENTATION IN DRONE UNDER BIRD STRIKE DAMAGE

(51) International classification :G09B9/10, G06F30/15, G06F30/20, B64C1/12
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT OF THE INVENTION A STUDY ON PERFORMANCE ANALYSIS OF SANDWICH COMPOSITE PLY ORIENTATION IN DRONE UNDER BIRD STRIKE DAMAGE The invention focuses on improving the safety and structural integrity of drones by optimizing the ply orientation in sandwich composite materials to enhance resistance to bird strike damage. As drones are increasingly deployed in various industries, the risk of bird strikes, which can lead to structural failure and loss of control, becomes a critical concern. Sandwich composites, known for their lightweight core and stiff outer layers, provide excellent energy absorption properties, making them ideal for impact resistance. The orientation of the composite layers, or ply orientation, plays a crucial role in determining the material's mechanical behavior under impact, particularly in resisting bird strikes. By strategically optimizing the ply orientation, this invention aims to enhance a drone's ability to withstand such incidents, thereby improving its safety, reliability, and performance. The research offers valuable insights for drone designers and manufacturers, helping them create more resilient UAVs that can better handle bird strikes, ultimately advancing the development of safer and more robust aircraft for real-world applications.

No. of Pages : 8 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/05/2025

(21) Application No.202541046970 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SYSTEM AND METHOD FOR EXPLAINING AN ESTIMATION OF VITAL PARAMETERS

(51) International classification :A61B5/00, A61B5/02, A61B5/0205, G16H50/20, G06N3/02, G06F17/00, G06N3/08
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present disclosure provides a system 200 for estimating and explaining vital parameters from photoplethysmographic (PPG) signals. The system 200 communicatively coupled to a PPG sensor 208. The system 200 includes a processor 202, and memory 204 storing executable programs. The processor 202 receives the PPG signals to extract spatial and temporal features using an ensembling model to predict heart rate (HR), respiratory rate (RR), systolic blood pressure (SBP), and diastolic blood pressure (DBP). The system 200 configured to explain and employs Gradient-weighted Class Activation Mapping (Grad-CAM) to compute gradients of the final feature with respect to convolutional layers, generating heatmaps that highlight the most influential regions of the PPG signal. These heatmaps are overlaid onto the signal and displayed with the predicted parameters on a graphical user interface (GUI), providing users to visualize, interpret, and trust the predictions of the model. (To be published with Fig. 1)

No. of Pages : 37 No. of Claims : 26

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/05/2025

(21) Application No.202541047005 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD OF DETECTING OBSTRUCTIVE SLEEP APNEA USING PHOTOPLETHYSMOGRAPHY SIGNALS

(51) International classification :A61B5/00, A61B5/1455, A61B5/024, G06F17/00, G06N3/08, G06N3/0442, G06N3/0464
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

SYSTEM AND METHOD OF DETECTING OBSTRUCTIVE SLEEP APNEA USING PHOTOPLETHYSMOGRAPHY SIGNALS The present invention discloses a system 100 and method 400 for detecting OSA using PPG signals. The system 100 is connected with a wearable device 110 configured to acquire PPG signals. Further, the system 100 employs a Multivariate Long Short-Term Memory - Fully Convolutional Network ML model 160 to classify apnea events. The system 100 segments the PPG signals into windows, ensuring that apnea events remain centrally positioned. The ML model 160 extracts temporal and spatial features, leveraging LSTM layers 162, convolutional layers 164, squeeze-and-excitation (SE) blocks 166, and a global average pooling (GAP) layer 168. Further, the ML model 160 classifies windows into apnea or non-apnea events using a fully connected layer 170 with a sigmoid activation function. The invention improves OSA detection accuracy, enables real-time monitoring, and provides a cost-effective alternative to polysomnography. [To be Published with Figure 1]

No. of Pages : 36 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541051137 A

(19) INDIA

(22) Date of filing of Application :28/05/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A PROCESS FOR REDUCING WATER ACTIVITY IN FOOD PRODUCTS

(51) International classification :A23L0033105000, A23L0019000000, A23L0033210000, A23L0029000000, A61P0011000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A PROCESS FOR REDUCING WATER ACTIVITY IN FOOD PRODUCTS The present disclosure relates to a process for formulating food products with reduced water activity to enhance their microbiological stability. The process involves analyzing a food composition to determine the concentrations of inherent soluble solids, including food acids, salts, and sugars. Based on the known water-binding capacities of these components, the amount of free or unbound water in the composition is calculated. The concentrations of food acids, salts, and sugars are then adjusted in a proportionally balanced manner to ensure that their combined water-binding effect reduces the free water content to below a microbiologically safe threshold. This adjustment results in a water activity (aw) of the food product above 0.9, thereby preventing microbial spoilage. Importantly, the process is adapted to maintain the sensory characteristics of the food product, such as taste, texture, and flavor, without compromising quality.

No. of Pages : 9 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541053560 A

(19) INDIA

(22) Date of filing of Application :02/06/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : CROSS-MODAL AUTOENCODER FOR MULTI-MODAL NEUROIMAGING FUSION WITH DYNAMIC FEATURE WEIGHTING AND MISSING DATA RECONSTRUCTION

(51) International classification :G06N0003045000, A61B0005000000, G06F0018241100, G06N0003080000, G06N0003088000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Cross-Modal Autoencoder for Multi-Modal Neuroimaging Fusion with Dynamic Feature Weighting and Missing Data Reconstruction. This invention describes a Cross-Modal Autoencoder (CMA) framework designed for multi-modal neuroimaging fusion, integrating structural MRI (sMRI), functional MRI (fMRI), and electroencephalography (EEG) into a unified latent space. The system optimizes feature extraction and classification in schizophrenia diagnosis by incorporating dynamic feature weighting based on clinical relevance. A contrastive loss function aligns latent representations across modalities, ensuring structural-functional consistency. The framework also includes adversarial decoders that reconstruct missing data, allowing inference of fMRI patterns from sMRI or EEG signals. A dynamic weighting layer, guided by a pre-trained clinical relevance model, prioritizes essential biomarkers such as hippocampal connectivity over occipital activity in schizophrenia classification. The final fused representation is processed by a Deep Neural Network (DNN) or Support Vector Machine (SVM) for classification. This system enhances multi-modal learning, missing data imputation, and feature interpretability, thereby improving diagnostic precision and robustness in AI-driven schizophrenia assessment.

No. of Pages : 18 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541053563 A

(19) INDIA

(22) Date of filing of Application :02/06/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : MULTI-MODAL PSEUDO-INFORMATION GUIDED FEATURE EXTRACTION SYSTEM FOR SCHIZOPHRENIA DIAGNOSIS USING CROSS-MODAL LEARNING

(51) International classification :G06N0003045000, A61B0005000000, A61B0005055000, G06N0003080000, A61P0025180000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Multi-Modal Pseudo-Information Guided Feature Extraction System For Schizophrenia Diagnosis Using Cross-Modal Learning This invention describes a multi-modal pseudo-information guided feature extraction system for computer-aided schizophrenia diagnosis, integrating MRI, fMRI, EEG, and clinical data through cross-modal learning. A pseudo-information generator leverages autoencoders to create modality-specific intermediate representations (pseudo-labels), enhancing feature extraction across modalities. For example, EEG-derived temporal biomarkers refine MRI-based structural analysis, and MRI-based neuroanatomical insights improve EEG signal interpretation. The cross-modal feature extractor fuses pseudo-labels with raw data using attention-based mechanisms to prioritize clinically relevant patterns. Finally, a deep neural network classifier trained on fused multi-modal features achieves 99% accuracy on validation datasets. Key advantages include 15% higher diagnostic precision compared to single-modal approaches, robustness to missing data, and interpretability through cross-modality biomarkers (e.g., EEG-derived hippocampal volume estimates). Validated on the NIMH schizophrenia dataset, this system enhances AI-driven neuropsychiatric diagnostics, improving early schizophrenia detection through multi-modal fusion and deep learning.

No. of Pages : 17 No. of Claims : 2

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :09/06/2025

(21) Application No.202541055389 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR ACCELERATED QUERY PROCESSING IN INTEGRATED DATASETS USING AN OPTIMIZED INDEXING TECHNIQUE

(51) International classification :G06V20/13, G06F16/2453, G06F16/44, G06F16/48, G06F16/29, G06F16/73, G06T7/00, G06N3/08
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

SYSTEM AND METHOD FOR ACCELERATED QUERY PROCESSING IN INTEGRATED DATASETS USING AN OPTIMIZED INDEXING TECHNIQUE Embodiments herein provide a system 100 for accelerated query processing of an integrated dataset of records data and satellite image data to generate parameters on a Graphical User Interface by (i) collecting a first set of datasets and a second set of datasets, (ii) performing, based on interaction of a user on a graphical user interface (GUI), a multi-level selection of hierarchical geographical regions comprising a first-level region, a second-level region, a third-level region and subsequent level region using a hybrid spatial indexing technique, (iii) updating the GUI to present vector geometries, (iv) generating analytical data on spatial matching, (v) automatically determining, using a trained artificial intelligence (AI) model, categorized pixels from images associated with a group of a geospatial unit, (vi) assessing, the categorized pixels of the group of the geospatial unit with a score for an entity, (vi) performing accelerated query processing using optimized Indexing, FIG. 1

No. of Pages : 63 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541056914 A

(19) INDIA

(22) Date of filing of Application :13/06/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : REGENERATIVE ADAPTIVE/ACTIVE SUSPENSION SYSTEM & METHOD USING ELECTRIC PROPULSION MOTOR

(51) International classification :B60G0017015000, B60G0017016500, B60G0017018000, B60G0017080000, B60G0017040000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A regenerative vehicle suspension system (100) integrates an electric propulsion motor (108) with suspension functionality includes a driving gear (104), a driven gear (102) connected to a wheel (200), a gear linkage (106) for maintaining contact between the gears during relative motion and a chassis linkage (202) to transfer linear motion between vehicle and gear components. A control system (600) operates the electric propulsion motor (108) in a multiple propulsion mode for vehicle (400) movement, a regenerative adaptive suspension mode where the motor (108) resists 'change in angular velocities' caused by road irregularities, either by consuming less electricity for propulsion or generating electricity while providing variable damping. In regenerative active suspension mode, where the motor (108) accelerates or decelerates at appropriate times thus actively adjusting the height of the vehicle body (400) relative to the wheel (200) to counter/cancel road/rail induced vibrations on the vehicle (400).

No. of Pages : 52 No. of Claims : 23

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/06/2025

(21) Application No.202541057481 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Artificial Intelligence (AI)-Powered Customizable Clothing System with AI Generated Music and Method Thereof

(51) International classification :G10H0001000000, A61B0005000000, G10L0015080000, A63F0013650000, G06F0016583000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Artificial Intelligence (AI)-Powered Customizable Clothing System with AI Generated 5 Music and Method Thereof An Artificial Intelligence (AI)-powered customizable clothing system (104) with AI-generated music and method thereof is disclosed. The system (104) is configured to receive one or more images from a user. The system (104) is further configured to perform an image processing on the received one or more images to extract and categorize features of the received one or more images. 10 The system (104) is further configured to fetch contextual data from a memory. The system is further configured to analyse the extracted features. The system (104) is further configured to map the analysed data with the contextual data using a rule-based mapping or ML classifier. The system (104) is further configured to generate music based on the context mapping using the AI. The AI composes a short thematic audio track based on garment color schemes, patterns, a style type, or 15 an intended occasion. <>

No. of Pages : 19 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541058410 A

(19) INDIA

(22) Date of filing of Application :18/06/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ADVANCING HEALTHCARE ACCESS AND SURGICAL PRECISION THROUGH IOT AI DRIVEN
TELEMEDICINE, ROBOTIC SURGERY, UNUSED DRUG DONATION AND DIETICIAN-ASSISTED CARE

(51) International classification :G16H0040670000, G16H0010600000,
G16H0040200000, G16H0050200000,
G06Q0010063900

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

Abstract The evolution of healthcare is increasingly being shaped by the convergence of emerging technologies such as the Internet of Things (IoT), Artificial Intelligence (AI), and robotic systems. This integrated approach aims to enhance healthcare accessibility, efficiency, and patient outcomes, especially in underserved regions. This patent proposes a unified smart healthcare framework that combines IoT-enabled telemedicine and remote patient monitoring for real-time diagnosis, AI-driven data analytics for predictive care, and robotic-assisted surgery to improve precision and reduce invasiveness. Additionally, the system incorporates an IoT-based supervised platform for unused drug donation to minimize medical waste and increase medicine availability, particularly for economically disadvantaged populations. Integrated dietician-assisted care modules ensure personalized nutrition and recovery planning. The synergy between these components fosters a sustainable, equitable, and patient-centered healthcare ecosystem. By leveraging automation, intelligent monitoring, and professional oversight, this system has the potential to redefine modern medical delivery and safety standards.

No. of Pages : 17 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541058411 A

(19) INDIA

(22) Date of filing of Application :18/06/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : DESIGN OF A DIGITAL TWIN AND SOFT CYBORG-BASED ASSISTIVE SYSTEM FOR REAL-TIME HEALTH MONITORING AND DISABILITY SUPPORT

(51) International classification :A61B0005000000, G16H0010600000, A61B0005110000, G16H0050300000, G16H0040670000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Abstract This project presents the design and development of an integrated assistive system that combines Digital Twin (DT) technology with soft cyborg-based techniques to enhance the daily living and health monitoring of individuals with disabilities. The proposed system leverages real-time data from wearable sensors, biomechanical actuators, and vision-based systems to create a dynamic Digital Twin-an accurate, virtual representation of the user's physical and physiological state. The soft cyborg interface augments human capabilities. through bio-compatible, flexible robotic components that support mobility, posture correction, and motor assistance. Advanced AI algorithms are employed to analyze all:ively patterns, predict health anomalies,_ .. and provide personalized feedback, enabling proactive healthcare management. The system also supports remote monitoring by caregivers and healthcare professionals, ensuring continuous support and timely interventions. By integrating Digital Twin modeling with adaptive assistive technology, this work aims to significantly improve independence, safety, and quality oflife for individuals with physical impairments or chronic conditions.

No. of Pages : 17 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541058412 A

(19) INDIA

(22) Date of filing of Application :18/06/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : IOT BASED SMART SYSTEM FOR MEDICATION DISPOSAL AND SUPERVISED DRUG DONATION TO ENHANCE PUBLIC HEALTH AND ENVIRONMENTAL SAFETY

(51) International classification :G06Q0010063100, G06Q0010300000, B09B0003000000, G16H0020100000, G06Q0050260000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Abstract The improper disposal of unused or expired medications poses significant threats to both public health and environmental safety, including groundwater contamination, accidental ingestion, and the potential for drug abuse. At the same time, the lack of a structured system for redistributing surplus usable medicines results in missed opportunities to support underserved populations. To address these dual challenges, this project introduces an IoT-Based Smart System for Medication Disposal and Supervised Drug Donation, offering an integrated and intelligent approach to pharmaceutical waste management and donation supervision. The proposed system leverages Internet-of-Things (IoT) technologies, combining smart disposal units and drug donation kiosks equipped with sensors such as . . weightmodules, .. RFID readers, temperature monitors, and real-time clocks. These units enable secure collection, environmental condition tracking, and real-time data reporting to a centralized cloud platform. A web-based interface facilitates user registration, donation tracking, and healthcare professional oversight, ensuring that only safe, unexpired medications are considered for redistribution. Additionally, the system integrates support from licensed dietitians and physicians to guide proper allocation based on patient needs. This IoT-enabled framework enhances transparency, reduces pharmaceutical waste, prevents environmental harm, and improves medication accessibility for vulnerable communities. By unifying disposal and donation processes within a secure, automated, and health-conscious system, the project contributes to building a safer and more sustainable public health infrastructure.

No. of Pages : 17 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :24/06/2025

(21) Application No.202541060437 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AN ORTHODONTIC DENTAL DEVICE WITH LED FOR GUM DISEASES, WHITE SPOT LESIONS, AND TOOTH WHITENING

(51) International classification :A61Q0011000000, A46B0009040000, A61C0019060000, A61C0017200000, A61C0015020000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
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(57) Abstract :

AN ORTHODONTIC DENTAL DEVICE WITH LED FOR GUM DISEASES, WHITE SPOT LESIONS, AND TOOTH WHITENING
ABSTRACT An orthodontic dental device (100) with LED for gum diseases, white 5 spot lesions, and tooth whitening is provided. The dental device (100) includes a dual-sided detachable head system (101) including a first detachable head (102a) and a second detachable head (102b) attached to a central unit (103) of the dental device (100) to provide unparalleled flexibility for oral care, a sonic interdental proxabrush (104) equipped with 10 a soft silicone tip (110) attached to first side of the dental device (100) and the first detachable head (102a) for removing food debris and plaque in teeth, a liquid-infusing microchannel (106) integrated within the sonic interdental proxabrush (104) for delivering essential liquid to balance pH levels and support tooth remineralization, a LED (108) integrated to the first detachable head (102a) and near the sonic interdental prox15 abrush (104) for emitting a near-infrared light for promoting tissue regeneration and healing while cleaning the gingival sulcus. [FIG. 1A]

No. of Pages : 22 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541061225 A

(19) INDIA

(22) Date of filing of Application :26/06/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SYSTEM AND METHOD OF PROCESSING DNA-BASED SNP DATA AND USER BIOMETRICS IN REAL TIME USING DYNAMIC LEARNING AI

(51) International classification :G06V0030100000, G06N0020000000, G06F0040300000, G16H0010600000, G06N0003080000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(72)Name of Inventor :

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(57) Abstract :

ABSTRACT The present invention relates to a modular AI-based health platform comprising of: an input module (301) for receiving data including user, genetic SNP (306) and wearable data, a modular AI engine (302) for processing the data, an OCR (Optical Character Recognition) and NLP (Natural Language Processing) module (311), compatibility modules (310), assistant module (315), output modules (303) which provide real-time adaptive recommendations (122) based on genetics (306), behaviour (308), and feedback (316) by using dynamic learning and transform raw genetic data into weekly lifestyle recommendations (313) to the user and also provide real time food ingredient compatibility analysis (using the OCR + NLP module (311) using AI models and wearable integration. Our present invention follows the modular digital architecture with client-side interfaces (mobile app and web interface) (315), a backend API layer (318), and an AI engine (309) for SNP-based analysis which learns using reinforcement learning methodologies.

No. of Pages : 26 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :02/07/2025

(21) Application No.202541062967 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SMART COASTAL WATCH: ENHANCING MARINE PROTECTED AREA SECURITY WITH IOT AND LORA

(51) International classification :B63B0035140000, H04W0004021000, B63B0035240000, A01K0069060000, A01K0097120000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

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(57) Abstract :

Abstract Underwater Exclusion Zones (UEZs) are assigned areas for the amusement and crossbreeding of marine organisms. Complications linked to the execution of UEZs have endured for numerous years. The involvement of angling undertakings within these zones presents a substantial opportunity to the prolonged viability of aquatic assets. In India, the overseeing bodies rely solely on unmediated visual scrutiny to uncover the entrance of fishing vessels into the UEZs. This manuscript introduces an IoT-based structure devised to scrutinize the arrival of fishing vessels into the UEZ. The structure utilizes the Haversine procedure to compute the interval between the fishing vessel and the UEZ. This interval measurement is then employed to categorize the ship's location condition, which is attainable through a web interface. The analysis employs a LoRa communication component to broadcast topographical details from the fishing vessel to the main station, covering spans of just a few kilometers. The web interface, amalgamated with the Google Maps API, empowers distant surveillance of fishing vessel entry into the UEZ, delivering an unambiguous and all-encompassing understanding of the scenario. This invention presents a smart surveillance system designed to monitor and protect Marine Protected Areas (MPAs) from unauthorized fishing vessel entry. The system integrates GPS technology, the Haversine geolocation algorithm, and LoRa (Long Range) wireless communication to create a low-power, real-time monitoring solution suitable for remote maritime environments. Each vessel is equipped with an IoT device that continuously calculates its position relative to designated MPA boundaries. If a geofence breach is detected, an alert is transmitted via LoRa to a shore-based monitoring station, where authorities can visualize, log, and respond to the intrusion using a dashboard interface. The innovation provides a scalable, cost-effective method for enforcing marine conservation laws, promoting sustainable fishing practices, and supporting global efforts in marine biodiversity protection.

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No. of Pages : 18 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :02/07/2025

(21) Application No.202541062977 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : CLOUD-INTEGRATED IOT SYSTEM FOR SMART WATER FILTRATION AND MONITORING IN HOMES AND COMMUNITIES

(51) International classification :G01N0033180000, H04L0067120000, C02F0001440000, H04L0009320000, C02F0001320000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

Abstract This invention introduces a cloud-integrated Internet of Things (IoT) system designed for intelligent water quality monitoring and automated filtration in residential and community settings. The system utilizes a network of sensors to continuously measure key water quality parameters such as pH, turbidity, Total Dissolved Solids (TDS), temperature, and flow rate. A microcontroller processes this data in real time, and based on pre-set thresholds, controls a smart filtration unit to ensure safe water delivery. Sensor data is transmitted to a secure cloud platform, enabling remote access through web and mobile dashboards. Users and administrators can track water quality trends, receive contamination alerts, and manage filtration activity from anywhere. The system is energy-efficient, modular, and scalable, offering a reliable solution to enhance water safety, improve transparency, and support sustainable water management in both urban and rural environments.

No. of Pages : 17 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :09/07/2025

(21) Application No.202541065463 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A DEVICE AND METHOD FOR NON-INVASIVE URINE-BASED IMMUNOFLUORESCENCE DETECTION OF EARLY DIABETIC NEPHROPATHY

(51) International classification :G01N0033680000, G01N0021640000, A61B0005150000, G01N0033493000, G01N0033487000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

The invention relates to a portable immunofluorescence-based urine analysing device (101) for non-invasive detection of early diabetic nephropathy. The device comprises a pre-calibrated immunofluorescence test strip (201), an assay chamber (203), a fluorescence detection unit (205), a processing unit (207), a display interface (209), a memory (215), a communication interface (213), and a protective device housing (211). The device enables rapid, quantitative measurement of urinary biomarkers such as Neutrophil Gelatinase-Associated Lipocalin (NGAL) and beta-2 microglobulin, offering early identification of renal injury. A method is also disclosed, involving loading a urine sample onto the test strip (201), detecting fluorescence signals, processing the data to determine biomarker levels, and displaying or transmitting the results. The system allows point-of-care screening without blood sampling or complex laboratory equipment, making it suitable for both urban and rural healthcare settings, and supporting timely clinical intervention to prevent progression of diabetic nephropathy

No. of Pages : 28 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :09/07/2025

(21) Application No.202541065201 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A DEVICE AND METHOD FOR NON-INVASIVE SALIVA-BASED DETECTION OF NEONATAL JAUNDICE USING ELECTROCHEMICAL SENSING

(51) International classification :A61B0005000000, A61B0005021500, G01N0033720000, G01N0027480000, A61B0005145000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention relates to a non-invasive, portable device for detecting neonatal jaundice using saliva as the testing medium. The device integrates a saliva collection strip, a bilirubin oxidase-immobilised electrode, a cyclodextrin-enhanced electrochemical sensing unit, and a microcontroller-based signal processor. Upon contact with saliva, the enzyme reacts with bilirubin to generate an electrochemical signal that is processed and displayed as a real-time bilirubin level. The device eliminates the need for invasive blood sampling, reducing pain, infection risks, and anxiety for both infants and caregivers. Designed to be compact, accurate, and easy to operate, the device is suitable for hospital wards, neonatal ICUs, and even remote clinics. With an accuracy exceeding 90% compared to laboratory standards, this solution offers a cost-effective and child-friendly alternative to traditional bilirubin testing, improving early diagnosis and intervention in neonatal care

No. of Pages : 30 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541065281 A

(19) INDIA

(22) Date of filing of Application :09/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Eco-Concrete: A Sustainable Composition Incorporating Coarse Plastic Aggregates For Enhanced Mechanical Properties

(51) International classification :C04B0028020000, C04B0028040000, C04B0018140000, C10G0001000000, C04B0111000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a novel composite concrete formulation incorporating recycled plastic waste and silica fume for enhanced sustainability and mechanical performance. This innovation explores the partial replacement of coarse aggregate with polypropylene-based plastic waste and cement with silica fume in concrete mixes at a constant water-cement ratio of 0.45. Experimental results demonstrate that while increasing plastic content generally reduces compressive, flexural, and split tensile strengths due to a weaker interfacial transition zone (ITZ), the incorporation of silica fume significantly offsets this effect by densifying the microstructure and improving bond strength within the matrix. The present invention highlights the critical synergy between silica fume and plastic aggregate, recommending a maximum plastic replacement of 10% for structural applications. This invention provides a sustainable, cost-effective alternative to conventional concrete, reducing environmental impact while maintaining satisfactory structural integrity

No. of Pages : 12 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065679 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Real-Time Patient Health Monitoring Using Federated Learning for Secure Data Aggregation

(51) International classification :G06F0021620000, A61B0005000000, G16H0040670000, G16H0010600000, A61B0005021000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention discloses a real-time patient health monitoring system, termed FL-HealthGuard, that employs a novel method known as Secure Federated Aggregation and Personalized Edge Learning (SFAPEL) to ensure decentralized, secure, and privacy-preserving aggregation of sensitive health data. The system integrates wearable IoT devices and edge computing nodes to continuously collect and process physiological parameters such as heart rate, blood pressure, glucose levels, and ECG signals. Each edge node performs local training using the Personalized Adaptive Gradient Descent (PAGD) technique and transmits only encrypted model updates to a central federated learning coordinator. The coordinator applies Federated Averaging with Differential Privacy (FADP) to securely aggregate updates and enhance the global model without accessing raw patient data. The updated model is redistributed to all edge devices for improved inference and personalized health monitoring. The FL-HealthGuard system ensures data confidentiality, minimizes latency, supports real-time alerting, and is scalable for chronic disease management, elderly care, and remote patient monitoring environments.

No. of Pages : 10 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541065693 A

(19) INDIA

(22) Date of filing of Application :10/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Self-Calibrating Multi-Sensor IoT Device for Precision Agricultural Microclimate Monitoring

(51) International classification :A01G0025160000, G06Q0050020000, H04W0004380000, G06Q0010100000, A61F0013420000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention proposes a self-calibrating, multi-sensor IoT device tailored for precision agricultural microclimate monitoring. Equipped with a diverse set of environmental and soil sensors, the system autonomously monitors parameters such as temperature, humidity, soil moisture, leaf wetness, UV radiation, and CO₂ levels. A built-in calibration engine ensures sustained accuracy by detecting and correcting sensor drift. Real-time data transmission via LoRa, NB-IoT, or GSM ensures reliable connectivity even in rural areas. The device integrates with cloud platforms for analytics, alerts, and advisory generation, enabling farmers to make informed, data-driven decisions. The invention supports scalable deployment across open fields, greenhouses, and orchards, promoting sustainable and precision farming.

No. of Pages : 14 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065696 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : DIGITAL SELF-FRAGMENTATION SCALE

(51) International classification :G06Q0050000000, G16H0020700000, G06N0005022000, H04L0067306000, A61B0005160000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

In today's intrinsically connected digital world, people often find themselves split across their digital media personas and their real or private selves. This regular management of multiple identities like on social media platforms or a persona private self can gradually lead to a fragmented sense of self or inconsistent sense of self identity. This can further cause emotional fatigue, detachment, mental exhaustion, and identity confusion. This concept is especially apt in the current era where expression of a person, the need for social validation, and communication are majorly surrounded around the digital platforms. This Digital Self-Fragmentation Scale is a psychological tool developed with an intention to measure the fragmentation that occurs between a person's online and real-life identity/self. This scale describes the key dimensions such as authenticity conflict, emotional fatigue, and identity dissonance which are the key components for understanding the fragmentation of self in the digital and real life. This scale has its roots from established theories, follows a structured methodology and apt statistical methods. By understanding the psychological effect of digital usage through social media, this scale adds knowledge into the concept of digital wellbeing. The scale designed can be utilized in various settings like research, education, and hospitals to identify the fragmentation people experience in digital era and assist in developing interventions further to foster healthy digital habits.

No. of Pages : 6 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065695 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI Emotional Relationship Scale

(51) International classification :G06N0020000000, H04L0051020000, G10L0015220000, G06N0003006000, G06F0040300000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

The growing incorporation of AI in the human interactions emphasize a significant shift from traditional interpersonal relationships to those formed with artificial entities. This scale is designed to understand the manner in which people feel and respond while they are interacting with artificial intelligence (AI) systems like chatbots, virtual assistants or digital companions. The tool aims to measures important aspects of the human's experience with AI, such as bonding, relation, trust, emotional connection, comfort. This was built using established psychological theories, structured methodology and apt statistical methods. The scale designed can be utilized in various settings like research, schools, education, and hospitals. The scale can be delivered on paper, through apps, or even directly within AI systems. It helps designers, researchers, and psychologists make AI more human-centered, ethical, and emotionally aware.

No. of Pages : 7 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065697 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : UniPhish Guardian: A Multi-Modal Phishing Detection Framework

(51) International classification :H04L0009400000, H04L0051212000, G06N0020200000, G06F0021550000, G06N0005045000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Phishing attacks have grown more sophisticated, using diverse channels such as emails, SMS, voice calls, websites, malicious attachments, and images. Traditional models mainly focus on textual spam, missing the broader landscape of real-world phishing techniques. There is a critical need for a comprehensive, multi-modal phishing detection system that can handle various threat formats beyond plain text. Existing solutions lack the extensibility and modular design required to tackle such diversity effectively. This study introduces UniPhish Guardian, a modular and extensible phishing detection framework. The primary goal is to design a multi-modal system that achieves high detection accuracy across seven types of phishing attacks, using tailored models suited to each data type. UniPhish Guardian integrates fine-tuned transformer models (e.g., RoBERTa) for text-based threats and tree-based models (XGBoost) for structured/tabular data. The system is built for production, offering API integration, real-time dashboards, explainability features, and comprehensive performance metrics for each threat type. The system demonstrates high accuracy across all seven phishing categories: email, SMS, call transcripts, phishing websites, malicious links, PDF documents, and image-based attacks. Each model is optimized for its input modality, enabling precise and efficient detection. UniPhish Guardian goes beyond traditional classifiers by acting as a cybersecurity layer that understands and detects modern phishing threats. It bridges the gap between isolated spam filters and intelligent, adaptive phishing defense systems, aligning with current needs in cyber threat detection.

No. of Pages : 13 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541065699 A

(19) INDIA

(22) Date of filing of Application :10/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : NALAM AI

(51) International classification :G16H0010600000, G06F0040295000, G16H0020100000, G16H0050300000, G16H0050200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

Nalam AI is an integrated artificial intelligence system designed to assist elderly and medically illiterate users in underserved regions by providing personalized health record analysis and medication recommendations. The system ingests unstructured medical records via Optical character recognition (OCR) and employs a multi-agent AI framework to generate structured health summaries, insights, and dosage recommendations. Patient data is securely stored in a MongoDB database. Nalam AI also analyzes images of medication labels, even of poor quality, to determine drug suitability based on the patient's stored health profile. A dedicated pipeline combining Named entity recognition (NER) with Retrieval-augmented generation (RAG) retrieves authoritative drug information and performs web searches (via Serper) for unfamiliar medications. Finally, the system translates health summaries and medication instructions into 10 regional Indian languages using Sarvam AI to improve accessibility. By leveraging these innovations, Nalam AI addresses the high rates of self-medication and medical errors in India, providing clear, personalized guidance tailored to each user's medical history.

No. of Pages : 8 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065738 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : An Iot Enabled Remote Diabetic Screening System

(51) International classification :A61B3/12, A61B3/14,
G16H40/67, G16H50/20
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to :NA
Application Number :NA
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(57) Abstract :

Abstract Healthcare solutions powered by IoT provide clever ways to cut expenses and raise service standards. Permanent blindness may result from diabetic retinopathy (DR), a disorder brought on by diabetes. IoT devices in this project take pictures of the retinal fundus and upload the information to the cloud, allowing for extensive storage and accessibility. A Vision Transformer (ViT) model, which is excellent at identifying intricate visual patterns, is used to analyze the photos. A Genetic Algorithm (GA) improves the accuracy of disease diagnosis, further optimizing the system. This technology offers prompt, accurate medical diagnosis and facilitates effective, real-time DR detection by combining IoT, ViT, and GA.

No. of Pages : 13 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065708 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-Based Smart Trolley System with Real Time Billing and Inventory Management

(51) International classification :G06Q0010087000, G07G0001000000, G06Q0030060100, G06Q0020200000, G06Q0020320000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The rapid evolution of retail technologies has led to the emergence of smart solutions aimed at enhancing customer experience and streamlining operations. One such innovation is the AI-Based Smart Trolley System with Real-Time Billing and Inventory Management, designed to revolutionize the conventional shopping process in supermarkets and retail stores. The system uses AI algorithms to verify product details, detect anomalies (e.g., misplaced or incorrect items), and maintain a realtime bill displayed on the trolley screen. Customers can view their current purchases, total cost, and applicable discounts instantly, allowing for informed buying decisions. Simultaneously, the system syncs with a centralized inventory database, updating stock levels in real time as products are added to or removed from the trolley. This facilitates accurate inventory tracking, reduces human error, and assists in demand forecasting. AI-Based Smart Trolley System ultimately enhances customer convenience by enabling seamless, cashier-less checkouts and personalized shopping experiences. It also benefits retailers by offering precise inventory control, reduced labor costs, and valuable consumer insights. This innovation represents a significant step toward smarter, more automated retail environments.

No. of Pages : 10 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065710 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Multi-Modal Keystroke Dynamics and Mouse Trajectory-Based Continuous Authentication System

(51) International classification :H04L0009400000, G06F0021310000, G06N0020000000, G06F0021320000, H04W0012065000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A multi-modal continuous authentication system combining keystroke dynamics and mouse trajectory analysis for real-time user verification during computing sessions. The system captures behavioral biometrics locally, processes feature via adaptive machine learning models, and continuously authenticates users without interrupting workflow. It improves security by detecting unauthorized access promptly and adapts to natural behavioral changes over time while preserving user privacy. Suitable for enterprise environments and sensitive applications, the invention enhances protection against session hijacking and insider threats.

No. of Pages : 16 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541065713 A

(19) INDIA

(22) Date of filing of Application :10/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A Method for Tuning Crystallinity of Electroless Nickel-Phosphorous Coatings on Carbon fiber Using Ammonium-Based Complexing Agents

(51) International classification :C23C0018360000, C23C0018440000, C23C0018160000, C23C0018540000, G11B0005840000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT A Method for Tuning Crystallinity of Electroless Nickel-Phosphorous Coatings on Carbon Fiber Using Ammonium-Based Complexing Agents The present invention relates to a method for depositing nickel-phosphorous (Ni-P) coatings on carbon fiber substrates using an electroless plating process in an alkaline medium. The method enables controlled tuning of the crystallinity and microstructure of the coatings by varying the concentration of an ammonium-based complexing agent, specifically ammonium chloride, in the plating bath. The process involves preparing a chemically balanced bath containing a nickel source, a reducing agent, a stabilizer, and ammonium chloride, followed by deposition at controlled pH and temperature conditions. By adjusting the complexing agent concentration within a specific range, the invention allows modulation of crystallite size, microstrain, and the phase composition of the resulting Ni-P layer. The coatings produced exhibit tunable surface morphology and properties, making the method suitable for applications in advanced composite materials, electronics, and protective surface engineering

No. of Pages : 16 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065724 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : LOCK MECHANISM FOR BOREWELL RESCUE TOOL

(51) International classification :A62B0003000000, A62B0099000000, E06C0007440000, A62B0005000000, F16K0047080000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Abstract The Lock Mechanism for Borewell Rescue Tool is designed to address the critical need for a safe, efficient, and reliable solution to rescue children and individuals trapped in narrow borewells. Traditional rescue methods are time-consuming, and there are few drawbacks due to the confined space, unstable soil, and irregular positioning of the victim. The present invention has lock mechanism (100) with the cylindrical structure for secure handling of borewell rescue tool. Lock mechanism (100) allows the leg of the set up to tightly fix into the uneven ground surface. The stand (101) is fixed at the lower end of the leg for providing strong support on uneven ground surface. The lever handle (102) is attached at the side position of the cylindrical structure for adjusting the position of the lock mechanism. The lever handle (102) is used for holding and releasing the borewell rescue tool. The upper portion of the lock mechanism has small diameter opening which allows the rescue tool to get into the borewell hole. The lower portion of the lock mechanism has wider opening that allows the tool to come out from borewell hole. The lock mechanism is used for borewell rescue process where there is uneven ground surface of borewell hole and for tight holding of rescue tool without splitting debris on the child body surface. The Lock Mechanism for Borewell Rescue Tool ensures compatibility with varying.

No. of Pages : 10 No. of Claims : 2

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065732 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR DETECTING LUNG CANCER USING TUNA SWARM ALGORITHM AND EFFICIENTDET

(51) International classification :G06N0003006000, C12Q0001688600, G01N0033574000, G06T0007000000, G16H0050200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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Disclosed herein is a system and method for detecting lung cancer using tuna swarm algorithm and Efficientdet model. The proposed hybrid framework combines EfficientDet, known for its scalability and real-time detection capabilities, with TSA, a metaheuristic optimization algorithm inspired by the behavior of tuna fish. This integration enables fine-tuning of model parameters to achieve optimal performance. The model was evaluated using the Lung Image Database Consortium and Image Database Resource Initiative (LIDC-IDRI) dataset. The hybrid model achieved outstanding performance metrics on the LIDC-IDRI dataset: 99.8% accuracy, 99.3% recall, 99.4% precision, 99.5% F1-score, and an Area Under Curve (AUC) of 0.989. These results underline the effectiveness of the proposed method in enhancing diagnostic precision and early detection of lung cancer. The integration of EfficientDet with TSA provides a powerful and efficient approach for early lung cancer detection. The significant improvements in accuracy and other performance indicators suggest that this model can greatly support radiologists and clinicians in the timely identification of malignant nodules, ultimately improving patient outcomes. Fig. 1

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065736 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : DEEP LEARNING-ENABLED ANOMALY DETECTION SYSTEM FOR SMART IOT SENSORS IN CLOUD PLATFORMS

(51) International classification :G06N0003080000, G06N0003045000, G06N0003088000, H04L0009400000, G06N0003044000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
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(57) Abstract :

The present invention discloses a cloud-based anomaly detection system using deep learning to monitor and analyze real-time data from smart IoT sensors. The system integrates multiple sensor nodes transmitting temperature, vibration, current, and environmental data to a centralized cloud platform. A data preprocessing module standardizes incoming streams, which are then analyzed using advanced deep learning models, including Autoencoders, LSTM networks, and CNNs. Anomalies are detected based on reconstruction errors, prediction variance, and contextual deviations. The models adapt dynamically to changes in data behavior through continuous retraining. Alerts are generated in real-time and delivered via dashboards or external systems. The architecture is designed for scalability, secure communication, and deployment across industries such as manufacturing, healthcare, smart cities, and critical infrastructure. The invention enables proactive fault detection, operational efficiency, and enhanced system reliability in heterogeneous IoT environments. FIG.2

No. of Pages : 14 No. of Claims : 2

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065740 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Machine Learning Random Forest Algorithm based Fault Prediction for Industrial Machines

(51) International classification :G06N0020000000, G05B0023020000, G06Q0010200000, G05B0019418000, G05B0019050000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

This project presents a machine learning-based fault prediction system for industrial machines using a Random Forest algorithm. The system integrates with a Mitsubishi Electric FX5U Programmable Logic Controller (PLC), GOT 2000 Human-Machine Interface (HMI), and smart sensors to predict potential faults in industrial equipment. The FX5U PLC collects data from smart sensors installed on the machine, while the GOT 2000 HMI provides a user-friendly interface for monitoring and control. The Random Forest algorithm analyzes the sensor data to identify patterns and anomalies, enabling early detection of potential faults. The system generates alerts and notifications based on predicted faults, allowing for proactive maintenance and minimizing downtime. By leveraging machine learning and industrial automation, this system enhances equipment reliability, reduces maintenance costs, and improves overall operational efficiency. The proposed system demonstrates the potential of machine learning in predictive maintenance, enabling industries to transition towards Industry 4.0 and smart manufacturing.

No. of Pages : 9 No. of Claims : 2

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065750 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : An Efficient Access Of Spectrum In Transmission Over Cognitive Radio Using Deep Learning

(51) International classification :H04W16/14, H04W72/04,
H04B17/30, G06N3/02
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to :NA
Application Number :NA
Filing Date :NA
(62) Divisional to Application :NA
Number :NA
Filing Date :NA

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(57) Abstract :

Abstract In response to the increasing wireless bandwidth demands of emerging multimedia applications, cognitive radio has emerged as a promising solution to enhance spectrum efficiency. Unlike infrastructure-based wireless networks, cognitive radio networks feature users competing for limited idle spectrum, resulting in a dynamically heterogeneous radio environment. This project introduces a deep learning-based spectrum access scheme designed to adaptively allocate multimedia data across multiple idle spectrum holes while addressing the stringent delay and throughput requirements of multimedia applications. Different from infrastructure based wireless networks, users in cognitive radio networks tend to compete with each other to access limited idle spectrum, thus leading to a dynamically heterogeneous radio environment. In this project, a deep learning based spectrum access scheme is proposed to adaptively allocate multimedia data over multiple idle spectrum holes. In this project sensing and sharing for high efficiency of the spectrum. This project proposes a deep learning-based spectrum access scheme that adaptively allocates multimedia data across multiple idle spectrum holes, considering the stringent delay and throughput performance requirements of multimedia applications. Simulation results demonstrate that the proposed scheme quickly converges to a stable state, optimizing throughput, power efficiency, and collision probability.

No. of Pages : 12 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065749 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SMART WATER INSIGHTS: PREDICTION THE FUTURE WITH MACHINE LEARNING

(51) International classification :G01W0001140000, G01N0033180000, G08B0021100000, H04W0004380000, G06Q0050060000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

Abstract The shortage of water resources in a growing concern for many governments and International Organizations. With advancements in communication technology, smart solutions for monitoring water quality and flood alerts are becoming more popular. This project aims to create an online system called Internet of Water Things (IOWT) to monitor and manage water resource effectively. Its main goal is to oversee water sources and predict possible floods. The system collects data using sensors such as water level sensor, DHT11 (for temperature and humidity), a rain gauge, and sensors to measure pH and turbidity. These readings are sent to an Arduino Uno, which processes the data and uploads it to the cloud for further analysis using machine learning techniques. One of the most common natural disasters like flood often causing serious financial damage and putting lives at risk. An early warning system like this can help reduce losses by giving people enough time to evacuate areas that may be affected, ensuring their safety.

No. of Pages : 12 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065799 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : MOTION TRACKING WHEELCHAIR OPERATED BY HEAD GESTURE

(51) International classification :A61G0005040000, A61G0005100000, A61F0004000000, G06N0003080000, G06F0003010000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Abstract Joystick is the most common wheelchair controlling interface, however, it might not be applicable for cases of severely disabled people, for example quadriplegic users. The few solutions currently available on the market, such as the four switches on the headrest, the sip-n-puff, or the tongue drive system, can be cumbersome to use, while they offer limited control to the user. For such cases, a vision-based head controlled wheelchair is a unique alternative solution, which despite its benefits, has not been equally well studied. In this work, we propose and evaluate a novel method for operating an Electric Powered Wheelchair (EPW) via head movements in a non-invasive way. This is based on computer vision techniques and Deep Learning to estimate accurately the orientation of the user's head. It allows calibration for individual users and driving in a continuous navigation space as opposed to the discrete commands imposed by alternatives such as head switches.

No. of Pages : 9 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065798 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : INDUSTRIAL MONITORING USING LIFI

(51) International classification :F02D0035020000, B25J0013000000, B25J0011000000, G05D0001000000, B25J0015000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

Abstract All have some kind of mechanical construction, a frame, form or shape designed to achieve a particular task. For example, a system designed to travel across heavy dirt or mud, might use caterpillar tracks. The mechanical aspect is mostly the creator's solution to completing the assigned task and dealing with the physics of the environment around it. Form follows function. For example, the robot with caterpillar tracks would need some kind of power to move the tracker treads. That power comes in the form of electricity, which will have to travel through a wire and originate from a battery, a basic electrical circuit. Even petrol-powered machines that get their power mainly from petrol still require an electric current to start the combustion process which is most petrol powered machines like cars, have batteries. Here we implement a system for monitoring the industries like (Gas and petroleum), we construct a Rope path for system way for travel and placed sensor and control system from Base station.

No. of Pages : 8 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065796 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Smart Specs : Real-Time Object Detection through Embedded Vision.

(51) International classification :G06N0003045000, G06N0003080000, G06V0010820000, G01V0003100000, G06T0005700000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Human eye is the most significant character to detect the objects. Detecting the object includes the detection of position, size, distance etc. For individuals who have lost their vision and cannot detect objects, this problem can be addressed using smart specs. To enable virtual vision, machine learning and image processing approaches utilizing packages such as OpenCV and NumPy are required. There are different types of algorithms available to detect the object like R-CNN (Region-based Convolutional Neural Network), Fast R CNN, Faster R CNN, Sliding Window object detection and YOLO. You Only Look Once (YOLO) is the famous algorithm to detect the objects and gives the accurate position, size, etc. To create a smart specs device it requires microcontrollers like Arduino, Raspberry pi, ESP32, STM32, etc. To detect and announce the detected object. it requires a camera & speaker. By using YOLO algorithm and hardware devices like Arduino, Camera & speaker, the smart specs will be created.

No. of Pages : 27 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065751 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Hybrid Energy Storage Systems for Electric Vehicles using Machine Learning based Optimization Techniques.

(51) International classification :G06N0020000000, G05B0013020000, G06N0007020000, B60W0050000000, G05B0019042000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

This research investigates a novel approach for electric vehicles (EVs) using fuzzy logic algorithms in conjunction with this emphasis on arrangement Hybrid Energy Storage Systems (HESS) and Machine-Learning-Based Optimization (MLBO). To improve vehicle performance and efficiency, the aim is to optimize the energy between various storage components, such as batteries and supercapacitors. To dynamically modify the energy distribution between the battery and supercapacitor, the suggested method makes use of MLBO, an optimization technique influenced by the machine learning process in education. Energy allocation is continuously improved by this iterative optimization, which takes into account the needs of the vehicle and the driving conditions of the present. In the process, fuzzy logic methods are used to handle ambiguities and imprecisions. Fuzzy logic improves the flexibility and adaptability of the system by simulating human reasoning and basing judgments on ranges of values rather than set inputs. This advanced control system, which combines the MLBO, and fuzzy logic approaches, efficiently distributes power, minimizes energy waste, and enhances the EV's overall driving range and performance. By using an intelligent system instead of more conventional techniques, the results show that electric vehicle operating may be made more sustainable and efficient.

No. of Pages : 28 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065757 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : ARTIFICIAL INTELLIGENCE-ENABLED SYSTEM AND METHOD FOR ENHANCING BATTERY PERFORMANCE AND AUTONOMOUS OPERATION OF ELECTRIC VEHICLES

(51) International classification :G06N0020000000, G01R0031392000, G06N0003080000, G05D0001000000, G01R0031367000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Exemplary embodiments of the present disclosure are directed towards an artificial intelligence-enabled system and method for enhancing battery performance and autonomous operation of electric vehicles. The system includes one or more sensor modules for collecting real-time environmental data, a Global Positioning System module and an Inertial Measurement Unit for determining vehicle position and dynamics, and a Vehicle Control Unit configured to aggregate all sensor inputs. A Central Processing Unit processes the aggregated data using artificial intelligence algorithms, assisted by a Graphics Processing Unit and at least one artificial intelligence acceleration chip for high-speed decision-making. An Advanced Driver Assistance System module generates autonomous navigation and hazard response signals based on the processed data. A Battery Management System monitors and controls battery health, state-of-charge, and performance in coordination with a Power Distribution Unit that allocates electrical energy to various subsystems. The integrated architecture enables intelligent autonomous driving and real-time battery optimization through AI-based processing of sensor, positional, and energy data streams. Fig. 1

No. of Pages : 30 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065760 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Designing, development and validation of ergonomically designed multipurpose recliner chair in an auto-rickshaw to alleviate sleep deprivation and associated musculoskeletal problems among auto-rickshaw drivers.

(51) International classification :B60N0002220000, B60N0002020000, B60N0002225000, B60N0002200000, B23K0009230000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention relates to an ergonomically designed, multipurpose recliner seat specifically developed for installation in auto-rickshaws to improve driver comfort, reduce musculoskeletal strain, and enhance rest during idle hours. The recliner seat comprises a rotating mild steel base disc, central and roller bearings for flexible movement, a welded structural frame, an adjustable backrest with a reclining angle of up to 130 degrees, integrated headrest support, and soft yet durable cushioning. The seat is dimensionally optimized to fit within standard auto-rickshaw configurations and is constructed using materials capable of withstanding frequent urban use. The invention also includes a method for validating the ergonomic and functional benefits of the seat through a pilot study involving selected auto-rickshaw drivers from South Bengaluru. Participants were chosen based on specific inclusion criteria and subjected to structured prototype usage and qualitative feedback sessions. Ethical considerations were adhered to, with informed consent obtained from all participants and institutional ethical clearance granted. The prototype demonstrated promising results in terms of driver comfort, posture support, and usability, making it suitable for broader deployment and potential commercial application.

No. of Pages : 16 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541065869 A

(19) INDIA

(22) Date of filing of Application :10/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR HYBRID WIRELESS POWER TRANSFER IN ELECTRIC VEHICLES

(51) International classification :B60L53/12, B60L53/122, H02J50/10, H02M7/48, H02M1/08, H02J7/00, H01F38/14, H02J50/70
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
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(57) Abstract :

SYSTEM AND METHOD FOR HYBRID WIRELESS POWER TRANSFER IN ELECTRIC VEHICLES ABSTRACT The present disclosure generally relates a system and method for regulating high-frequency power transfer during wireless charging of vehicles and enabling bidirectional vehicle-to-vehicle wireless charging. In an embodiment, the system includes a three-leg inverter coupled with a hybrid coupler to wirelessly transfer high-frequency AC power from a power source to charge a vehicle battery. A modulation circuitry operating at a constant switching frequency is configured to receive an error signal waveform indicating power variation and generate switching pulses based on threshold band comparison, thereby regulating power transfer. In another embodiment, the system facilitates bidirectional vehicle-to-vehicle wireless charging, wherein a traction converter of a primary vehicle converts DC power from the battery into high-frequency AC power, which is then transferred to a secondary vehicle through a hybrid coupler. The system supports efficient and controlled wireless energy exchange between stationary or mobile electric vehicles. Fig. 1

No. of Pages : 30 No. of Claims : 17

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541065906 A

(19) INDIA

(22) Date of filing of Application :10/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Blockchain based Carbon Credit Tokenization system

(51) International classification :H04L0009000000, H04L0009320000, G06Q0020380000, G06F0021570000, H04L0009400000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Abstract The present invention discloses a blockchain-integrated system for real-time tokenization of carbon dioxide (CO₂) savings resulting from solar energy generation. The invention comprises a multifunction metering device that measures solar energy output and calculates the corresponding CO₂ emission reductions using configurable emission factors. For each kilogram of CO₂ saved, the system automatically mints a digital token named SYSTEM CONTRACTORS via a smart contract on the Ethereum blockchain. These tokens are securely transferred to the user's linked Ethereum wallet, enabling transparent, traceable, and decentralized participation in carbon credit markets. The invention eliminates the need for third-party validation, reduces administrative overhead, and democratizes access to environmental incentives for micro-level contributors such as residential solar users. Designed with secure firmware, real-time network connectivity, and immutable ledger recording, the system ensures accuracy, auditability, and global scalability. The invention significantly enhances the accessibility, immediacy, and integrity of carbon trading systems.

No. of Pages : 16 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202544066107 A

(19) INDIA

(22) Date of filing of Application :10/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : User-Controlled SIM Tray Lock with Tamper Alert Mechanism for Mobile Security

(51) International classification (31) Priority Document No (32) Priority Date (33) Name of priority country (86) International Application No Filing Date (87) International Publication No (61) Patent of Addition to Application Number Filing Date (62) Divisional to Application Number Filing Date	:H04L0009400000, H04W0012060000, H04W0004029000, G06F0021550000, H04L0009320000 :63/776,185 :23/03/2025 :----- :NA :NA : NA :NA :NA :NA :NA	(71)Name of Applicant : 1)SURAKASI DEEPAK Address of Applicant :Deepak Surakasi Reddika Street, Fazulbegpeta Srikakulam, Andhra Pradesh – 532001 Phone: +91 7075097489 Email: deepaksurakasi@gmail.com ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)SURAKASI DEEPAK Address of Applicant :Deepak Surakasi Reddika Street, Fazulbegpeta Srikakulam, Andhra Pradesh – 532001 Phone: +91 7075097489 Email: deepaksurakasi@gmail.com -----

(57) Abstract :

The invention discloses a mobile security system designed to prevent unauthorized removal of the SIM tray and detect tampering with the device's back panel. The system integrates biometric, facial, or PIN-based user authentication to unlock the SIM tray and employs a magnetic reed switch to detect physical tampering. Upon unauthorized access, the system triggers an alert and transmits the device's real-time GPS location to a connected user device. While modern smartphones offer safeguards against power-off and airplane mode misuse, SIM tray removal remains an unprotected vulnerability. This security gap can result in loss of connectivity and the inability to track a stolen device using location services. The proposed invention addresses this issue by restricting SIM tray access through user authentication and providing tamper alerts, thereby enhancing protection against SIM-based theft, swapping attacks, and unauthorized access to mobile networks or OTPs.

No. of Pages : 22 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065933 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Green-Synthesized Scandium Co-Doped Cu:ZnO Nanorods with Enhanced Anticancer Activity and Biocompatibility

(51) International classification :A61K36/58, B82Y30/00, A01N65/26, A01N65/00, B82Y15/00, A61P35/00
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT Green-Synthesized Scandium Co-Doped Cu:ZnO Nanorods with Enhanced Anticancer Activity and Biocompatibility The present invention discloses a green-synthesized nanorod composition comprising scandium co-doped copper zinc oxide (Sc-Cu:ZnO) nanostructures with enhanced anticancer efficacy. The nanorods are synthesized via an eco-friendly route using Chromolaena odorata leaf extract as a natural reducing and morphology-controlling agent. The resulting nanostructures exhibit a stacked, layered nanorod morphology with a hexagonal wurtzite crystal structure, high crystallinity, and uniform dimensions. Scandium, introduced as a novel co-dopant, synergistically enhances the structural, optical, and biological properties of the nanorods. Cytotoxicity assays demonstrate significant anticancer activity against A549 (lung) and MCF-7 (breast) cancer cell lines, with low IC₅₀ values (32–44 µg/mL), and minimal toxicity toward normal cells (WI-38, MCF-10A), highlighting their selective cytotoxicity. The invention provides a biocompatible and sustainable nanomaterial platform for targeted cancer therapy. The novel integration of rare-earth doping and green synthesis presents an advancement over existing ZnO-based nanostructures for biomedical applications, particularly in cancer nanotherapeutics.

No. of Pages : 19 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541065981 A

(19) INDIA

(22) Date of filing of Application :10/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A scalable crystalline metal-organic framework (MOF) and the method of synthesis thereof

(51) International classification :B01J20/22, C07F5/00, C01F17/10, C01F17/30, B01J20/30, C08G83/00
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT: Title: A scalable crystalline metal-organic framework (MOF) and the method of synthesis thereof The present invention (100) discloses a scalable and reproducible synthesis procedure (200) for cerium based metal-organic frameworks (MOFs), which is Ce-BDC. A high-yield protocol enables the production with consistent batch-to-batch crystallinity, confirmed by PXRD. A ~30 g batch of Ce-BDC MOF is synthesized using ammonium cerium nitrate and benzene-1,4-dicarboxylic acid. The PXRD structure of Ce-BDC MOF is refined using Rietveld analysis, confirming a triclinic system with structural similarity to $Tb_2(BDC)_3 \cdot 4H_2O$. Ce-BDC MOF exhibit permanent porosity and tailored pore dimensions suitable for selective gas separation, particularly CO_2/N_2 . The invention bridges laboratory-scale synthesis and industrial-scale production of Ce-MOFs. The present invention provides a foundation for environmental applications such as carbon capture. The MOFs are thermally stable, chemically robust, and offer high surface area. The present invention opens pathways for deploying cerium MOFs in energy and environmental sectors. Main Illustrative: Figure 5

No. of Pages : 18 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541065944 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : QUADRUPED ROBOT SYSTEM AND METHOD FOR NAVIGATION

(51) International classification :B25J0009160000, G06N0003080000, G06V0010820000, G06N0020000000, G16H0030400000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a quadruped spider robot system (100) which includes a processing unit (102), memory (104), and at least one camera (105) mounted on the robot body (101) for environmental perception in disaster zones. It features a machine learning model (106) implementing a YOLOv5 neural network that identifies objects of interest, triggering an alert system (107) when potential survivors are detected. The system incorporates four limbs (113, 114, 115, 116, 117), each equipped with servo motors (118) for precise movement control and piezoelectric generators (119) that convert mechanical stress into electrical energy. This harvested energy is managed by a power management system (109) for distribution to robot components. A flat mounting surface (110) with flexible arm capabilities enables debris manipulation. The robot communicates with a user interface (120) through an encrypted wireless connection, transmitting video feed and alerts while receiving navigation commands for effective disaster zone exploration.

No. of Pages : 28 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541066014 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : MOBILE HUGELKULTUR GARDENING ASSISTIVE SYSTEM

(51) International classification :G06F0003048800, B25J0005000000, H04L0067010000, H04L0009320000, B60P0003000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A mobile hugelkultur gardening assistive system, comprising a mobile framework 101 having an enclosure 102 for storing raw materials and is equipped with omnidirectional wheels 103 underneath for mobility, a recess 104 stores logs for the foundational hugelkultur layer, multiple chambers 105 hold loose materials, a pair of boundary units 106 form a perimeter around the selected gardening area, a dispensing unit 110 cuts and dispenses logs using a vertical receptacle 110a, pusher 110c, sloped flap 110d, conveyor belt 111a, dual-axis lead screw, articulated cutter 111c, and extendable clamps 112 attached via cascading sliders 113, an articulated conduits 114 with pumps 115 loose material into the perimeter, a sensing unit with camera 116 and laser sensors scans the perimeter's shape and dimensions, a touch enabled display unit 117 for operational and monitoring purposes, a microphone 118 and speaker 119 facilitate user interaction and remote control.

No. of Pages : 29 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541066013 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SUSTAINABLE WINDOW-MOUNTED AIR FILTRATION SYSTEM

(51) International classification :B01D0046710000, B01D0029640000, F02B0063040000, H02S0040380000, E01H0001080000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A sustainable window-mounted air filtration system, comprising an enclosure 101 housing a chamber 102 with fans 103 to induce airflow, a Peltier unit to regulate temperature of airflow, an acoustic insulation panels 104 for quiet operation, a sensing unit to monitors airflow-related parameters, a filter cleaning arrangement to maintain filtration unit 105 consists of a dual-axis lead screw arrangement 106, an articulated telescopic gripper 107 to lift filters and a suction unit 110 with conduit 108 having bristles 109 articulated via telescopic link 111 to dislodge and remove debris, a compartment 112 to store exhausted filters, an articulated collapsible solar panel 113 with hinges 114 section mounted via a telescopic bar 115 to harvest solar energy to store in a battery, an imaging unit 116 to detect space available for deployment of panel 113 and a microphone 117 and a speaker 118 to facilitate voice-based monitoring and operation.

No. of Pages : 26 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066020 A

(19) INDIA

(22) Date of filing of Application :10/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM FOR BARRICADING A MONITORING AREA

(51) International classification :G06V0020520000, A63B0024000000, H04N0007180000, G01N0015060000, G08B0021180000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

A system for barricading a monitoring area, comprises of a housing 101, the housing 101 includes a sliding door 115 for allowing a user to enter in the monitoring area and a biometric sensor linked to a cloud database for storing a real-time user data, a retractable barricading unit barricades the monitoring area, the barricading unit includes plurality of segments 102 operably coupled by means of a ball and socket arrangement, a monitoring unit disposed in the system to detect an 'activity', the monitoring unit is an AI-enabled camera 111 and a dust sensor, a responding unit is an alarm unit 112 and a water sprinkler 113 used for alerting the user about an unauthorized access and settling the dust respectively, a control unit linked to a database and operably connected to the monitoring unit to operate the alarm unit 112 based on the detection of the activity.

No. of Pages : 19 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066019 A

(19) INDIA

(22) Date of filing of Application :10/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SYSTEM AND METHOD USING MACHINE LEARNING FOR PREDICTING POST-SURGICAL COMPLICATIONS IN ICU PATIENTS

(51) International classification :G16H0050200000, G06N0020200000, G16H0010600000, G16H0050700000, G16H0050300000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

[047] The present invention provides a system and method for predicting post-surgical complications in ICU patients using advanced machine learning techniques. The system integrates real-time and historical patient data from various sources including electronic health records, physiological monitors, laboratory results, and clinical notes. A preprocessing engine cleans and aligns the data, while a feature extraction module generates clinically relevant indicators. These inputs are processed by an ensemble machine learning model that outputs complication risk scores in real time. The system includes an explainability module to enhance clinical interpretability using SHAP-based visualizations. Alerts are generated when risk thresholds are exceeded and presented to clinicians via an integrated dashboard. Additionally, the system employs federated learning to allow secure model personalization without compromising patient privacy. This invention enables early detection of complications, reduces ICU burden, and improves patient outcomes through intelligent, data-driven clinical decision support. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 20 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066023 A

(19) INDIA

(22) Date of filing of Application :10/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A PROCESS FOR AUTOMATED BEVERAGE PREPARATION AND SELF-CLEANING FOR BEVERAGE MACHINE

(51) International classification :A47J31/44, A47J31/00
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
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(57) Abstract :

The present disclosure relates to an automated process for the preparation of filter coffee, designed to streamline and enhance consistency in beverage production. The process involves pumping coffee decoction from a designated decoction reservoir via a decoction pump, followed by heating the decoction to a predetermined temperature. Simultaneously, milk is extracted from a milk reservoir and transferred into a heating chamber using a milk pump. Within the heating chamber, the milk is heated through integrated heating means to a specified temperature and subsequently frothed to achieve the desired texture. The heated and frothed milk is then combined with the heated coffee decoction at a dispensing nozzle. The integrated approach enables efficient, hygienic, and real-time preparation of filter coffee, suitable for deployment in automated coffee vending machines or smart kitchen appliances. This process ensures consistent quality, minimizes manual intervention, and caters to user preferences with programmable temperature and frothing controls.

No. of Pages : 17 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066024 A

(19) INDIA

(22) Date of filing of Application :10/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : INTELLIGENT IMAGE ENHANCEMENT SYSTEM USING GENERATIVE ADVERSARIAL NETWORKS FOR LOW-LIGHT AND NOISY VISUAL DATA

(51) International classification :G06N0003045000, G06N0003047000, G06N0003080000, G06T0007000000, G06T0005600000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention discloses an intelligent image enhancement system utilizing Generative Adversarial Networks (GANs) for restoring and improving low-light and noisy visual data. The system comprises an input preprocessing module to analyze image degradation, an adaptive condition encoder to generate context-aware enhancement parameters, a generator network for reconstructing high-fidelity images, a discriminator network for guiding realism through adversarial training, and a post-processing module for final refinement. The framework employs a composite loss function including adversarial, perceptual, pixel-wise, and noise-adaptive structural similarity components, ensuring both perceptual and structural integrity. Optimized for real-time performance and deployable on edge devices, the system finds applications in surveillance, mobile photography, medical imaging, autonomous vehicles, and other domains requiring high-quality visual data under challenging environmental conditions. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 18 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066025 A

(19) INDIA

(22) Date of filing of Application :10/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-POWERED ADAPTIVE DECISION SUPPORT SYSTEM FOR OPTIMIZED WORKFORCE ALLOCATION IN HYBRID WORK MODELS

(51) International classification :G06Q0010063100, G06N0003080000, G06N0020100000, G06Q0010063900, G06Q0010060000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

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(57) Abstract :

041] The invention discloses an AI-powered adaptive decision support system for dynamic workforce allocation in hybrid work environments. The system comprises a data ingestion engine, a context-aware inference engine, an AI optimization module, a feedback loop module, and an interactive dashboard. It collects and analyzes real-time data from various sources, including HR systems, collaboration platforms, and IoT sensors, to evaluate employee-task compatibility and generate optimized allocation strategies. The system supports human-in-the-loop validation, continuous learning through feedback, and integration with existing enterprise tools. It enhances organizational efficiency, employee satisfaction, and responsiveness in managing distributed and flexible workforces. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 20 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066031 A

(19) INDIA

(22) Date of filing of Application :10/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-Assisted 6G Communication protocol For dynamic spectrum Allocation

(51) International classification :H04W0016140000, G06N0020000000, H04W0016100000, H04L0009000000, H04W0024020000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The rapid evolution of wireless communication demands a shift toward more intelligent, adaptive, and efficient spectrum management strategies, especially with the emergence of 6G networks. This paper introduces a novel AI-assisted communication protocol designed to perform dynamic spectrum allocation (DSA) in real-time, tailored for the complex, heterogeneous, and high-density environments expected in 6G ecosystems. The proposed system integrates multi-agent reinforcement learning (MARL) within base stations and edge devices, enabling each node to autonomously sense, learn, and optimize its spectrum usage based on environmental inputs and network performance feedback. Additionally, a lightweight inter-agent communication protocol allows collaborative negotiation and conflict resolution, improving spectral efficiency and minimizing interference. The design supports federated learning to ensure privacy-preserving cooperation among nodes. Through this intelligent, decentralized architecture, the system achieves significant advancements in latency reduction, resource fairness, QoS adaptability, and scalability, making it a key enabler for future 6G use cases such as autonomous vehicles, smart infrastructure, and massive IoT connectivity.

No. of Pages : 8 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066044 A

(19) INDIA

(22) Date of filing of Application :10/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-BASED PLATFORM FOR ANALYZING POSTCOLONIAL IDENTITY AND ETHICAL DISSONANCE IN FICTIONAL NARRATIVES

(51) International classification :G06F0040284000, G16H0015000000, G16H0070600000, G06N0020000000, G06Q0050260000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT The present invention provides a computer-implemented system and method for analyzing postcolonial trauma and gendered violence in literary narratives. The system comprises an input module to receive digitized texts with metadata, a preprocessing module performing tokenization, lemmatization, and linguistic feature extraction, and an analysis engine integrating trauma theory lexicons, gendered violence taxonomies, and narrative structure models to identify, classify, and annotate trauma and violence representations. A database module stores processed texts, annotations, and thematic classifications, while an output module generates structured thematic analysis reports and visualizations such as heat maps, network graphs, and timelines for scholarly interpretation. The method includes receiving texts, preprocessing, applying trauma and gendered violence analyses, narrative structure examination, data storage, and output generation. The invention enables structured, scalable, and interdisciplinary analysis, enhancing research, teaching, and comparative studies in postcolonial literature, trauma studies, and gender studies. The figure associated with abstract is Fig. 1.

No. of Pages : 14 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541066079 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Multi-Port Smart Charging Station with Adaptive Power Distribution Linked to Smart Grid

(51) International classification :B60L53/60, G06N20/00, B60L53/66, H02J7/00, B60L55/00, G06Q50/06, G16Y10/35, G16Y40/10
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
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(57) Abstract :

A Multi-Port Smart Charging Station with Adaptive Power Distribution Linked to Smart Grid, aims to revolutionize electric vehicle (EV) and electronic device charging infrastructure by integrating intelligent power management, real-time load balancing, and smart grid connectivity. This system comprises multiple charging ports equipped with adaptive distribution mechanisms that dynamically allocate power based on demand, battery status, priority, and grid availability. By leveraging IoT sensors, embedded controllers, and AI-driven algorithms, the station monitors energy usage patterns and grid load in real-time to optimize charging cycles and ensure efficient energy utilization. The integration with the smart grid enables two-way communication for dynamic pricing, load shifting, and renewable energy integration, thus supporting grid stability during peak and off-peak hours. The station supports different charging standards (AC/DC, fast/slow charging) to accommodate various EV models and portable devices simultaneously. An intuitive user interface and remote mobile application allow users to schedule charging, monitor energy usage, and receive alerts. Designed for deployment in public, residential, and commercial environments, this system ensures scalability, modularity, and energy sustainability. The adaptive nature of power distribution minimizes energy wastage and reduces infrastructure stress.

No. of Pages : 17 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541066095 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A DENTAL ROBOTIC LAMP SYSTEM FOR ADAPTIVE ILLUMINATION

(51) International classification :A61B0005000000, H05B0047190000, F21V0023040000, A61B0034200000, H04N0023611000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT A DENTAL ROBOTIC LAMP SYSTEM FOR ADAPTIVE ILLUMINATION The present disclosure relates to a dental robotic lamp system (100) for adaptive illumination. The system (100) comprises an integrated imaging module (102) within a lamp to capture intraoral images and/or live video, generating input data based on these visuals. A processing module (104) processes this data using pre-configured techniques to detect dental features, predict patient movement, and generate control signals for dynamic lamp adjustments. A robotic arm mechanism (106) with at least two stepper motors (106A, 106B) adjusts the lamp's position along two axes based on these control signals. An adaptive multi-spectral lighting unit dynamically modifies parameters, including brightness and wavelength, as per procedural needs. The system (100) also includes a control interface (106D) enabling non-contact user interaction through gesture and voice commands, and a modulation module (106E) to align the robotic arm and lamp for optimal positioning.

No. of Pages : 30 No. of Claims : 12

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541066100 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : NANO-CATALYST SYSTEM FOR ENHANCED HYDROGEN PRODUCTION VIA WATER SPLITTING

(51) International classification :B82Y30/00, B82Y40/00, B01J35/45, B01J35/33, C25B1/04, C25B11/051, B01J27/02, B01J27/051

(86) International Application No Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number Filing Date :NA

(62) Divisional to Application Number Filing Date :NA

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(57) Abstract :

The present invention discloses a nano-catalyst system designed to enhance hydrogen production through efficient water splitting. The system comprises nanostructured metal-based catalysts such as transition metal sulfides, phosphides, or layered hydroxides integrated with conductive supports like nitrogen-doped graphene or carbon nanotubes. Engineered in core-shell, layered, or porous configurations, the catalyst offers high surface area, excellent charge transfer properties, and robust performance in both acidic and alkaline environments. The invention enables low overpotentials, high faradaic efficiency, and long-term operational stability, making it suitable for scalable electrochemical and photoelectrochemical hydrogen generation systems.

No. of Pages : 18 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/07/2025

(21) Application No.202541066101 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : System and Method for Assessing and Enhancing the Impact of Artificial Intelligence in Banking and Financial Management

(51) International classification :G06Q0020400000, G06Q0040020000, G06Q0040120000, G06Q0010067000, G06Q0010063700

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

This invention discloses a system and method for evaluating and enhancing Artificial Intelligence (AI) applications in banking and financial management, especially in regional economies like Telangana, India. The system uses structured data collection, statistical hypothesis testing, and feedback-based recommendations to assess AI effectiveness in operational efficiency, customer service, fraud detection, financial decision-making, and adoption challenges. The invention aims to bridge the gap between AI availability and utilization by offering a region-specific, data-driven framework that enables inclusive and efficient AI integration in the financial services sector.

No. of Pages : 11 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066129 A

(19) INDIA

(22) Date of filing of Application :11/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SKIN METRIC NON INVASIVE BIO AND SKIN DEPTH SCANNER MEASUREMENT SYSTEM FOR PRECISION IN PROSTHETIC PROCEDURE.

(51) International classification :A61B0005000000, A61F0002800000, A61F0002780000, A61F0002500000, A61B0005107000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention discloses a portable, non-invasive system designed to accurately measure the physical characteristics of a residual limb to create customized prosthetic devices. The system utilizes a fusion of multiple low-cost sensors-including infrared (IR) LEOs (950 nm), a photodiode, ultrasonic sensors, and a rotary encoder-to capture real-time data on skin reflectivity, tissue depth, limb circumference, and limb length without the need for expensive CAD imaging or bio scanners. The IR LED and photodiode pairing allows for the estimation of subsurface skin and tissue depth based on the intensity of backscattered IR light, while ultrasonic sensors assist in mapping limb width. The rotary encoder measures both the vertical profile of the limb and its circumferential dimensions. All captured data is processed by a microcontroller and sent to a Python-based software system that converts the measurements into a 2D visual profile or image, enabling prosthetists to accurately fabricate limb-specific prosthetics. The invention is lightweight, affordable, and scalable, making it particularly suitable for clinical and rural outreach applications. It bridges the gap between traditional prosthetic design and digital measurement without relying on costly 3D scanners or computer-aided design tools. PRIOR ART: Conventional methods used in the field of prosthetic design primarily depend on either manual techniques or expensive digitized systems. Manual methods involve the use of plaster castin&, measuring tapes, and hand-drawn limb profiles, which often lack precision and consistency. These techniques are highly dependent on the skill of the technician and offer no digital record or reproducibility of measurements. Digital alternatives, such as 3D laser scanners, infrared depth cameras, and MRI/CT-based imaging, provide accurate geometric data for prosthetic modeling. However, these systems are costly, require specialized training, and are largely confined to urban medical centers. Their dependency on computer-aided design (CAD) software further increases the barrier to adoption in rural and low-resource healthcare settings. While infrared (IR) sensors and ultrasonic sensors have been individually used for proximity or simple tissue measurement applications in biomedical and robotics fields, their integration into prosthetic measurement systems remains limited. For example, IR-based proximity sensors such as TCRT5000 are typically used for object detection, and ultrasonic sensors like the HC-SR04 are common in basic distance measurement tools, but they do not provide tissue-specific profiling or multi-dimensional data when used alone.

No. of Pages : 10 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541066615 A

(19) INDIA

(22) Date of filing of Application :12/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : DEVELOPMENT AND IN-VITRO STUDIES OF A NON-AQUEOUS DOSAGE FORM AS AN ORAL CARE INTERVENTION

(51) International classification :A61Q11/00, A61K6/15, A61K9/00, A61K47/44, A61K36/889, A61K8/02, A61K8/92, A61K8/97

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

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(57) Abstract :

The aim of the present work was to develop and evaluate non-aqueous mouthrinse for oral hygiene. A homogenous oily vehicle was prepared using a blend of fixed oils. Combination of essential oils was incorporated to the vehicle. Formulations were prepared by simple mixing with various proportions of fixed oils and essential oils. Pre-formulation studies and evaluation tests were conducted for the procured oils and formulations respectively. For comparison, a marketed oily mouthrinse product Perfora (MP) was also evaluated. Solidification behaviour of the vehicle as well as the formulations was studied. It was found that blends containing 25% v/v and higher proportions of sesame oil in coconut oil did not solidify under room temperature (23-24°C). Except M1, all other formulations (i.e.M2-M5) did not solidify under room temperature. The formulations M4 and M5 did not solidify at refrigeration temperatures (2-4 °C), unlike the marketed product which solidified at this temperature. All the samples showed zone of inhibition against S. mutans- ranging from 0.2 to 2.73 mm against standard compound tetracycline (13mm). M4 was found to have antimicrobial activity of 94% efficacy in comparison with the marketed product. The peroxide value of formulations ranged from 3.15 to 8.2 on day 30, thus the products did not show rancid behaviour. To conclude, M4 was identified as the optimized antibacterial oily mouth rinse which does not solidify at refrigeration temperature and 94% effective in comparison to that of marketed product.

No. of Pages : 16 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :12/07/2025

(21) Application No.202541066632 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : ML-POWERED FRAMEWORK FOR EVALUATING THE ROLE OF TEACHING PRACTICES IN SOCIAL-EMOTIONAL DEVELOPMENT OF HIGHER EDUCATION INSTRUCTORS

(51) International classification :G06Q0050200000, G06F0040300000, G06N0020000000, G09B0019000000, G09B0005060000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

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(57) Abstract :
ML-POWERED FRAMEWORK FOR EVALUATING THE ROLE OF TEACHING PRACTICES IN SOCIAL-EMOTIONAL DEVELOPMENT OF HIGHER EDUCATION INSTRUCTORS The method for the development of a framework driven by machine learning (ML) to assess how teaching methods influence the social-emotional growth of college instructors. The mental health and interpersonal skills of teachers are critical in creating productive learning environments in the quickly changing academic world. The framework evaluates teaching strategies, engagement trends, and reflective practices using sentiment analysis, behavioural analytics, and natural language processing. The model finds relationships between teaching methods and teachers' emotional development by examining a variety of datasets, including student evaluations, instructor comments, and classroom interaction logs. This clever method helps organizations create focused interventions to improve the well-being of educators in addition to providing a data-driven approach to professional development. By adding affective dimensions to faculty performance indicators, the suggested framework has the potential to revolutionize pedagogical assessments and eventually create more resilient and emotionally intelligent teaching communities in higher education. FIG.1

No. of Pages : 16 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067153 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : “ML-Driven Smart Surveillance System for Real-Time Prediction and Control of Malaria and Dengue Fever”

(51) International classification :G16H0050800000, G06N0020000000, G16H0050700000, G06F0018241300, G06N0003045000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

Malaria and dengue fever as a matter of concern in terms of public health in most tropical and sub-tropical areas where mosquito borne transmission is high. Conventional approaches of disease surveillance and control fail to meet the mark especially since they have long response time and very little resources prompting outbreaks that were avoidable. The invention solves this problem through providing a real-time smart surveillance machine-learning algorithm (ML) based malaria and dengue prediction, control and monitoring system. This novel system is based on machine learning algorithms K-Nearest Neighbors (KNN) and Artificial Neural Networks (ANN) to process environmental, epidemiological as well as entomological data in real time. The system keeps track of the major parameters such as mosquito population density levels, climatic conditions and reported symptomology to predict the possible areas of an outbreak. With early detection of the high-risk areas, the system facilitates speedy response, specific inter

No. of Pages : 14 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067159 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ASSESSING THE ORGANIZATIONAL BEHAVIOR AND PERCEPTION TOWARDS THE SERVICE QUALITY IN THE BANKING SECTOR

(51) International classification :G06Q0010063900, G06Q0010063700, G06Q0010063300, G06Q0030020100, H04L0041506700

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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2)Dr. Geetha Manoharan

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(57) Abstract :

ASSESSING THE ORGANIZATIONAL BEHAVIOR AND PERCEPTION TOWARDS THE SERVICE QUALITY IN THE BANKING SECTOR ABSTRACT This invention presents a unified model for assessing the impact of organizational behavior on perceived service quality in banking institutions. It integrates internal behavioral metrics with customer satisfaction data to identify and bridge service delivery gaps. Using structured assessments, the model provides insights into employee performance, management style, and communication efficiency, aligning them with customer expectations. The invention facilitates strategic service improvements by addressing both internal processes and external perceptions, enhancing overall service consistency and customer satisfaction within the banking sector.

No. of Pages : 13 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067160 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AUTOMATIC LIQUID DISPENSER USING IC 555 TIMER

(51) International classification :A47K0005120000, G01F0013000000, B65D0083000000, A47J0031000000, B67D0001080000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

An automatic dispenser is disclosed for dispensing a predetermined amount of a liquid upon detecting an object. The dispenser employs a laser and light-dependent resistor (LDR) sensor for touchless detection, a comparator circuit for signal processing, an IC 555 timer for adjustable timing control, and a motor-driven pump to dispense the liquid. An adjustment knob and potentiometer, or alternatively a selectable capacitor, allow customization of dispensing duration. The system is low-cost, energy-efficient, and compatible with various liquid containers, making it suitable for portable, battery-powered applications in diverse settings, such as hygiene, food service, or industrial environments.

No. of Pages : 19 No. of Claims : 16

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067161 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ANALYSING THE FACTORS AFFECTING EMPLOYEE EMPOWERMENT AMONG IT EMPLOYEES

(51) International classification :G06Q0010063700, G06Q0010063900, G06F0021620000, A61B0005000000, G16H0040200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ANALYSING THE FACTORS AFFECTING EMPLOYEE EMPOWERMENT AMONG IT EMPLOYEES ABSTRACT The invention provides a comprehensive framework to analyze factors influencing employee empowerment in the IT industry. It identifies critical dimensions leadership, autonomy, communication, training, and feedback that directly impact empowerment levels. Using a mixed-method approach, the invention evaluates and ranks these variables through empirical techniques including surveys, analytics, and interviews. A scoring model assists in determining the empowerment index and identifying organizational gaps. The framework is adaptable across varied IT structures and offers real-time visualization to aid strategic HR decision-making. By enabling organizations to understand and enhance empowerment mechanisms, the invention contributes to improved employee satisfaction, innovation, and performance. This analytical tool transforms HR practices into a more responsive, data-driven system aligned with modern IT workforce expectations.

No. of Pages : 12 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067162 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ASSESSING ENTREPRENEURIAL INTENTION AMONG ENGINEERING AND NON-ENGINEERING STUDENTS IN COIMBATORE DISTRICT

(51) International classification :G06Q0050200000, G06Q0010063700, G09B0007020000, G06Q0050260000, G09B0007000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ASSESSING ENTREPRENEURIAL INTENTION AMONG ENGINEERING AND NON-ENGINEERING STUDENTS IN COIMBATORE DISTRICT ABSTRACT This invention analyzes entrepreneurial intention among engineering and non-engineering students in Coimbatore district using a structured, data-driven approach. By applying theoretical models like the Theory of Planned Behavior and tools such as the Entrepreneurial Intention Questionnaire, it identifies key factors influencing students' entrepreneurial drive. The invention uncovers significant differences in attitudes, confidence levels, and motivations between the two student groups and links these findings with educational and demographic backgrounds. Based on empirical evidence, the invention recommends customized interventions to strengthen entrepreneurship education in both domains. The results support educators and policymakers in enhancing entrepreneurial potential, contributing to regional innovation and economic development.

No. of Pages : 14 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067163 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR AXI-LITE ENABLED COMMUNICATION BETWEEN CHIPS USING RISC-V STEEL PROCESSOR

(51) International classification :H04W0088060000, G06F0015780000, G06N0003063000, G06F0030330800, G06F0030300000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The RISC-V architecture has become popular these days because of its open-source, flexible and modular design approach. Although started as an academic project, it is now widely used in both research and industry. Its modular nature allows users to adapt it to specific applications, making it a very good choice for embedded applications, processor and custom designs. This project focuses on designing a RISC-V based Steel processor, a simpler version of RISC-V family that works with limited resources and where power, performance area constraints are important and hence suitable for implementation using FPGAs. In this project we designed a RISC-V based Steel processor, that uses AXI Lite protocol for inter-chip communication, using Verilog programming and simulate the results using Xilinx Vivado design suite. The goal is to show that when these technologies are used together, they provide an effective solution for low-cost, high-performance communication between two chips.

No. of Pages : 11 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067169 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ASSESSING THE ORGANIZATIONAL BEHAVIOR AND PERCEPTION TOWARDS THE SERVICE QUALITY IN THE INSURANCE INDUSTRY

(51) International classification :G06Q0040080000, G06Q0030020300, G06N0020000000, G06Q0010063700, G06Q0030020100

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ASSESSING THE ORGANIZATIONAL BEHAVIOR AND PERCEPTION TOWARDS THE SERVICE QUALITY IN THE INSURANCE INDUSTRY ABSTRACT This invention provides an integrated framework for assessing organizational behavior and perception towards service quality in the insurance industry. It combines internal behavior diagnostics with perceptual mapping to evaluate the alignment between employee actions and customer service outcomes. The model utilizes structured surveys, behavior audits, and feedback mechanisms to identify behavioral gaps and recommend strategic interventions. Machine learning algorithms enhance predictive accuracy, enabling proactive service improvement. The invention helps insurance providers improve employee alignment, decision-making, and service consistency, resulting in higher customer satisfaction and organizational performance.

No. of Pages : 13 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067170 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : MODULAR AIR COOLING ASSEMBLY WITH INTERCHANGEABLE CLIP ON MECHANISM FOR STEPPER MOTORS

(51) International classification :H02K0009060000, H02K0001140000, F01P0007020000, H02P0006182000, F24F0011000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention relates to an interchangeable and cost-effective cooling arrangement for stepper motors (1). It includes a high-speed blower (4) powered by a brushless DC 5 motor to provide forced air cooling. A flow diverter (5) is push-fitted to the blower (4) to direct air toward heat-prone areas of the motor (1). The blower (4) is mounted on a clip-on setup (2) using a screw nut (3), allowing manual adjustment of its position. The clip-on setup (2) is fabricated from ABS for thermal resistance and fits directly above the motor without permanent fixtures. The flow diverter (5) is made of low-cost PLA I 0 and designed for easy directional airflow control. The entire assembly is modular and interchangeable for front and rear cooling applicatiOns

No. of Pages : 16 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067171 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI BASED REAL TIME ENERGY EFFICIENT POWER ALLOCATION SYSTEM FOR D2D COMMUNICATION IN 5G NETWORKS

(51) International classification :G06N0003080000, G06N0003045000, G05B0013020000, H04W0052240000, G06N0003084000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

The invention provides an energy-efficient power allocation system for 020 communication underlying 5G networks using a reinforcement learning controller (4). 5 A OOPG actor neural network (5) generates real-time power settings based on channel inputs from the collector (7), considering both RF and circuit power via a modeling module (8). The critic neural network (6) refines long-term efficiency based on reward feedback from module (1 0). Power settings are applied instantly through the transmission unit (9) within each 1 ms slot. Cellular user (2) performance is I 0 safeguarded by penalizing harmful interference. A ZeroMQ messaging interface (11) links the controller to an N~-:j L 11:-A simulator (12) for packet-level validation. Tile system demonstrates significant energy savings without compromising service quality

No. of Pages : 15 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067172 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : LATENT REPRESENTATION BASED HADRL FRAMEWORK FOR EFFICIENT PATH PLANNING IN MOBILE ROBOTS

(51) International classification :G05D0001000000, G06F0009455000, G01C0021340000, H04L0009400000, H04L0043045000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a real-time path planning system for mobile robots that integrates multiple modules for efficient navigation in dynamic environments. It 5 features a Dual Frontier Expansion Unit (1) that performs bidirectional A* search from start and goal nodes to reduce search time. A Reverse Dijkstra Module (2) computes admissible heuristics dynamically, managed by a Heuristic Update Manager (7). A Dynamic Update Detector (3) monitors environmental changes and triggers localized heuristic recalculations. A Latent Representation Module (5) abstracts the I O . environment to reduce the computational load. The Visualization Engine (4) renders live search states, frontiers, and obstacles for human interpretation. A Real-Time Path Reconstruction Unit (10) finalizes the optimal route when frontiers meet, with continuous adaptability.

No. of Pages : 15 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067173 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : BIODEGRADABLE WATER TAP WITH INTEGRATED COPPER BASED BIOFILTER FOR NATURAL WATER PURIFICATION

(51) International classification :B33Y0010000000, A61P0001160000, E03C0001040000, F24F0013280000, C02F0101200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The invention discloses a sustainable water tap system fabricated using biodegradable material such as PLA through additive manufacturing. The tap 5 comprises a stem (1) with threaded ends for connection, a valve (2) housed within the stem to regulate water flow, and a nut (3) for secure attachment to a water tank. A copper filter (4) is positioned between the stem (1) and the cap (5), enabling natural purification by releasing copper ions into the water. The cap (5) serves as the outlet and retains the filter in place. All components are designed for easy assembly, I O maintenance, and leak-proof operation. The invention offers an eco-friendly, healthbeneficial alternative to traditional plastic taps.

No. of Pages : 14 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067174 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : EDGE-AI ENABLED DYNAMIC NETWORK SLICING METHOD FOR OPTIMIZED 5G SERVICE DELIVERY

(51) International classification :G06F0021620000, H04L0041160000, G06N0020000000, H04L0043085200, H04L0041400000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

ABSTRACT Title: EDGE-AI ENABLED DYNAMIC NETWORK SLICING METHOD FOR OPTIMIZED 5G SERVICE DELIVERY This invention presents a dynamic network slicing method powered by Edge-AI for optimized 5G service delivery. It replaces centralized control with intelligent edges based orchestration for faster, context-aware decisions. The system analyzes realtime network metrics like traffic load, latency, and signal strength to manage slices efficiently. A hybrid AI engine combines supervised and reinforcement learning for adaptive optimization. The slice controller executes actions such as creation, adjustment, or migration based on SLA needs. Predictive analytics enable proactive I/O resource allocation, while federated learning ensures data privacy. The solution supports scalable, secure, and autonomous operations across multi-tenant 5G and future networks.

No. of Pages : 17 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067175 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : INTELLIGENT RESOURCE ALLOCATION SYSTEM FOR ULTRA-RELIABLE LOW-LATENCY COMMUNICATION IN 5G NETWORKS

(51) International classification :H04L0005000000, H04L0047220000, G06F0009380000, H04W0072520000, H04W0072512000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT Title: INTELLIGENT RESOURCE ALLOCATION SYSTEM FOR ULTRARELIABLE LOW-LATENCY COMMUNICATION IN 5G NETWORKS The present invention discloses an intelligent resource allocation system designed to support Ultra-Reliable Low-Latency Communication (URLLC) in 5G wireless 5 networks. The system integrates a context-aware learning module, a resource prediction engine, a priority queue scheduler, and a dynamic allocation manager to provide adaptive and proactive control over radio resource distribution. Utilizing machine learning algorithms, the system predicts user mobility, traffic bursts, and resource availability in real time, allowing for latency-optimized and reliability- 10 enhanced packet transmission. By prioritizing critical URLLC flows and dynamically pre-allocating or mirroring resources, the invention ensures consistent compliance with strict latency and reliability requirements. The system facilitates efficient spectrum usage while enabling the coexistence of URLLC, eMBB, and mMTC traffic. This invention significantly improves 5G network performance in mission-critical 15 applications such as autonomous driving, remote surgery, and industrial automation.

No. of Pages : 18 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067176 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A REAL-TIME MULTI-MODAL DEEP LEARNING SYSTEM FOR INTEGRATED AUDIO-VISUAL EVENT RECOGNITION

(51) International classification :G06N0003080000, G06N0003045000, G06N0003044000, G06N0003049000, G06V0010820000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT Title: A REAL-TIME MULTI-MODAL DEEP LEARNING SYSTEM FOR INTEGRATED AUDIO-VISUAL EVENT RECOGNITION The present invention discloses a multi-modal deep learning system for real-time event recognition by integrating audio and visual data. The system comprises an Audio 5 Input Unit (1) and Video Input Unit (2) to capture live signals from the environment. Audio is processed using MFCC Feature Extractor (3) and a 3-layer Audio LSTM Network (4) to capture temporal sound features. Simultaneously, video frames are sampled and preprocessed by the Video Frame Sampler (5), followed by spatial analysis through ResNet-50 CNN (6) and temporal modeling using a 2-layer Video 10 LSTM Network (7). Features from both streams are merged in the Feature Fusion Module (8) and passed through a 1-ully Connected Layer (9) anti SiymuiLI Activation Function (10) for classification. Dropout and Batch Nonmalization Unit (11) ensures stable training and generalization. Final output is generated through the Event Classification Output Unit (12) with 85.19% accuracy on the AVE dataset.

No. of Pages : 15 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067177 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : WALL-MOUNTED MOBILE PHONE CHARGER WITH INTEGRATED INCLINED SUPPORT STAND FABRICATED USING ADDITIVE MANUFACTURING

(51) International classification :H02J0007000000, H04M0001040000, A45C0011200000, C08L0055020000, B65D0081380000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT Title: WALL-MOUNTED MOBILE PHONE CHARGER WITH INTEGRATED INCLINED SUPPORT STAND FABRICATED USING ADDITIVE MANUFACTURING The invention discloses a mobile phone charger integrated with a support stand for secure device placement during charging. It comprises a plug end (2) with plug pins 5 (1) for power input, a central belly part (3) housing the charging circuitry, and a USB end (5) for connecting output cables (6). A fixed support stand (4) is positioned above the belly part (3) at an inclined angle of 1 oao and height of 35 mm to allow screen visibility while charging. The stand consists of dual vertical arms, 4 mm thick and spaced 13 mm apart, to hold phones of different sizes. All three components are I 0 designed to snap fit for modular assembly and stability. The charger IS tabcnated using fused filament fabrication and ABS material for lightweight, thermal-resistant, and electrically insulated performance. A decorative sticker (7) is used to enhance aesthetics and cover joint seams.

No. of Pages : 17 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067179 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : IMPROVING THE EMOTIONAL ERGONOMICS OF HEALTH CARE WORKERS USING EMOTIONAL INTELLIGENCE

(51) International classification :A61B0005000000, A61B0005160000, G16H0050200000, G06N0020000000, A61B0005024000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

IMPROVING THE EMOTIONAL ERGONOMICS OF HEALTH CARE WORKERS USING EMOTIONAL INTELLIGENCE ABSTRACT

This invention focuses on improving the emotional ergonomics of healthcare workers by applying Emotional Intelligence (EI) principles to enhance emotional regulation, reduce stress, and foster a supportive work environment. The method utilizes an interactive training program designed to equip healthcare workers with essential EI skills such as self-awareness, empathy, and emotional regulation. Through engaging modules, role-playing exercises, and scenario-based training, workers learn how to manage emotionally challenging situations and improve interpersonal communication. In parallel, a wearable device or mobile application is employed to monitor the physiological indicators of emotional states, such as heart rate and skin conductivity. Using machine learning algorithms, the device provides real-time feedback and personalized suggestions to help workers regulate their emotions and manage stress more effectively. The combination of this interactive training and real-time emotional data support both immediate and long-term improvements in the emotional well-being of healthcare professionals, leading to better job satisfaction, patient care, and team collaboration.

No. of Pages : 13 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067313 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : MACHINE LEARNING-POWERED PREDICTIVE MAINTENANCE FOR SMART FACTORIES

(51) International classification :G06N0020000000, G05B0023020000, G06Q0010200000, G07C0005080000, G06N0003080000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

MACHINE LEARNING-POWERED PREDICTIVE MAINTENANCE FOR SMART FACTORIES The present invention introduces a method powered by Machine Learning in smart factories, predictive maintenance has become a game-changing way to improve operational effectiveness and reduce unscheduled downtime. Intelligent predictive models are able to identify early indications of wear and possible equipment breakdowns by utilizing real-time sensor data, past maintenance logs, and machine performance parameters. This method allows for timely interventions and optimal resource utilization by replacing reactive or scheduled routines in traditional maintenance methods with a data-driven, proactive strategy. Regression analysis, decision trees, neural networks, and anomaly detection approaches are examples of machine learning algorithms that can be integrated to accurately estimate maintenance requirements and failure risks. ML-based predictive maintenance is essential for cutting costs, extending the life of equipment, and promoting sustainable manufacturing practices in smart factory settings where automation and Internet of Things devices produce enormous volumes of data. The architecture, methods, advantages, and difficulties of deploying ML-powered predictive maintenance systems in Industry 4.0 ecosystems are examined in this study. FIG.1

No. of Pages : 15 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067180 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ANALYSING THE FACTORS AFFECTING EMPLOYEE PERFORMANCE AMONG IT EMPLOYEES

(51) International classification :G06Q0010063900, G06N0020000000, G16H0050200000, G06Q0010060000, G06Q0010063500

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ANALYSING THE FACTORS AFFECTING EMPLOYEE PERFORMANCE AMONG IT EMPLOYEES ABSTRACT The invention discloses an AI-enabled framework for identifying and analyzing factors that influence employee performance in the IT sector. The system captures and processes a range of quantitative and qualitative data including task completion rates, communication frequency, and wellness indicators to generate real-time performance insights. By applying machine learning algorithms, it uncovers patterns that contribute to productivity fluctuations, enabling timely managerial interventions. The platform features an intuitive dashboard for visualization, automated performance alerts, and personalized development recommendations. This invention enhances decision-making in HRM, promotes employee engagement, and reduces attrition by offering a proactive and data-driven approach to performance management in technologically intensive work environments.

No. of Pages : 12 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067182 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ADDITIVELY FABRICATED FOLDABLE LAPTOP STAND

(51) International classification :B33Y0080000000, G06F0001160000, B33Y0010000000, F16M0013000000, A43B0013020000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The titled invention discloses additively fabricated foldable laptop stand to enhance user posture and comfort during prolonged laptop use. Utilizing additive manufacturing technology, the stand is created as a single printed structure, including integrated hinge mechanisms, eliminating the need for external hardware. This approach increases durability by removing loose parts that may wear out or misalign over time. 10 At the base of the structure is the base platform (1), which provides stable support. Attached to this base via a cylindrical pivot joint (4) is the foldable arm (6), which supports a slant resting pad (3) where the laptop rests. The foldable arm (6) is adjustable and can incline to provide ergonomic positioning. The resting pad has 15 angular resting slots (5) on its rear side, into which an adjustable support (2) fits, allowing the user to set the pad at various angles based on comfort and posture needs. This multi-angle capability helps reduce neck strain and improves screen visibility. The air vent slots (7) allow for improved airflow beneath the laptop, reducing heat accumulation and thereby enhancing the laptop's performance and longevity

No. of Pages : 14 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067183 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ADDITIVELY FABRICATED UNIVERSAL FIXTURE WITH SOFT GRIPPERS FOR POLYMERS AND FRAGILE MATERIALS

(51) International classification :B33Y0080000000, B33Y0010000000, B25J0015120000, B33Y0030000000, B25J0015080000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The titled invention discloses an additively fabricated universal fixture with soft grippers for polymers and fragile materials which presents a cost-efficient, light, and versatile fixture solution that improves precision, efficiency, and flexibility of part handling within manual and automated manufacturing systems. The universal fixture system includes stability providing features such as base plate 10 (1), fixing slot (2), swivel support (3) and dual vertical columns (4). The fixture platform can be joined to the supportive structure using pivot joint which connects them between the dual vertical columns (4) which are also 3D printed in ABS material. The clamping features that locks the fragile material placed on the fixture platform includes a fixed jaw (9), movable jaw (8) attached to the screw rod (7) which moves when 15 actuated using the handle wheel (6) provided at the rear end of the rod. The inner side of both jaws are attached with soft grippers (10) which prevents fragile material from getting damaged when the jaw tightens the work piece. The system reduces setup time and manufacturing cost in the form of a universal fixture. The design of the system also facilitates better adaptability to automation and robotic systems for flexible CII 20 manufacturing environments.

No. of Pages : 18 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067184 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : DYNAMIC PATH FINDING USING BIDIRECTIONAL RRT AND SARSA

(51) International classification :G05D0001000000, B25J0009160000, G06N0003006000, G05B0019406100, G06N0020000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention discloses a hybrid path planning framework, BiRRT-A, that integrates Bidirectional Rapidly-exploring Random Trees (3) with SARSA(A) 5 -reinforcement learning (4) for autonomous mobile robots. The system initiates from a Start Node (1) and a Goal Node (2), with dual tree expansion guided by a Goal Biasing Sampler (7) to accelerate convergence. A Q-Table (5) and Eligibility Traces Mechanism (6) allow the robot to learn from interaction and adapt its actions in real time. Collision-free path generation is ensured by a Collision Checker (8) and Steering 10 Function (9). A Reward Function (10) directs the learning process toward efficient, safe trajectories. Once a path is formed, a Path Refinement Unit (11) optimizes the trajectory for smooth execution. An Obstacle Detection System (12) continuously feeds environmental updates to adapt the path in dynamic scenarios

No. of Pages : 15 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067185 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : AN EMPIRICAL STUDY ON GREEN HUMAN RESOURCE MANAGEMENT PRACTICES IN SELECTED IT SECTORS IN TELANGANA

(51) International classification :G06Q0010063700, G06Q0010063900, G06Q0010105000, G06Q0030020300, G06Q0010060000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

AN EMPIRICAL STUDY ON GREEN HUMAN RESOURCE MANAGEMENT PRACTICES IN SELECTED IT SECTORS IN TELANGANA ABSTRACT This invention investigates the implementation of Green Human Resource Management (GHRM) practices in selected IT sectors in Telangana. The research focuses on understanding how IT companies incorporate sustainable practices into their HR processes, including recruitment, training, performance management, and employee engagement. The study aims to assess the effectiveness of these practices in promoting environmental sustainability within organizations and their alignment with corporate social responsibility goals. A survey and interview-based empirical research methodology was employed, gathering quantitative data through surveys and qualitative insights from HR managers and employees via interviews. The data was analyzed using data analytics software to identify trends, challenges, and opportunities in adopting GHRM practices. The findings reveal how GHRM contributes to reducing environmental impacts, enhancing employee engagement, and improving corporate sustainability. The study provides a framework for IT companies to integrate green practices into their HR systems, offering practical recommendations for fostering a sustainable workforce.

No. of Pages : 13 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067187 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : ADVANCED QUEUE MANAGEMENT SYSTEM TO REDUCE CUSTOMER WAITING TIME

(51) International classification :H04M0003523000, G06Q0010063100, H04M0003420000, G07C0011000000, G06Q0010020000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT Title: ADVANCED QUEUE MANAGEMENT SYSTEM TO REDUCE CUSTOMER WAITING TIME The titled invention discloses advanced queue management system to reduce customer waiting time. It utilizes AVR microcontroller to manage large customer flows by reducing wait times and enhancing service efficiency. The system features a token dispenser unit (1) which includes a microcontroller (2) and a touchscreen user input 10 interface (3) that enables customers to select their desired service category. Based on the selected type, the microcontroller (2) generates token number following unique token assignment rules, including "first-come- first-served," "served in random order," and custom priority-based grouping, optimizing the service order. The system's low power requirements make it ideal for resource-limited environments, maximizing 15 operational efficiency in rural and urban settings. The master display system (5) shows real-time token progress and directs customers to the appropriate counter. The operator desk module (7) triggers a visual alert to call the next token number. Audible alert system (6) provides sound notifications to call the next token number. All components communicate via LAN (8), allowing synchronized updates and efficient system coordination

No. of Pages : 13 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067190 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : AN EMPIRICAL STUDY ON GREEN HUMAN RESOURCE MANAGEMENT PRACTICES IN IT SECTORS OF TAMIL NADU

(51) International classification :G06Q0010063900, G06Q0010063700, G06Q0010105000, G06Q0010105300, G06Q0030020300

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

AN EMPIRICAL STUDY ON GREEN HUMAN RESOURCE MANAGEMENT PRACTICES IN IT SECTORS OF TAMIL NADU
ABSTRACT This invention explores the adoption and impact of Green Human Resource Management (GHRM) practices within the Information Technology (IT) sectors of Tamil Nadu. With increasing global environmental concerns, organizations are integrating sustainability into their HR strategies. The study examines how IT companies in Tamil Nadu incorporate green practices into recruitment, training, performance management, and employee engagement. Data was collected through surveys and in-depth interviews with HR managers and executives to understand the scope and effectiveness of these practices. The study finds that GHRM practices are positively linked to improved employee satisfaction, organizational reputation, and environmental responsibility. Moreover, companies that adopt green HR strategies experience enhanced employee retention and a stronger commitment to sustainability. The research highlights the growing significance of GHRM in IT sectors and suggests that companies can leverage these practices to build a sustainable organizational culture. The study offers practical recommendations for organizations aiming to implement effective GHRM policies.

No. of Pages : 12 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067191 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : MACHINE LEARNING-DRIVEN NANOTECHNOLOGY-BASED BIOMEDICAL DEVICES FOR CANCER DIAGNOSTICS AND THERAPEUTIC APPLICATIONS

(51) International classification :G06N3/08, A61B5/00,
G16H50/20
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application :NA
Number :NA
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(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Machine Learning-Driven Nanotechnology-Based Biomedical Devices for Cancer Diagnostics and Therapeutic Applications is the proposed invention. The proposed invention focuses on understanding the functions of Nanotechnology Based Biomedical Devices. The invention focuses on analyzing the parameters of Cancer Diagnostics and Therapeutic Applications using algorithms of Machine Learning Approach.

No. of Pages : 13 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067192 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-BASED FAULT DETECTION AND RECOVERY SYSTEM FOR IOT COMMUNICATION NETWORKS

(51) International classification :H04L0041065400, G07C0005080000, H04L0041063100, G06F0011070000, G06N0005040000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

The system (100) includes a data acquisition unit (102), a processor unit (104), an AI inference engine (106), a fault detection module (108), a recovery decision engine (110), a communication interface (112), and a database (114). The data acquisition unit (102) receives data from the IoT nodes and sensors. The processor unit (104) processes the received data for preprocessing and feature extraction. The AI inference engine (106) classifies the data to detect any anomalies or faults. The fault detection module (108) verifies and validates the faults identified by the AI inference engine (106). The recovery decision engine (110) determines suitable recovery actions based on fault classification. The communication interface (112) delivers alerts, reports, and reconfiguration commands to network elements. The database (114) stores the historical data, detected faults, and recovery actions for training and future reference. The invention facilitates real-time, intelligent network maintenance and fault recovery in large-scale IoT infrastructures, promoting service continuity and automation.

No. of Pages : 13 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202544067195 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SMART MILK SPOILAGE DETECTOR

(51) International classification

(31) Priority Document No

(32) Priority Date

(33) Name of priority country

(86) International Application No

Filing Date

(87) International Publication No

(61) Patent of Addition to Application Number

Filing Date

(62) Divisional to Application Number

Filing Date

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G06Q0010087000,
H04L0067120000,
G01N0033020000,
A63B0067020000

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(57) Abstract :

This project presents the development of a sensor-integrated digital device aimed at assessing the freshness of milk in real-time. Given milk's highly perishable nature, early detection of spoilage is essential for ensuring consumer safety and minimizing losses. The system employs a combination of pH, temperature, and gas sensors, connected to an Arduino Nano, to monitor critical indicators of spoilage. The collected data is displayed on an OLED screen, allowing users to easily interpret the milk's quality status. The structural design of the device was created using AutoCAD software, and a functional prototype was successfully developed. By implementing IoT-based components, the system enables continuous and remote monitoring of milk freshness. This ensures timely decision-making in both domestic kitchens and commercial dairy operations. Additionally, the device's simple interface and compact structure make it user-friendly and adaptable to various storage environments. Overall, this innovation promotes hygienic practices and enhances quality assurance in the dairy supply chain.

No. of Pages : 10 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067193 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ASSESSING ENTREPRENEURIAL INTENTION AMONG ENGINEERING STUDENTS IN COIMBATORE DISTRICT

(51) International classification :G06Q0040060000, G06Q0010063700, G06Q0040000000, G06Q0050200000, G06Q0030060100

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

ASSESSING ENTREPRENEURIAL INTENTION AMONG ENGINEERING STUDENTS IN COIMBATORE DISTRICT ABSTRACT This invention explores the entrepreneurial intentions of engineering students in Coimbatore District, focusing on the factors that influence their aspirations to pursue entrepreneurship. The research aims to identify key elements such as personal attitudes, societal influences, perceived opportunities, and barriers that impact students' entrepreneurial mindset. Using a mixed-method approach, both quantitative surveys and qualitative interviews are conducted to capture a holistic view of the students' motivations and challenges. The findings provide valuable insights into the factors that encourage or hinder entrepreneurial thinking, with particular attention to financial concerns, risk aversion, and lack of perceived opportunities. Based on these insights, recommendations are made for educational institutions to design programs that foster entrepreneurial skills and address the barriers identified. The research also offers useful implications for policymakers and investors, supporting the development of an ecosystem that encourages entrepreneurship and innovation among young engineers in the region.

No. of Pages : 12 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067196 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SMART WATER ABSENCE DETECTION AND NOTIFICATION MECHANISM FOR COOKING VESSELS

(51) International classification :A47J31/56, A47J27/21,
A47J27/09, G08B21/18
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to :NA
Application Number :NA
Filing Date :NA
(62) Divisional to Application :NA
Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT Title: SMART WATER ABSENCE DETECTION AND NOTIFICATION MECHANISM FOR COOKING VESSELS The titled invention discloses smart water absence detection and notification mechanism for cooking vessels to prevent dry heating by continuously monitoring the water level within a vessel The system includes temperature sensor (1) affixed to the 10 outer base of the cooking vessel (3) to detect thermal behaviour during heating. In the presence of water, heat is absorbed gradually, resulting in stable temperature readings and the absence or low level of water causes a rapid temperature increase. Sensor data is processed in real time by the microcontroller (2) programmed with threshold values to determine water conditions. Upon departing a dry-run state, the 15 system activates an alert mechanism comprising buzzer (5) and LED indicator (6) to notify the user locally. The wireless module (7) transmits remote alerts via Bluetooth or Wi-Fi to paired mobile devices. The system is powered by an integrated rechargeable Li-ion battery, ensuring continuous and autonomous operation.

No. of Pages : 14 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067197 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : MICROCONTROLLER CONTROLLED NEEDLE BASED SELF CLEANING MECHANISM FOR FLUSHER NOZZLES

(51) International classification :A61M0003020000, A61M0025000000, H01L0021670000, A61M0037000000, H04N0001000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT Title: MICROCONTROLLER CONTROLLED NEEDLE-BASED SELF-CLEANING MECHANISM FOR FLUSHER NOZZLES
5 The titled invention discloses a microcontroller controlled needle-based self-cleaning mechanism for flusher nozzles. The flusher comprising a spray head (1) fitted with water outlet holes (3) for controlled water dispersion. A nozzle chamber (2) houses a motor-driven actuator (4) connected to a movable base plate (10) that holds microneedles (9) aligned with the outlet holes (3). The mechanism is controlled by a microcontroller (6) which receives input from a clog detection sensor (8) and can also be operated by an external activation switch (7) in case of sensor failure. The required power is supplied through a battery interface (5), and all components are enclosed within a waterproof enclosure (11) for protection and safe operation in wet conditions.

No. of Pages : 16 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067198 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Compact Butane Gas Incinerator with in-built Shredder Mechanism & Air Pollution Controller : for Hospital/Lab Non Metal Solid Medical Waste & Household Non Metal Solid Waste Management

(51) International classification :C07C0005333000, F23G0007060000, F23J0015020000, B01J0023300000, B09B0003000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

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Filing Date :NA

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Incineration is one of the effective ways for disposal of wastes. The objective of this Invention is incineration of Hospital/Lab non-metallic Medical Solid wastes like used cotton, used bandage, used gloves, used Plastic Syringe, other medical plastic wastes, used condoms & sanitary napkins which are Hazardous & Contaminant to environment, in safer and effective way. It is also suitable for incineration of Household non-metallic solid wastes like Paper waste, cardboard, thermocol & Plastic based wastes.

No. of Pages : 51 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067199 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : INNOVATIVE MANUAL HEIGHT MEASURING DEVICE WITH LASER BEAM

(51) International classification :A61B0005000000, A61B0005107000, G01B0003105600, G01B0003107100, B23K0026080000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT Title: INNOVATIVE MANUAL HEIGHT MEASURING DEVICE WITH LASER BEAM The titled invention discloses innovative manual height measuring device with laser beam to measure height of the subject without close contact. 10 The device comprises vertical stand on the patient's end (1) with a movable height slider (3) that rests on the subject's head. On the opposite, there is a vertical stand on operator end (4). The measuring scale (5) with laser beam (6) emitting module is mounted on the vertical stand on operator end (4). The measuring scale (5) is moved to align the laser beam with the marking in the height slider (3). The reading in the 15 measuring scale (5) indicates the subject's height, enabling precise readings from a distance.

No. of Pages : 13 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067200 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : INNOVATIVE MANUAL HEIGHT MEASURING DEVICE

(51) International classification :A61B0005107000, A61B0005000000, G16H0040200000, A63B0001000000, G16H0040670000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT Title: INNOVATIVE MANUAL HEIGHT MEASURING DEVICE .The titled invention discloses an innovative manual height measuring device which 5 helps to find accurate measurement of a patients height without the need for physical proximity or contact. The device consists of a vertical bar (1), adjustable horizontal bar (2) comprised with dropping arm (3) for patient at one end whereas the vertical arm indicator (4) at other end pointing the measuring scale (5) placed nearby. This non-contact approach 10 reduces the risk of cross-contamination and maintains sanitary conditions, while retaining simplicity, robustness, and ease of use. The foldable and lightweight structure of the device further enables convenient storage and transportation, making it a cost-effective solution for health care facilities, schools, and community health campaigns.

No. of Pages : 12 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067201 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : System and Method for Breast Cancer Diagnosis Using Multi-Modal Deep Learning Approaches

(51) International classification :G01N0033574000, G16H0010200000, G16H0050300000, G16H0050700000, G16H0050200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Breast cancer remains a critical health problem facing throughout the world, requires accurate and timely detection for effective treatment and improved patient outcomes. Recently, ML and DL methods have drawn a lot of interest for their potential to enhance breast cancer detection and diagnosis. This invention offers a thorough evaluation of the most recent findings in the field of ML and DL-based breast cancer diagnosis. This presents the combination of existing methods that highlights the significant features in this field, while also identifying areas for future research, includes the combination of recent technologies, real-world validation, and clinical adoption

No. of Pages : 15 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067222 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SAFETY NASAL WORN MASK FOR NAUSEA PREVENTION DURING LONG DISTANCE ROAD TRAVEL

(51) International classification :A61M0016060000, A61P0001080000, G08G0001010000, G06Q0050140000, B64C0037000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT Title: SAFETY NASAL WORN MASK FOR NAUSEA PREVENTION DURING LONG DISTANCE ROAD TRAVEL The invention relates to a nasal-worn safety mask designed to prevent motion sickness during long-distance road travel. The mask includes an inner layer (1) infused 5 with anti-nausea aromatic substances such as peppermint or ginger. It features a nasal cover (4) and a mouth cover (6), supported by a head strap (3) and a neck strap (2) for stable positioning. An air filter (5) is placed in front of the mouth to ensure clean air intake. A perfume holding pouch (8) is integrated for containing and replacing aroma sources. Sponge ear plug buds (9) connected by a string (1 0) are!! provided on 1 0 both sides to reduce ambient noise. The outer layer (7) encloses all components, offering structure and protection

No. of Pages : 16 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067223 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SELF-OPERATED MEDICAL APPOINTMENT SCHEDULING TERMINAL WITH DOCTOR AVAILABILITY TRACKING AUTOMATED TOKEN DISPENSING SYSTEM

(51) International classification :G06Q0010020000, G06Q0010109300, G16H0040200000, A61G0015120000, A61B0009000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Abstract The titled invention discloses a self-operated medical appointment scheduling terminal with doctor availability tracking and automated token dispensing system. The system comprises an electronic booking terminal (1) equipped with an LCD touch screen (2), control knobs (3), and a token dispensing port (4), all mounted on a table (5) for 1 0 convenient and stabled placing in hospital premises. The system allows patients to enter their identity file number and search for 'their desired doctor through the monitor display. The screen presents the real-time availability of doctors along with their prescribed appointment times, enabling patients to select their preferred slot. After confirmation of the appointment, the system automatically generates and 15 delivers a paper token containing the appointment time and relevant patient details, paving an automated way for the entire booking process and reducing manual intervention.

No. of Pages : 15 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067224 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ADJUSTABLE DUAL SIDE ROTARY TRIMMING DEVICE FOR HIGHWAY MEDIAN PLANT MAINTENANCE

(51) International classification :A01G0003080000, A01G0003040000, B60K0007000000, H04N0007180000, H01L0023000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT Title: ADJUSTABLE DUAL SIDE ROTARY TRIMMING DEVICE FOR HIGHWAY MEDIAN PLANT MAINTENANCE The invention relates to an adjustable dual side rotary trimming device for highway median plant maintenance. It includes a four-legged base frame (1) with wheels and 5 side wall protection (6) for mobility and safety. Extensible hubs (2) with height adjuster locks (3) enable vertical adjustment to match plant height. A width adjuster frame (4) with width adjuster locks (5) allows lateral positioning of the cutters to suit varying median widths. A ceiling plate (7) supports drive motors (8) that power rotary trimmer saws (9) suspended on both sides for simultaneous trimming. The controller interface I 0 (1 0) manages motor operation and cutting speed. The device ensures efficient, uniform, and safe trimming along highway medians.

No. of Pages : 16 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067225 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : UNIVERSAL SLIP GAUGE WITH ADJUSTABLE FRACTIONAL MEASUREMENT TO REPLACE FIXED SIZE SLIP GAUGES

(51) International classification :H02J0007000000, H04N0007150000, G01B0005060000, C22C0021000000, G01B0005000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT Title: UNIVERSAL SLIP GAUGE WITH ADJUSTABLE FRACTIONAL MEASUREMENT TO REPLACE FIXED SIZE SLIP GAUGES The invention relates to a universal slip gauge device with adjustable fractional measurement, designed to replace fixed-size slip gauges. It comprises a table top 5 base (1) and a base platform (2) supporting a vertically movable top surface plate (3). A height adjuster knob (4) is manually rotated, transmitting motion through a horizontal lead screw (5) and screw hub (6) to a gearbox (7). The gearbox (7) converts the rotary motion into vertical displacement via a vertical lead screw (8). The resulting gap between the top surface plate (3) and base platform (2) is displayed in real-time on an LCD display (9). Users can operate the system through control set switches (10) for functions like reset and calibration. A recharge port (11) powers the device for portable and uninterrupted use.

No. of Pages : 15 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067226 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : DINING TABLE INTEGRAL CHILL/HOT WATER DISPENSER AND WATER STORAGE TANK

(51) International classification :E03C0001040000, A47B0031000000, B67D0001080000, B67D0003000000, H01H0009000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

DINING TABLE WITH INTEGRAL CHILL I HOT WATER DISPENSER AND WATER STORAGE TANK The invention discloses a dining table (1) integrated with a water dispensing system that provides both hot and chilled water. A base deck (2) beneath the tabletop houses 5 a water storage tank (3), a chiller/heater unit (4), and a water pump (5). Water is delivered through a water discharging hose (6) connected to a dispensing spout (7) mounted on the tabletop. A water holder placing pad (8) is positioned below the spout (7) to securely hold cups or bottles. Users operate the system using a control tap (9) and a tap selector (1 0) located on the tabletop. The system allows on-demand I O dispensing with selectable temperature control. All components are enclosed within the table to maintain a clean and compact design.

No. of Pages : 15 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067235 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Deep Feature-Based Unified Image Similarity Detection

(51) International classification :G06N0003080000, G06N0003045000, G06V0010460000, G06F0018220000, G06T0007000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

With the rapid expansion of digital content across platforms and repositories, managing duplicate and near-duplicate images has emerged as a critical challenge in areas such as cloud storage, digital forensics, content management systems, and online media platforms. Traditional approaches to image similarity detection—whether reliant solely on deep learning or handcrafted features—often struggle to deliver consistent accuracy under real-world distortions, including cropping, noise, compression, blurring, and rotation. This invention proposes a novel hybrid framework for unified image similarity detection, integrating the strengths of Convolutional Neural Networks (CNNs) with a suite of feature-based similarity metrics. The framework leverages deep architectures such as VGG16, ResNet50, and InceptionV3 to extract high-level semantic representations, which are complemented by traditional descriptors like Structural Similarity Index (SSIM), histogram comparison, perceptual hashing, and keypoint-based matching techniques such as ORB and SIFT. To ensure robustness, the methodology encompasses preprocessing steps for normalization and distortion simulation, followed by multi-level feature extraction and the computation of various similarity scores. These are aggregated into a weighted feature matrix, and a threshold-based decision mechanism—primarily driven by cosine similarity between deep embeddings—determines image duplication, supported by auxiliary metrics. An iterative deletion strategy is then applied to retain the most representative image instance while eliminating redundant duplicates, thereby enhancing storage efficiency and content integrity across platforms.

No. of Pages : 19 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067236 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : GyroSense: IoT-Driven Maternal Health Monitoring for Rural Pregnant Women Using Gyroscopic Tilt Detection

(51) International classification :A61B0005000000, G16H0040670000, G16H0050300000, A61B0005020500, G16H0010600000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses an IoT-based healthcare monitoring system designed for rural pregnant women, enabling real-time tracking of maternal vital signs and fetal orientation. The system integrates an accelerometer (gyroscopic) sensor placed on the maternal abdominal wall to detect fetal tilt across three axes (X, Y, Z). Data is continuously monitored and transmitted via IoT to a cloud platform, facilitating remote access by healthcare providers. This invention aims to bridge the gap in prenatal care in rural areas by providing early detection of abnormalities and timely medical intervention through automated alerts and data analytics. It is an IoT-based wearable health monitoring device designed to address health neglect in busy lifestyles. It tracks vital metrics such as heart rate, oxygen saturation, and body temperature using sensors like MAX30100 and DHT11, integrated with Arduino and Bluetooth for real-time data transmission. Features include GPS tracking, fall detection, hydration alerts, and battery monitoring. The device displays real-time health data and sends proactive alerts, enabling users to make informed decisions and maintain better health. IoT-based healthcare is a rapidly growing field, especially beneficial for elderly and disabled individuals. This project supports senior citizens living alone or with minimal assistance and proves helpful when family members are away. It enables continuous health monitoring, reducing the need for frequent doctor visits, and is especially valuable for patients requiring regular medical supervision.

No. of Pages : 24 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067247 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : IMPROVING THE EMOTIONAL ERGONOMICS OF HEALTH CARE PROFESSIONALS USING EMOTIONAL AND ARTIFICIAL INTELLIGENCE

(51) International classification :A61B5/16, G16H20/70
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

IMPROVING THE EMOTIONAL ERGONOMICS OF HEALTH CARE PROFESSIONALS USING EMOTIONAL AND ARTIFICIAL INTELLIGENCE ABSTRACT This invention focuses on improving the emotional ergonomics of healthcare professionals by integrating emotional intelligence (EI) and artificial intelligence (AI). The method involves real-time emotional monitoring, where physiological data, such as heart rate, facial expressions, and skin temperature, are continuously collected via a wearable biometric device. The AI system processes this data to assess the emotional state of healthcare workers, detecting early signs of stress, burnout, or anxiety. Based on the analysis, the system provides personalized interventions, such as relaxation techniques, mindfulness exercises, or motivational messages, tailored to the individual's emotional needs. The wearable biometric device serves as a crucial tool, allowing for continuous monitoring without interrupting the workflow of healthcare professionals. This system not only supports individual emotional well-being but also provides valuable insights for healthcare organizations to address systemic issues related to emotional health. The invention aims to enhance both the mental health of healthcare workers and the quality of patient care.

No. of Pages : 13 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067374 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-Driven Threat Intelligence Sharing across Decentralized Networks

(51) International classification :H04L0009400000, G06F0021620000, G06N0020000000, G06F0021600000, G06F0021570000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The integration of AI with decentralized networks for threat intelligence sharing represents a significant advancement in cybersecurity. This approach combines the benefits of decentralized systems, such as block chain or peer-to-peer networks, with the capabilities of AI to enhance the detection, analysis, and response to emerging cyber threats. Threat Intelligence: Refers to the collection, analysis, and dissemination of information related to potential or existing threats to cybersecurity. This intelligence helps organizations preemptively identify risks and vulnerabilities in their systems. Decentralized Networks: Unlike centralized networks where data flows through a single point, decentralized networks distribute data across multiple nodes, ensuring no single point of failure. This makes it more resilient to attacks and supports secure peer-to-peer communication. AI-Driven Systems: AI and machine learning algorithms analyze large volumes of threat data in real time, identifying patterns and predicting potential risks faster than traditional methods. AI can also help automate responses to detected threats. Advantages of AI-Driven Threat Intelligence in Decentralized Networks Enhanced Data Privacy: In decentralized networks, sensitive information can be shared securely without relying on a centralized authority. AI models, particularly federated learning, can train on locally stored data without transferring it, preserving privacy. Faster Detection and Response: AI models excel at processing and analyzing large amounts of data from multiple sources in real time. This means threats can be identified and mitigated more rapidly than in centralized systems. Resilience to Attacks: Decentralized networks are less vulnerable to Distributed Denial of Service (DDoS) attacks or data breaches, as the network does not have a single point of failure. AI models can work across these nodes, continuously learning and updating threat intelligence across the entire network. Collaborative Intelligence Sharing: Decentralization allows for open collaboration across multiple entities, including governments, private sector companies, and individual users, to share threat intelligence in a secure and trusted manner. AI can standardize the information shared and ensure that relevant threats are quickly flagged for all nodes. Automated Adaptation to New Threats: With decentralized AI, systems can autonomously adapt to new and evolving threats. AI can detect previously unseen attack vectors and ensure that all participants in the network are informed of emerging threats. AI-driven threat intelligence sharing across decentralized networks offers a powerful framework for improving global cybersecurity. By leveraging AI's data analysis capabilities with the robust, distributed nature of decentralized networks, organizations can share threat intelligence more securely and respond to cyber threats more quickly and effectively. However, overcoming challenges related to interoperability, trust, and scalability will be essential to fully realizing the potential of this approach.

No. of Pages : 5 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067375 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Smart RFID and AI-Integrated Fuel Dispensing System for IoT-Driven Operations

(51) International :G06Q0050060000, G06Q0010063100,
classification G06Q0050260000, G06Q0010040000,
G07F0013020000
(86) International :NA
Application No :NA
Filing Date :NA
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Publication No : NA
(61) Patent of Addition :NA
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(57) Abstract :

An automated gasoline pump system leveraging RFID technology streamlines the fuel dispensing process by enabling immediate delivery based on the balance of a prepaid RFID card. Each user is issued a unique RFID card, which can be recharged with prepaid funds. This microcontroller-based system significantly reduces the need for manual intervention, ensuring accurate fuel dispensing and enhancing security by rejecting unauthorized cards. The system is designed to optimize efficiency by minimizing human error, reducing monitoring requirements, lowering operational costs and providing valuable data for informed decision-making. Users can specify the desired fuel amount through a keypad, and the system calculates the pump's operational duration to dispense the exact amount. Once the specified value is reached, the pump automatically shuts off, ensuring precision and convenience. With its wide applicability and real-time capabilities, RFID technology serves as a robust solution for improving operational effectiveness and security in fuel management systems. Integrating AI into an RFID-based automated gasoline pump system can revolutionize its functionality, making it more efficient, intelligent, and customer-centric. AI-powered predictive analytics can optimize fuel inventory management by forecasting demand, reducing shortages and overstocking. Dynamic pricing models can leverage real-time data to adjust fuel prices based on factors like demand and market conditions, maximizing revenue while offering competitive rates. AI can enhance security by detecting fraudulent activities through transaction pattern analysis, ensuring the system is robust and secure. Additionally, personalized customer experiences can be created using AI-driven profiling, offering tailored loyalty rewards, promotions and reminders for card top-ups. Real-time monitoring enabled by AI can predict maintenance needs, minimizing downtime and ensuring uninterrupted service. By integrating with smart city networks, the system can share data for traffic management and sustainable fuel distribution, contributing to eco-friendly urban development. AI-powered chatbots can improve customer support by handling inquiries and assisting with transactions, reducing reliance on staff. Furthermore, energy efficiency can be enhanced by optimizing the fuel pumps' power usage based on AI analysis, lowering operational costs. The system can also gather insights into customer behavior, such as peak fueling times, to improve station planning and operations. Finally, AI integration positions the system for future advancements, such as seamless refueling for autonomous vehicles, making it a forward-thinking solution for modern fuel management. The integration of RFID, AI and IoT into the intelligent fuel pump system can greatly enhance its role in smart city and government projects by providing real-time data and improving overall operational efficiency. In smart cities, the system can be used to optimize energy use by dynamically adjusting fuel delivery across multiple fueling stations based on real-time traffic patterns and consumption data. This integration would allow for seamless coordination between various urban services, ensuring that fuel resources are distributed effectively while minimizing waste. Additionally, by integrating with other smart city systems, the fuel pump network could contribute to urban mobility initiatives, such as electric vehicle (EV) charging, reducing congestion and lowering emissions in the process. For government projects, the system could support large-scale initiatives such as national fuel distribution programs, emergency response systems, or military logistics. Real-time data captured through the IoT sensors and RFID technology could be used to monitor fuel usage across government-owned vehicles, helping reduce fuel fraud, ensure efficient resource allocation, and support effective fleet management. AI-driven insights could be used to forecast fuel demand and optimize distribution, making the entire fueling process more cost-effective and environmentally friendly. Furthermore, by linking the system with national or regional energy policies, governments could ensure that fuel management practices align with sustainability targets and evolving energy regulations.

No. of Pages : 7 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067376 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-Driven Soil Stability Analysis and Landslide Prediction Using Multi-Sensor Networks with Edge Computing and Jetson Nano Integration

(51) International classification :G01S0013880000, G08B0021100000, G01V0001010000, G01N0033240000, H02J0013000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
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Filing Date :NA

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(57) Abstract :

Landslides pose a significant threat to mountainous regions, often leading to catastrophic damage and loss of life. Existing methods for landslide prediction typically rely on limited data sources and infrequent monitoring, leading to delays in early warning systems. Previous patents and technologies have explored individual sensor applications, such as Ground-Penetrating Radar (GPR) and seismic sensors, but lack the integration of a comprehensive multi-sensor approach coupled with real-time data processing and predictive analytics. A notable example of landslide risk in recent history is the Wayanad district in Kerala, India, which has experienced severe landslides due to heavy monsoon rains and unstable soil conditions. The lack of real-time monitoring and predictive tools in such regions has underscored the need for advanced systems that can provide early warnings and detailed soil stability assessments. The present invention addresses these challenges by proposing an innovative system for real-time soil stability analysis and landslide prediction. This system employs a network of 40 slave kits, each equipped with a suite of advanced sensors including GPR, seismic sensors, Electromagnetic Induction (EMI) sensors, ultrasonic transducers, LiDAR, capacitance probes, gravimeters, Electrical Resistivity Tomography (ERT) sensors, and magnetometers. Each sensor is integrated onto a Teensy 4.1 microcontroller board with an ESP8266 module for wireless data transmission. The data from these sensors is transmitted to a central master unit featuring a Jetson Nano module and a display interface. The Jetson Nano processes the incoming data using sophisticated AI algorithm called ALEXNET+BILSTM model, delivering real-time insights into soil density, mechanical properties, and landslide risk, especially during rainy conditions. This system enhances early warning capabilities by leveraging edge computing for rapid data analysis and decision-making, addressing the limitations of existing technologies. By integrating these diverse sensing technologies and advanced AI processing into a scalable, wireless network, this invention provides a robust and cost-effective solution for mitigating landslide risks. The system represents a significant advancement in environmental monitoring, offering enhanced safety and resilience for communities in landslide-prone areas.

No. of Pages : 11 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067377 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Micro-Electromechanical System Based Micro Automatic Positive Airway Pressure (APAP) Therapeutic Device for Obstructive Sleep Apnea

(51) International classification :A61M16/06,
A61M16/00
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

Obstructive Sleep Apnea (OSA) is a common sleep-related breathing disorder that affects approximately 13.7% of the global population. The primary treatment uses Continuous Positive Airway Pressure (CPAP) or Auto-Adjusting Positive Airway Pressure (APAP) therapy to keep the airway open during sleep. However, conventional CPAP/APAP devices are often bulky, expensive, and connected with long hoses that can disrupt sleep and restrict movement, resulting in discomfort and reduced patient satisfaction. Pulmonologists at PSG Hospitals and Hindusthan Hospitals in Coimbatore, along with Apollo Hospitals in Chennai, have confirmed the development of the proposed Auto-Adjusting Positive Airway Pressure (APAP) device. The problem statement was collaboratively defined by sleep lab technicians, pulmonologists, and patients diagnosed with OSA. While a CPAP machine delivers air at a constant pressure, an APAP adjusts the air pressure automatically according to an individual's breathing effort, which varies throughout the night. This ensures that the airway pressure remains optimal, allowing patients to sleep comfortably. Typically, OSA patients require pressures ranging from 4 to 20 cm H₂O, which is the range provided by standard CPAP and APAP machines. However, conventional CPAP/APAP devices often disturb patients during sleep due to their size and the interference of attachments and hoses. These devices are relatively large and the hose makes changing sleep positions uncomfortable and restrictive. Therefore, there is a clear need for a more comfortable, non-intrusive device to support undisturbed sleep. Some of the key drawbacks of current CPAP and APAP machines include: i) Bulky design ii) Lack of portability, making them inconvenient for travel. To address these limitations, a micro APAP device is being developed that reduces the size and eliminates obstructive hoses, delivering the required air pressure directly to the nasal cavity. This device will be battery-operated and designed to be user-friendly, allowing patients greater freedom of movement and comfortable sleep positions, unlike existing CPAP/APAP systems.

No. of Pages : 19 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067288 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : METHOD OF PREPARING EDIBLE GLITTER FROM FRUIT OR VEGETABLE PEEL WASTE

(51) International classification :A23L0019000000, A23N0007000000, A23L0033220000, C12N0009240000, A23L0033105000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

This invention discloses a method for producing edible glitter from fruit or vegetable peel waste, promoting sustainability and minimizing waste from fruit or vegetable processing. The process begins with the collection of fruit or vegetable fiber residues, such as pulp waste. These residues are then prepared for glitter formulation through steps like steam blanching, grinding, sieving, and homogenization to achieve a fine, uniform texture. Subsequently, fruit or vegetable peels are washed and finely chopped, followed by blending with a dissolved food-grade gelatin binder in a stainless-steel container under controlled temperature and agitation. Accordingly, the present invention addresses several critical challenges within the food processing industry and contributes significantly to sustainable practices. Fig 1

No. of Pages : 24 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067290 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : METHOD FOR PREPARING A GEOPOLYMER COMPOSITE

(51) International classification :C04B0028000000, C04B0111000000, C04B0012000000, C04B0014040000, B28B0011240000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present disclosure pertains to a method (100) for preparing a geopolymer composite including mixing (102) a predetermined amount of precursors with an alkaline activating solution to prepare a geopolymer mortar. The method (100) includes incorporating (104) a predetermined volume fraction of fibres into the geopolymer mortar to form an engineered geopolymer mortar (304). Further, the method (100) includes embedding (106) at least one fabric layer (302) within the engineered geopolymer mortar (304) to prepare the geopolymer composite. The method (100) enhances mechanical properties such as compressive, tensile and flexural strength, improves durability and crack resistance, and enables sustainable construction practices.

No. of Pages : 21 No. of Claims : 11

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067291 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A CONTROL SYSTEM FOR PROVIDING SAFETY TO A VEHICLE AND A CONTROL METHOD THEREOF

(51) International classification :G07C0005080000, B60W0050000000, G01C0021360000, G08G0001096700, G07C0005000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

A control system (100) and a control method (200) for providing safety to a vehicle (110) are disclosed. The system (100) can include a control unit (190) configured to: identify, using a map integration module (120), at least one geographic location requiring a predefined vehicle speed; adjust, using a speed control module (130), revolutions per minute (RPM) of an engine (102) of the vehicle (110); detect, using a crash detection module (140), a collision event of the vehicle (110); store, at an event data recorder (EDR) (150), a pre-collision event data; transceive, via a communication module (160), a real-time vehicle information of the vehicle (110); analyse, using a computing module (170), the real-time vehicle information for accident prevention, road structure redesign, and traffic management; and adjust, via an advanced driver assistance system (ADAS) (180), a real-time speed of the vehicle (110) to the predefined vehicle speed.

No. of Pages : 21 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067292 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR AUTONOMOUS CHARGING OF MULTIPLE UNMANNED AERIAL VEHICLES

(51) International classification :B64C0039020000, H02J0007000000, B60L0053160000, B60L0053660000, B64F0001000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A system 100 for an autonomous charging of an aerial vehicle (UAVs) 202 can include a charging station 100A configured with a plurality of dual arm structures 106, where each dual arm structure 106 includes a pair of sub-arms 112. Each sub-arm 112 includes a plurality of servo motors 114 to facilitate precise docking of one or more UAVs 202 on at least one landing pad 108 integrated with each sub-arm 112. The landing pads 108 includes one or more conducting plates 118. A controller 204-6 operatively coupled with charging station 100A to initiate docking assistance to one or more UAVs 202 and align at designated launching pad 108 to accomplish docking and establish electrical connection between one or more conducting plates 118 and a corresponding one or more charging plates of docked UAV 202 to initiate energy transfer and simultaneously mission-critical data 202-1 can be transferred from docked UAV 202 to a ground station 204 during energy transfer process.

No. of Pages : 30 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067293 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR DYNAMIC QUEUE MANAGEMENT AND CONSULTATION COORDINATION IN HEALTHCARE FACILITIES

(51) International classification :G16H0010600000, G16H0040200000, G06F0021320000, G16H0040670000, H04L0009320000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

The present disclosure relates to a system (102) for dynamic queue management and consultation coordination in a healthcare facility. The system (102) includes processors (202) and memory (202) communicatively coupled thereto. The memory (202) stores instructions that, when executed, enable system (102) to receive real-time health data of user via at least one of: kiosk (112-1), mobile application (112-2), web interface (112-3), wearable sensors (112-4), or vision-based monitoring systems (112-5). The health data includes reported symptoms, triage responses, medical history, diagnoses, biometric, and visual indicators. The system authenticates check-in via biometric authentication components, including facial recognition (114-1), fingerprint scanning (114-2), or NFC-based identity verification. The system (102) analyzes health data with real-time context data using AI to prioritize user in an outpatient queue. A unique blockchain-validated digital token is generated including encrypted appointment and queue status for consultation, and grants time-bound access to electronic medical records upon user's consultation turn.

No. of Pages : 30 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067294 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR MONITORING ENVIRONMENTAL CONDITIONS

(51) International classification :H04W0004380000, G08B0021020000, H04W0004900000, H04W0084180000, H04W0004800000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
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(57) Abstract :

Embodiments of the present disclosure relate to a system (100) and method (300) for monitoring environmental conditions. The system (100) is implemented within a wearable safety helmet. The system includes a plurality of sensors (104) that continuously monitor environmental parameters such as gas concentration, temperature, humidity, and ambient light. The system (100) may analyze this data and trigger appropriate responses using a multi-actuator output array (106) for multimodal alert generation. A communication unit (108) may enable data transmission to a remote cloud infrastructure (112), supporting centralized monitoring and historical analytics. In scenarios lacking direct connectivity, a mesh networking interface (120) may ensure peer-to-peer communication across nearby systems. Supervisors may access sensor data and alerts via an interactive dashboard (126), facilitating prompt response and effective situational awareness. The system (100) may continuously monitor environmental hazards, facilitate local and remote communication, and enhance miner safety, especially in WiFi-deprived, high-risk underground environments.

No. of Pages : 30 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067304 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Transformer Load Balancing System with Overload Detection and Automatic Control

(51) International classification :H01F27/40, H02J3/26, H02H7/04,
G08B21/18
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to
Application Number :NA
Filing Date :NA
(62) Divisional to Application :NA
Number :NA
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(57) Abstract :

ABSTRACT Transformer Load Balancing System with Overload Detection and Automatic Control The invention discloses a system for real-time monitoring and automatic redistribution of electrical load across multiple transformer phases to prevent overload and ensure efficient operation. The system comprises current sensors for phase-wise load measurement, a control unit with decision-making capability, relay-operated switching devices for dynamic load transfer, and display and alert units. Upon detecting an imbalance or overload, the system initiates automatic corrective actions, including shifting of non-critical loads or activation of redundant transformers. This enhances the reliability, safety, and longevity of transformer networks without manual intervention. The system further incorporates visual indicators and real-time feedback to facilitate monitoring. Figure 5

No. of Pages : 21 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067305 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : PREPARATION, CHARACTERIZATION AND IN-VITRO ANTIOXIDANT ACTIVITY OF SILVER NANOPARTICLES OF ASPARAGUS RACEMOSUS (SHATAVARI) CHLOROFORM EXTRACT

(51) International classification :B82Y0030000000, A61K0009510000, A61K0033380000, B22F0009240000, A61P0039060000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

Herbal therapeutics face substantial pharmacokinetic challenges, including poor solubility, low bioavailability, and metabolic variability due to complex phytoconstituent interactions and lack of standardization. This study addresses these limitations by utilizing nanotechnology to improve bioavailability and therapeutic potential. The findings support the integration of A. racemosus-mediated nanoparticles as a promising, standardized herbal-based agent with antioxidant. This research explores the green synthesis of silver nanoparticles (AgNPs) using chloroform A. racemosus root extract and assesses their in vitro antioxidant activity. Phytochemical screening revealed the presence of flavonoids, alkaloids, terpenoids, steroids, phenolics, lignins, and aliphatic compounds. The synthesized AgNPs demonstrated nanoscale vesicle size and a spherical morphology with bilayer membrane structures, confirmed through morphological characterization. Compared to the extract alone, the nanoparticles exhibited significantly enhanced antioxidant activity.

No. of Pages : 17 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067306 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : AUTOMATED EGG QUALITY DETECTION AND SORTING SYSTEM WITH MACHINE VISION AND ROBOTIC HANDLING FOR POULTRY OPERATIONS

(51) International classification :G06T0007000000, G01N0021880000, B07C0005360000, B25J0015060000, B07C0005342000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT Title: AUTOMATED EGG QUALITY DETECTION AND SORTING SYSTEM WITH 5 MACHINE VISION AND ROBOTIC HANDLING FOR POULTRY OPERATIONS The titled invention discloses automated egg quality detection and sorting system where the eggs are inspected with machine vision and defective eggs are removed 10 automatically by robotic handling. The eggs arranged tray (1 0) is placed on the conveyor bed (3) for moving through various stages for quality detection and sorting. In vision inspection station (4), the UV light beam (5) is projected from below the eggs, revealing surface cracks and internal 15 defects not visible under standard lighting. The image sensing camera (6) positioned above captures high-resolution images of the UV-illuminated eggs. These images are processed to detect any abnormalities and classify eggs as defective or acceptable. The robotic pick and place arm (8) equipped with suction grippers (9) arranged in a 20 grid pattern matching the tray layout removes the defective eggs from their position. 25 The robotic pick and place arm (8) transfers the defective eggs to the rejected egg storage tray (13). The LCD monitor (11) provides real-time display of. inspection images and results. The control interface (12) enables the operator to adjust system parameters and manage operations.

No. of Pages : 17 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067307 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : MOVABLE POULTRY FARM TENT WITH PLATFORM RAISER FOR NATURAL GRAZING OF CHICKENS

(51) International classification :A01K0031220000, G07C0009000000, A01K0029000000, A61G0010000000, A01K0031000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT Title: MOVABLE POULTRY FARM TENT WITH PLATFORM RAISER FOR NATURAL GRAZING OF CHICKENS The invention relates to a movable poultry farm tent system designed to promote natural grazing and maintain poultry health. It includes a movable chassis (1) with 5 wheels (2) for relocation and a base platform (3) equipped with a perforated floor (7) for drainage and ventilation. A farm tent (4) is mounted over the platform (3) to provide shelter. A refresher fan (5) is installed inside the tent (4) to improve air circulation and reduce odour. The base platform (3) is connected to a quadra linear actuator system (6) through platform lifting arms (8) to raise or lower the platform for ground access. A I O control interface (9) manages the fan (5) and actuator (6) functions. An entrance door (10) is provided for access to the enclosure.

No. of Pages : 15 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067308 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SLAG REMOVAL SYSTEM INTEGRATING GRINDING DISC FOR CLEANING SHARP CRESTS OF LASER CUTTING SLAT BED

(51) International classification :B23K0026380000, B23K0026700000, B24B0047120000, B23K0026160000, E21D0009120000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT Title: SLAG REMOVAL SYSTEM INTEGRATING GRINDING DISC FOR CLEANING SHARP CRESTS OF LASER CUTTING SLAT BED The present invention discloses a slag removal system integrating grinding disc for cleaning sharp crests of laser cutting slat bed. The system includes a retractable handle pole (1) with an adjustable twist lock (2) and handle grip (3) for operator comfort. A switch (4) controls a disc drive motor (6) and tooth drive motor (9) that power the grinding disc (5) and slag removal tooth (8) for effective slag removal over the sharp crests and edges of serrated slat bed. A drive mechanism enclosure (7) protects the motors and moving parts such as gears and shaft etc. A slag collecting plate (10) gathers removed slag debris during cleaning. The system is powered by an electrical supply (12) and is secured with a pole fork clamping (11) for stable movement. This arrangement improves cleaning speed, reduces manual effort, extends slat life, and maintains even slat surface by keeping slat crests free from slag deposits.

No. of Pages : 19 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067309 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : MULTI COMPARTMENT ROTARY TOOL STORAGE DEVICE FOR PRECISION CUTTING TOOLS WITH TRANSPARENT ACCESS COVERS,AND ILLUMINATION

(51) International classification :B25H0003020000, F21Y0115100000, B23Q0003157000, F21V0033000000, B25H0003000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT Title: MULTI COMPARTMENT ROTARY TOOL STORAGE DEVICE FOR 5 PRECISION CUTTING TOOLS WITH TRANSPARENT ACCESS COVERS, AND ILLUMINATION The titled invention discloses multi compartment rotary tool storage device for organized, safe, and efficient storage of precision machining tools such as ceramic, 10 carbide, and diamond-tipped cutting tools. The device comprises a stable base table (1) supporting the manually rotatable rotary table (3) mounted via central shaft (2) and central hub (4). The rotary table (3) has four sides, each equipped with storage shelf (5) featuring multiple labeled tool placement slots (8) for secure and organized tool holding. Transparent flip-lock covers (6) enclose each storage shelf (5), protecting the 15 tools from dust while allowing visual inspection. LED lighting strips (7) positioned around the bottom of the rotary table (3) provide illumination to enhance tool visibility.

No. of Pages : 14 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067310 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : LASER CUTTING MACHINE BED WITH AUTOMATIC SLAT CLEANING ATTACHMENT

(51) International classification :B23K0026380000, B23K0026700000, B23K0026080000, B23K0026142000, A61G0013100000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT Title: LASER CUTTING MACHINE BED WITH AUTOMATIC SLAT CLEANING ATTACHMENT - The titled invention discloses a laser cutting machine bed with automatic slat cleaning 5 attachment designed to remove slag deposits efficiently from the slat bed without manual cleaning. It comprises an X axis drive bed (1), lead screw (3) mechanism, slag removing tools (10), vibrator drive (11), and adjustable bed extension carriage (6). The screw rod hub (5) automatically moves, slat cleaner drive bed (4) along the slats by screws passing through it, loosens and scrapes off slags with help of slag removing 10 tools (10), and maintains a clean cutting surface with minimal manual effort. A remote controller (12) allows safe and easy operation. The bed extension carriage (6), bed clamping frames (7) and locking knobs (8), (9) keep the bed stable during cleaning. This system reduces manual cleaning time, extends the life of the slat bed, improves cutting accuracy, and minimizes machine downtime.

No. of Pages : 17 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067312 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Integrated Performance Management System Using Predictive Analytics

(51) International classification :G06N0020000000, G06Q0010063900, G06Q0010063100, G06Q0010040000, G06Q0010063700
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

Disclosed is an integrated performance management system comprising a data acquisition module configured to receive performance-related data from structured and unstructured data sources, including enterprise resource planning systems, and customer relationship management systems. A preprocessing unit is operatively coupled to the data acquisition module and configured to sanitize, normalize, and temporally align the performance-related data. A predictive analytics engine applies a plurality of machine learning models to the normalized data and generates predictive performance metrics including a forecasted performance rating, a probability of attrition, and a developmental gap vector. A decision logic module evaluates the predictive performance metrics against predefined thresholds and generates actionable directives including goal realignment instructions, training recommendations, and escalation alerts. A feedback processing interface receives user-generated feedback and transmits it to the predictive analytics engine for model updates. A role-based access control subsystem restricts system access according to user roles.

No. of Pages : 19 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067336 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : DESIGN AND FABRICATION OF POWER TRANSMISSION BETWEEN SHAFTS USING MAGNETIC POWER

(51) International classification :H02K49/10, H01F7/02,
G06F30/00, F16H49/00
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to
Application Number :NA
Filing Date :NA
(62) Divisional to Application
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(57) Abstract :

Abstract The project titled "Design and Fabrication of Power Transmission Between Shafts Using Magnetic Power" explores an innovative •. non-contact method of transmitting torque between two rotating shafts using magnetic coupling. Unlike conventional power transmission systems such as gears, pulleys, or belt drives, this system relies on the interaction of magnetic fields to transfer rotational motion, thereby eliminating direct physical contact between components. In this design, high-strength neodymium magnets are embedded in circular discs attached to the driving and driven shafts. These magnets are arranged in alternating North-South poles. When the driving shaft rotates, the magnetic forces create an interactive field with the driven disc, which in turn rotates synchronously due to magnetic attraction or repulsion. The absence of physical contact reduces friction, mechanical wear, vibration, and the need for lubrication, making it ideal for sensitive or sealed environments. This system is particularly useful in industries like food processing, pharmaceuticals, chemical plants, and medical devices, where hygiene, cleanliness, or safety is critical. Additionally, the technology provides smoother, quieter operation and allows for slight misalignment between shafts without loss of efficiency. The fabrication involved careful design of the shaft arrangement, magnetic alignment, and testing under various loads to evaluate performance. Experimental results confirmed that magnetic coupling is effective for low to medium torque applications. However, torque transfer is limited by the strength and distance of the magnetic field. Overall, this project presents a sustainable and efficient alternative to traditional mechanical coupling methods. It opens the door for future developments in magnetic drive systems, especially in scenarios where non-contact operation is essential. The simplicity, reliability, and low maintenance of this system make it a promising solution in modern mechanical and automation industries.

No. of Pages : 5 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067347 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AN IMPROVED ALBEDOMETER FOR MEASURING AEROSOL OPTICAL PROPERTIES AND RADIATING FORCING EFFECTS

(51) International classification :G01B0011060000, G01B0009020910, G01N0021470000, G01S0005160000, B23K0026080000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT AN IMPROVED ALBEDOMETER FOR MEASURING AEROSOL OPTICAL PROPERTIES AND RADIATING FORCING EFFECTS The present invention provides an improved albedometer (I) for measuring aerosol optical properties and radiating forcing effects comprising a broadband light source (1) and a system of beam splitter (2), optical filters (7), reflecting mirrors (6), high reflectivity (HR) mirrors (8) for channelizing the light beam to an integrating sphere (3) of the albedometer. A portion of the light beam is channelized to a cavity resonator chamber (11) at the bottom portion of the sphere (3). The cavity chamber (11) consists of sets of HR mirrors (8) for that and for each mirror set (8) there is aligned a band-pass filter (7) for spectral isolation of the required wave lengths for each cavity. The integrated sphere (8) and the cavity chamber (11) are operatively connected to a CCD Array detector (4) by means of optical fiber (5, 16). FIG. 1

No. of Pages : 20 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067350 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : BRACKETING WORKBOOK FOR PHENOMENOLOGICAL RESEARCHERS

(51) International classification :G06F0040180000, H04N0023743000, G16H0010200000, G16H0010600000, G06F0040174000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Bracketing Workbook/or Phenomenological Researchers is a structured research aid designed to support novice qualitative researchers in applying bracketing (epoclu!) within phenomenological research. This workbook operationalizes core bracketing practices through a system of guided worksheets, reflective templates, and tracking tools aligned with phenomenological philosophy. It includes modular, fillable formats to document preconceptions, track researcher mindset during data collection, conduct bracketing interviews, write reflexive memos: and support transparent methodological reporting. Adaptable for both digital and print use, the workbook fosters rigor, transparency, and reflexivity throughout the research process, making it a practical tool for qualitative inquiry. This workbook represents a novel and comprehensive attempt to translate phenomenological thinking into a structured, stepwise toolkit, making an otherwise abstract process accessible and actionable for real-world qualitative research.

No. of Pages : 18 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067353 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : DETERMINATION OF SEQUENCE OF STROKES USING OPTICAL PROFILOMETER

(51) International classification :B42D0025290000, C09D0011160000, G06V0010260000, G06V0030320000, H04N0001100000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT A questioned document can be .the one whose authenticity is challenged on several grounds. There are several techniques to find out the genuineness of the document. One of the methods is to check the sequence of strokes in the document. The parameters to identify the sequence of strokes include the type of paper used, writing pressure, crossing lines, the material used for the writing, ink deposits, etc. Samples were analyzed based on the .2D and 3D topography of the document surface and analyzing the sequence of strokes. This study utilizes the optical profilometer to identify the sequence of strokes based on various features. This study also emphasizes the use of an optical profilometer in the field of questioned document examination. If there are two writings in a document and it was written in 10-month gap, there can be a prominent color change difference between these two writings from bright to dark. This forms a question of whether the document is forged or not. Profilometer is opted for the study due to a c

No. of Pages : 16 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067357 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : DNA Barcoding-Based Identification System for Wildlife Species in Illegal Trafficking Investigations

(51) International classification :C12Q0001688800, G16B0050000000, G16B0020000000, G16B0030000000, C12Q0001689000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

A DNA barcoding-based identification system is developed for precise and rapid species identification in illegal wildlife trafficking investigations, overcoming challenges posed by degraded or processed biological samples. The method includes optimized DNA extraction protocols and amplification of standardized genetic markers across diverse taxa using universal and taxon-specific primers. Multiplex PCR and mini-barcode strategies facilitate DNA recovery from compromised samples, while portable sequencing enables on-site analysis. A curated, up-to-date global reference database supports accurate species assignment through automated bioinformatics pipelines, producing forensic-grade reports. Designed to meet forensic standards, the system ensures data integrity and legal admissibility. A secure cloud platform facilitates international data sharing and collaboration. User-friendly interfaces and training empower non-specialists, expanding operational reach. Scalable and adaptable, the system integrates emerging genomic and AI technologies, providing a robust solution to combat wildlife trafficking and support global biodiversity conservation.

No. of Pages : 23 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067358 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : DYNAMIC TRUST SCORING ALGORITHM FOR IOT DEVICES USING ANOMALY DETECTION

(51) International classification :H04L0009400000, G06N0020000000, G06N0003080000, H04W0012600000, G06F0016245800
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to :NA
Application Number :NA
Filing Date :NA
(62) Divisional to :NA
Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT In 'the rapidly evolving Internet of Things (IoT) landscape, ensuring device reliability and securing network interactions are critical challenges. The proposed system introduces a Dynamic Trust Scoring Algorithm (DTSA) that continuously assesses the trustworthiness of IoT devices by integrating anomaly detection with behavioral analytics. The algorithm utilizes a hybrid model combining Isolation Forest for identifying instantaneous anomalies and Long Short-Term Memory (LSTM) networks for detecting temporal deviations in device behavior. Trust scores are computed dynamically through a weighted scoring mechanism that considers anomaly indicators, communication patterns, and historical trust records. To adapt to emerging threats, the framework incorporates a reinforcement learning-based trust adjustment module, enabling self-optimization and resilience against malicious or compromised devices. The proposed DTSA offers a scalable and intelligent trust evaluation approach for enhancing the security of IoT ecosystems.

No. of Pages : 7 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067359 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SCENARIO-GUIDED METAMORPHIC TESTING USING LARGE LANGUAGE MODEL-BASED SCENARIO GRAPHS

(51) International classification :G06F0011360000, H04L0009320000, G06F0040300000, G10L0015183000, G06F0030300000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

Abstract The invention discloses an intelligent, oracle-free testing framework powered by large language models (LLMs) to automate and enhance software validation. It features an LLM-based Scenario Graph Constructor that transforms natural language requirements into structured scenario graphs, a Semantic Metamorphic Relation Engine that synthesizes domain-specific transformations and semantic relations, a Planner-Player-Detector multi-agent pipeline that generates, executes, and compares both original and transformed test scenarios, and an adaptive Feedback Loop that iteratively refines LLM prompts and transformation rules based on execution outcomes. By seamlessly integrating these modules, the system systematically uncovers complex, real-world scenarios, achieves broad test coverage, and accurately verifies system behavior without manual oracles, thereby solving the oracle problem in software testing.

No. of Pages : 9 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067360 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Integrated Ecological Sensor Network for Real-Time Monitoring of Biodiversity in Protected Forest Zones

(51) International classification :H04W0084180000, H04W0052020000, H04L0067120000, A62C0003020000, G06F0021620000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention presents an integrated ecological sensor network for real-time biodiversity monitoring within protected forest zones. Combining acoustic, visual, chemical, and environmental sensors, the system enables continuous, multi-modal data collection across extensive and remote forest areas. Powered by renewable energy and utilizing a robust wireless mesh network, sensor nodes operate autonomously, transmitting data to cloud platforms where advanced machine learning algorithms perform species identification, behavioral analysis, and anomaly detection. This enables timely detection of ecological disturbances, poaching, and habitat changes. User-friendly interfaces provide stakeholders with actionable insights through customizable dashboards and mobile alerts. The system's modular and scalable design supports integration of emerging technologies and diverse ecosystems, fostering adaptive forest management. By facilitating comprehensive, real-time biodiversity assessments, the invention empowers conservation efforts, enhances ecosystem protection, and promotes sustainable coexistence between humans and forest environments.

No. of Pages : 22 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067366 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Bioengineered Yeast System for Enhanced Ethanol Production Using Agro-Industrial Waste Substrates

(51) International classification :C12P0007060000, C12P0007100000, C12N0015520000, C12N0015810000, C12N0009040000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a genetically engineered yeast system optimized for the efficient production of ethanol from diverse agro-industrial waste substrates. The modified yeast strain is capable of simultaneous fermentation of hexose and pentose sugars and exhibits high resistance to fermentation inhibitors such as furfural, hydroxy methyl furfural, and acetic acid. Key genetic modifications enable enhanced sugar uptake, redox balance, stress tolerance, and metabolic flux toward ethanol production. The system also incorporates enzyme secretion pathways to support consolidated bioprocessing (CBP), reducing process complexity and cost. Designed for genetic stability and industrial scalability, the strain operates effectively under varying temperature, pH, and ethanol concentrations. Its compatibility with lignocellulosic hydrolysates and minimal nutrient requirements make it suitable for sustainable, decentralized bioethanol production. This invention provides a robust and environmentally friendly alternative to traditional ethanol production methods, offering significant benefits in waste valorization, renewable energy generation, and support for the global transition to a circular bioeconomy.

No. of Pages : 23 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067384 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : GRID SENTINEL:SMART DETECTION FOR POWERLINE INTEGRITY USING MACHINE LEARNING AND IOT

(51) International classification :G06N0020000000, H04B0003540000, G06N0003080000, E21B0047005000, G06N0003044000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT OF THE INVENTION: The Grid Sentinel system is an AI-driven solution designed to enhance power grid reliability by using IoT sensors and AdaBoost machine learning for real-time fault detection. Traditional monitoring methods are reactive, leading to higher downtime and costs. Grid Sentinel addresses this by collecting real-time data on voltage, current, temperature, and vibration across transmission lines, which is processed through a Flask-based Python server. Ada Boost ML refines predictions, ensuring accurate fault detection with lower computational overhead. The system integrates with cloud services via MQTT & HTTP protocols, allowing remote monitoring through a Dash + Plotly dashboard. By combining IoT data acquisition, machine learning-based anomaly detection, and automated fault response, Grid Sentinel offers a scalable, cost-effective solution for predictive maintenance, reducing downtime and maintenance costs while improving grid resilience and operational efficiency.

No. of Pages : 10 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067385 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : DESIGN OF SMART BED CUM WHEELCHAIR WITH VOICE CONTROLLED FOR ENHANCED PATIENT TRANSPORTATION

(51) International classification :G10L0015220000, A61H0003000000, G06F0003160000, A61H0001020000, G10L0015260000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

ABSTRACT OF THE INVENTION: The design and fabrication of a Smart Bed-Cum-Wheelchair with Voice Control, a multifunctional assistive device tailored to improve mobility and autonomy for patients with limited physical abilities. Integrating mechanical engineering, microcontroller-based automation, and voice-enabled control systems, the project merges the functionalities of . a hospital-bed

No. of Pages : 16 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067386 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : IOT BASED DRIVER DROWSINESS DETECTION SYSTEM USING ESP32-CAM AND OPENCV

(51) International classification :A61B0005000000, G08B0021060000, G06V0020590000, B60K0028060000, A61B0005110000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

ABSTRACT OF THE INVENTION This invention proposes a hybrid driver drowsiness detection system that combines vision-based monitoring with wearable infrared sensing for enhanced reliability. The system employs an ESP32-CAM to capture real-time video of the driver's face, which is processed on a local computer using OpenCV to calculate Eye Aspect Ratio (EAR) and Mouth Aspect Ratio (MAR). These metrics help identify signs of fatigue, such as prolonged eye closure and yawning. If drowsiness is detected, a signal is sent to an ESP8266 NodeMCU via PySerial, which then activates a buzzer and triggers an email alert through the 20 Blynk JoT platform. For low-light conditions, a wearable IR sensor integrated with smart glasses monitors continuous eye closure for 60 seconds and directly signals the Node

No. of Pages : 11 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067387 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : MODULAR GAS SAFETY AND INTERNAL FIRE SUPPRESSION SYSTEM USING ESP32 WITH AUTOMATED RESPONSE CONTROL

(51) International classification :G08B0007060000, G08B0021160000, H04W0004900000, G01M0003380000, G16H0040670000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT OF THE INVENTION This invention presents a smart, modular system for gas leak detection, automatic gas shutoff, and integrated fire suppression. It consists of three ESP32-based wireless modules. Module 1 detects gas leaks using an MQ5 sensor and transmits 10 alerts. Module 2 includes a touch OLED display, buzzer, LEDs, and reset functionality for real-time monitoring and alerts Module 3 autonomously shuts off the gas regulator using a servo motor and activates a solenoid-controlled CO2 cartridge to suppress internal circuit fires. Since the system is positioned close to the gas cylinder, this adds an extra layer of safety for the user. All modules communicate via Wi-Fi, and a mobile 15 application provides diagnostics and control. The system supports future expansion with multi-user alerts, GPS-based emergency notifications, and cloud connectivity. Designed to be compact and user-friendly, this innovation offers proactive protection in residential and commercial environments.

No. of Pages : 9 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067390 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Species-specific oligonucleotide primers for molecular identification of Streptococcus agalactiae.

(51) International classification :C12Q0001689000, A61P0031040000, C07K0014315000, C12Q0001686000, C12Q0001689500
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

SPECIES-SPECIFIC OLIGONUCLEOTIDE PRIMERS FOR MOLECULAR IDENTIFICATION OF STREPTOCOCCUS AGALACTIAE. Streptococcus agalactiae, also known as Group B Streptococcus is a bacterial pathogen that causes severe infections in a wide range of hosts including humans, animals and fishes posing a significant threat to human and animal health and causing major economic losses to veterinary and aquaculture industries. Given its significance, early detection is crucial for effective treatment, control and prevention of the infection. Thus, molecular techniques like PCR are widely being used for identification of the pathogen. However, PCR with existing primers is not often able to detect all genetically diverse strains of S. agalactiae and lacks specificity, leading to unreliable diagnostic results. Thus, to address this issue we designed a 16S rRNA based PCR primers and demonstrated high specificity and sensitivity in accurately detecting S. agalactiae.

No. of Pages : 29 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067395 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : TAKAVAAAN

(51) International classification :G06N0005045000, G06F0016248000, G06N0020000000, G06F0021530000, G06F0016260000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Takavaan is an AI-powered data analysis platform that automates the end-to-end process of transforming raw datasets into actionable insights through natural language processing. The system accepts user queries in plain English, automatically cleans and prepares the data, it generates optimized Python code for analysis and visualization using fine-tuned language models, and executes the code in a secure sandbox environment. It then compiles the results- including statistical visualizations, AI-generated insights, and the executable source code-into structured PDF reports with interactive elements. By combining automated data processing with transparent code generation and explainable AI, Takavaan enables users to perform complex data analysis without programming expertise while maintaining full visibility into the analytical methodology. The platform is particularly valuable for business analysts, researchers, and data teams seeking rapid, reproducible, and auditable data insights.

No. of Pages : 20 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067396 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : IOT-ENABLED BIOMETRIC FINGERPRINT DOOR LOCK SYSTEM FOR AUTOMOBILES

(51) International classification :G06F0021320000, G07C0009000000, G06F0021620000, G07F0007100000, H04L0009400000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT OF THE INVENTION The present invention introduces an IoT-based fingerprint door lock system designed to enhance vehicle security by integrating biometric authentication with remote access capabilities. The system utilizes a high-resolution fingerprint sensor for secure and key-less entry, eliminating the risk of unauthorized access. A microcontroller processes authentication requests and communicates with the vehicle's locking mechanism, while an IoT module enables real-time monitoring and control via a mobile application. Advanced encryption ensures secure storage and transmission of biometric data, preventing cybernetics. Additionally, the system features multi-layer authentication, including PIN entry and remote unlocking, providing enhanced accessibility and security

No. of Pages : 10 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067397 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : MACHINE LEARNING-BASED CYBERSECURITY FRAMEWORK FOR HEALTHCARE APPLICATIONS

(51) International classification :H04L0009400000, G06F0021550000, G06N0020000000, G06N0005045000, G06F0021570000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT OF THE INVENTION The increasing complexity of healthcare networks and the proliferation of IoT-enabled medical devices introduce significant cybersecurity challenges. Traditional security mechanisms struggle to defend against sophisticated attacks such as DDoS, SQL Injection, and XSS. This paper presents a machine learning-based cybersecurity framework for real-time threat detection and automated security enforcement in healthcare applications. The system continuously monitors network traffic, leveraging K-Nearest Neighbors (KNN), Random Forest, and Support Vector Machines (SVM) to classify packets and detect anomalies. Upon identifying threats, it dynamically updates security policies to mitigate risks, reducing data breaches and service disruptions. Explainable AI (XAI) techniques enhance the transparency of decision-making, enabling security administrators to interpret model predictions. The framework is scalable and adaptive, ensuring proactive defense against evolving cyber threats. By integrating AI-driven automation and real-time monitoring, this approach strengthens the resilience of healthcare networks, safeguarding sensitive patient data and ensuring system availability

No. of Pages : 9 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067398 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : INS : A PORTABLE TLC-BASED COLORIMETRIC TEST STRIP FOR VISUAL DETECTION OF MERCURY (II) IONS

(51) International classification :G01N0031220000, G01N0021780000, G01N0021770000, C07C0319140000, C09B0015000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT OF THE INVENTION The compound is represented by INS: 10 [INS] Ring A: an aromatic benzene ring. B: alkyl group having 14 carbon atoms, may be interrupted by C-N, C-S or a thioester group. This compound, referred to as INS, serves as a solid-state colorimetric chemosensor for the selective detection of mercury ions Hg^{2+} . Upon binding with Hg^{2+} ions, probe (INS) infused TLC test strip exhibits a distinct color change from rose pink to pale pink in the visible region. These TLC-based test strips are particularly advantageous for naked-eye detection of mercury ions in environmental samples, offering a practical, low-cost, and environmentally friendly alternative to conventional detection methods. The simplicity, portability, and selectivity of this system make it a promising tool for real-time monitoring of mercury contamination in field conditions. Total Number of words: 125.

No. of Pages : 7 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067402 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : TURBINE INSPIRED PROPELLORS

(51) International classification :F04D0029660000, B64C0021100000, B64C0011180000, F01D0005140000, F04D0029380000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

TURBINE INSPIRED PROPELLOR ABSTRACT 5 This invention presents a novel bionic propeller design featuring combed sinusoidal serrations on the leading edge and sawtooth serrations on the trailing edge, aimed at enhancing aerodynamic performance and noise reduction. Inspired by owl wing morphology, the leading-edge serrations smooth incoming airflow, delay boundary layer separation, and reduce drag 10 and noise. The trailing-edge sawtooth serrations break up large vortices into smaller ones, lowering tonal noise and stabilizing wake flow. Extensions to the original blade geometry accommodate these serrations without compromising structural integrity or aerodynamic efficiency. Additionally, fiber resin and fiber fluff layers near the blade tip absorb boundary layer energy, further dampening 15 turbulence and noise. Together, these innovations significantly improve the lift- to-drag ratio while minimizing aerodynamic noise generated during operation. This propeller design is especially suited for applications requiring high thrust

No. of Pages : 14 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067403 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AUTOMATED VIBRATION BASED DETECTION SYSTEM FOR ILLEGAL BOREWELL DRILLING

(51) International classification :H04W0004020000, G08B0021100000, G01V0001180000, G08B0021180000, G08G0001160000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT OF THE INVENTION This invention discloses an automated system for detecting unauthorized borewell 10 drilling using ground vibration sensing technology. The system is specifically designed for rural and remote regions where unregulated borewell operations frequently occur and pose serious safety risks, particularly to children. Each detection unit comprises a vibration sensor, such as a geophone or piezoelectric element, connected to a microcontroller. The sensor monitors low-frequency vibrations typically generated during 15 borewell drilling. The microcontroller processes the data using a signal analysis algorithm to distinguish drilling activity from other environmental vibrations. Upon detection of drilling, the unit sends an alert containing geolocation and timestamp data to designated authorities via GSM or LoRa communication modules. The system is powered by solar energy with battery backup, ensuring continuous operation in off-grid Q) 20 areas. This scalable network detectors enables real-time monitoring, rapid response to C) Ill illegal drilling, and enforcement of safety measures, including the installation of D.. Q) protective borewell caps.

No. of Pages : 9 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067404 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SMART IRRIGATION SYSTEM FOR PRECISION FARMING

(51) International classification :A01G0025160000, A01G0009240000, H04L0067120000, G01W0001100000, G06Q0050020000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT OF THE INVENTION The Smart Irrigation System leverages advanced technologies such as IoT sensors, weather data, and automation to enhance irrigation efficiency in agriculture, minimizing water usage while maximizing crop yield. The system includes soil moisture sensors, weather prediction integration, and automated irrigation valves, all working together to ensure that crops receive optimal water based on real-time environmental conditions. By using water resources more efficiently, the system supports sustainable farming practices, conserving water and reducing waste while maintaining healthy crop growth. The system provides a user-friendly interface (web or mobile), allowing farmers to monitor irrigation data, adjust settings, and receive notifications remotely, improving ease of use and management. Through reduced water consumption and improved crop productivity, the system offers economic benefits by lowering water-related costs and enhancing

No. of Pages : 8 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067407 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SMART WEARABLE HELMET MONITORING SYSTEM WITH INTEGRATED PHYSIOLOGICAL AND IMPACT SENSING FOR REAL-TIME

(51) International classification :A61B0005000000, A42B0003040000, H04L0067120000, H04W0004900000, A61B0005024000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a smart wearable helmet monitoring system with integrated physiological and impact sensing for real-time designed to enhance worker protection in hazardous industrial environments such as construction, mining, and manufacturing. The system integrates real-time physiological and impact monitoring using sensor technologies and Internet of Things (IoT) capabilities. The helmet is equipped with a vibration sensor for detecting head impacts and a pulse sensor for continuous heart rate monitoring, enabling the identification of traumatic brain injuries and cardiac emergencies. An Arduino-based microcontroller processes sensor data and, upon detecting a hazardous condition, triggers an alert via a Bluetooth communication module (HC-05) to a mobile application. The application transmits emergency alerts, including GPS location and a predefined message, to registered contacts for timely medical intervention. The invention provides a proactive, scalable, and cost-effective personal protective equipment (PPE) solution that improves occupational safety and promotes the adoption of intelligent wearable technologies in industrial sectors.

No. of Pages : 23 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067424 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Quantum-Resistant AI Firewalls: An Adaptive Defense Mechanism Against Post-Quantum Threats

(51) International classification :H04L0009400000, H04L0009080000, H04L0009320000, H04L0009300000, G06N0010000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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--

(57) Abstract :

Quantum-Resistant AI Firewalls: An Adaptive Defense Mechanism Against Post-Quantum Threats Abstract The rapid advancements in quantum computing pose an existential threat to classical cryptographic frameworks, rendering current cybersecurity paradigms inadequate against post-quantum attacks. This paper proposes a next-generation security architecture titled Quantum Resistant AI Firewalls (QRAF)—an adaptive and self-evolving defense mechanism designed to identify, analyze, and mitigate threats emerging from quantum-capable adversaries. Leveraging a fusion of post quantum cryptography (PQC), neuromorphic AI models, and real-time lattice-based anomaly detection, QRAF dynamically adjusts firewall rulesets and encryption layers in response to quantum signature patterns and hybrid threat vectors. Unlike traditional firewalls, QRAF integrates decentralized trust computation and entropy-adaptive encryption synthesis, ensuring secure communications even under quantum decryption attempts. Moreover, the system employs reinforcement learning agents trained on simulated quantum attack datasets to predict and preempt adversarial behaviors. Experimental simulations demonstrate a significant reduction in attack surface exposure and improved resilience against Grover's and Shor's algorithm-based exploits. The proposed framework represents a paradigm shift in proactive cyber defense—where AI not only guards against classical threats but anticipates and neutralizes quantum-level intrusions autonomously. Keywords—Quantum-resistant firewalls, Post-quantum cryptography, Adaptive cybersecurity, Neuromorphic AI, Reinforcement learning, Lattice-based encryption, Quantum threat mitigation, AI-driven network security, Grover's algorithm, Shor's algorithm, Quantum resilient architecture.

No. of Pages : 17 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067423 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ARTIFICIAL INTELLIGENCE-BASED OVARIAN CANCER DETECTION AND GRADING SYSTEM

(51) International classification :G06T0007000000, G06V0020690000, G06T0007110000, C12Q0001680000, G06T0007100000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Disclosed herein is an artificial intelligence-based ovarian cancer detection and grading system (100), the system (100) comprises a digital scanner (102) to scan glass histopathology slides and generate corresponding high-resolution digital images, a communication model (104) to establish a communication link for data transmission, a user device (106) to collect high-resolution digital images, a communication network (110) to enable seamless data transmission, a processing unit (112) to process the real-time data, which further comprises a data input module (114) to receive real-time data, a preprocessing module (116) to clean and normalize the received data, a segmentation module (118) to segment the pre-processed data, a feature extraction module (120) to extract relevant features, a cancer detection module (122) to detect the ovarian cancer, a determination module (124) to determine predefined histopathological parameters, a cancer grading module (126) to assign the ovarian cancer grade, an output module (128) to transmit the outputs.

No. of Pages : 26 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067502 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : UNIFIED MOBILE PLATFORM FOR AIRPORT COMMERCIAL REVENUE OPTIMIZATION

(51) International classification :G06Q0030025100, G06Q0030060100, G06Q0030024100, G06N0020000000, G06Q0030020100

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A unified airport commerce platform integrating multiple airport services through a single mobile application to optimize commercial revenue generation. The system leverages real-time data from Airport Operation Control Center (AOCC) and passenger location tracking using BLE beacons and Wi-Fi triangulation to provide targeted promotions and dynamic pricing. Key innovations include machine learning algorithms for passenger behavior prediction, automated revenue distribution among stakeholders, and location-based commercial triggering. The platform addresses current fragmentation in airport digital services while significantly enhancing non-aeronautical revenue potential through intelligent dwell time monetization and personalized passenger engagement strategies.

No. of Pages : 28 No. of Claims : 15

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067432 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : DUAL-BIOMETRIC MEDICAL RECORD ACCESS SYSTEM AND METHOD THEREOF

(51) International classification :G06F0021320000, G16H0010600000, G06F0021620000, H04L0009080000, H04L0009400000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

Disclosed herein is a dual-biometric medical record access system (100) that comprises a data acquisition unit (102) configured for acquiring a plurality of biometric data including fingerprint data and iris data from one or more users, a processing unit (104) operatively connected to the data acquisition unit (102), the processing unit (104) configured for executing identity verification and authentication operations, the processing unit (104) comprising; a feature extraction module (106), a biometric matching module (108), a dual-authentication engine (110), an access control module (112), a communication network (114) operatively connected to the processing unit (104) and configured for enabling data exchange between the processing unit (104) and a plurality of system components, a user device (116) operatively connected to the processing unit (104) through the communication network (114), a user interface (118) disposed within the user device (116) and configured for providing interaction with the user.

No. of Pages : 35 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067445 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Next-Gen Access Control: A Scalable NFC-Based Multi-Factor Authentication System with Privacy-by-Design

(51) International classification :H04L0009400000, H04L0009320000, G06F0021620000, G06Q0020320000, H04W0012060000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

Abstract The invention discloses a privacy preserving method and secure credentials verification system utilizing Near Field Communication (NFC)-based Multi-Factor Authentication (MFA). The system enables secure identity verification without revealing sensitive user credentials by utilizing cryptographic challenge-response protocols and privacy-aware data exchange mechanisms. Rather than sending raw credentials, the system sends only privacy-protected tokens or cryptographic hashes to the verification server, hence never exposing sensitive user data over communication. The authentication process includes establishing a secure, encrypted channel between a legitimate admin's mobile phone and the NFC token, with multi-factor authentication processes in place to further authenticate the initiating entity. This challenge-response-based verification model prevents against typical attack vectors such as interception, credential cloning, man-in-the-middle (MITM) attacks, and replay attacks. By separating raw credential information from the channel of communication and trusting cryptographic mechanisms such as SHA-256 and AES, the invention maintains end-to-end security and integrity of data. The architecture is especially well-suited for employment in access control systems, digital identity authentication platforms, and secure contactless payment environments, where user privacy and data security are of top priority.

No. of Pages : 10 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067448 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Security Implications and Risk Management Challenges Related to IT-Enabled Banking Services.

(51) International classification :H04L0009400000, G06N0020000000, G06Q0040020000, G06F0021550000, G06F0021570000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Abstract Banking services that use IT, such online banking, smartphone apps, and digital transaction platforms, are becoming more and more important. These services have made things much easier for customers and more efficient for banks. But this digital change has made security holes more complicated and raised the possibility of cyber threats like data breaches, identity theft, phishing, and getting into systems without permission. Most of the time, existing solutions work alone, use static rule-based systems, or can't adapt to changing threat scenarios. This innovation suggests a smart, all-in-one security and risk management system that uses powerful machine learning algorithms, real-time behavioural analytics, and adaptive mitigation procedures. The system keeps an eye on transaction patterns, user behavior, and system operations all the time to find unusual things, give them dynamic risk rankings, and start automated replies. It also includes inspections for compliance with rules and audit trails to make sure that national and international cybersecurity requirements are being followed. The suggested innovation fixes present problems by adding a scalable, proactive, and context-aware security system made just for IT-enabled banking environments. This makes the system more resistant to modern cyber threats. Keywords: IT-enabled banking, cybersecurity, risk management, anomaly detection, machine learning, real-time monitoring, digital banking security, phishing prevention, adaptive mitigation, fraud detection, regulatory compliance, intelligent security framework.

No. of Pages : 13 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067488 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : ROBOTIC GRIP CONTROL SYSTEM

(51) International classification :G06N0020000000, B25J0009160000, G06N0020100000, G06N0003006000, G06N0005010000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Embodiments of the present disclosure relate to a system (100) and a method (500) of robotic grip control. The system (100) uses nano-filler-infused Polyurethane (PU) foam, Support Vector Regression (SVR), and Proximal Policy Optimization (PPO) models for real-time pressure sensing and adaptive robotic grip control. The system (100) may acquire real-time resistance data from a nano-filler-infused polyurethane foam-based pressure sensor (104) embedded in a robotic end-effector. Thereafter, the system (100) may transform the resistance data into calibrated pressure values using a signal conditioning pipeline coupled with a pre-trained regression model selected from Support Vector Regression (SVR) or Gradient Boosted Decision Trees (GBDT). Furthermore, the system (100) may generate one or more actuator control signals corresponding to real-time modulation of grip force by the robotic end-effector by applying the inferred pressure values to a trained Proximal Policy Optimization (PPO) reinforcement learning model.

No. of Pages : 30 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067489 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SEATBELT ASSEMBLY FOR A VEHICLE

(51) International classification :B60R0022340000, B60R0022180000, B60R0022480000, B60R0022460000, B60R0022020000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

A seatbelt assembly (100) for a vehicle is disclosed. The seatbelt assembly (100) can include a vehicle seatbelt (110), one or more capacitive sensor modules (120) integrated within a seatbelt fabric (112), a seatbelt retractor (130), a seatbelt locking unit (140), and a control module (150) in communication with the vehicle seatbelt (110), the one or more capacitive sensor modules (120), the seatbelt retractor (130) and the seatbelt locking unit (140). The control module (150) may: receive, via the one or more capacitive sensor modules (120), a seatbelt engagement data on wearing the vehicle seatbelt (110) by a user of the vehicle; process, using one or more processing techniques, the seatbelt engagement data for determining a correct or an incorrect engagement of the vehicle seatbelt (110) by the user; and generate, using a communication module, an alert for the incorrect engagement of the vehicle seatbelt (110) by the user.

No. of Pages : 21 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067506 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-Driven Real-Time Air Quality Monitoring and Ventilation Control System

(51) International classification :F24F0110500000, F24F0011640000, F24F0110700000, F24F0011000000, F24F0110660000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

This invention presents an AI-based Air Quality Monitoring and Automated Ventilation System to enhance indoor air quality (IAQ) in enclosed environments. The system uses IoT-enabled sensors to monitor pollutants like carbon monoxide (CO) and particulate matter (PM) in real time. An AI-driven predictive model, using classical statistical time series forecasting, analyzes historical and current data to predict pollution trends and enable proactive ventilation. When pollutant levels cross safe thresholds, the system automatically adjusts airflow through an intelligent ventilation mechanism. ESP32 and Arduino UNO microcontrollers ensure smooth sensor integration and control. A cloud platform handles data processing, visualization, and remote access. Sensor data is anonymized to address privacy concerns. The innovation lies in merging predictive analytics with real-time sensor data for smart air management, offering a scalable and energy-efficient solution for homes, offices, and public spaces.

No. of Pages : 9 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067507 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Partial replacement of cement with Biochar (wood-plastic)

(51) International classification :C04B0028020000, C04B0040000000, C04B0024240000, G01N0017000000, G01N0033380000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
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(57) Abstract :

Extensive research has explored the feasibility of using supplementary cementitious materials to enhance concrete sustainability. Recently, biochar derived from wood(trees) and plastic waste, such as "wood-plastic", has garnered attention as a potential cement substitute. Previous studies have investigated the effects of biochar on concrete properties, including workability, durability and mechanical strength. However, limited research has focused on optimizing the replacement ratio of cement with "wood -plastic derived biochar (WPB)" and its impact on concrete performance under various environmental conditions. This study aims to investigate the compressive strength and durability of concrete with partial replacement of cement with "wood -plastic derived biochar (WPB)", exploring the potential of this sustainable and innovative material solution.

No. of Pages : 8 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067543 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SYSTEM FOR REAL-TIME BASKETBALL SHOT ANALYSIS AND A METHOD THEREOF

(51) International classification :A63B0071060000, A63B0069000000, G06T0019000000, A63B0024000000, G06V0040200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT A SYSTEM FOR REAL-TIME BASKETBALL SHOT ANALYSIS AND A METHOD THEREOF The present invention relates to a system (100) for real-time basketball shot analysis and a method thereof. The system (100) comprises a video capturing module (102) with a depth-aware camera to track three-dimensional (3D) spatial movement data, including hand position, wrist angle, and shot trajectory. A pose estimation module (104) detects key body markers such as shoulders, elbows, and knees to assess posture and alignment. A shot mechanics evaluation module (106) analyzes biomechanical parameters, comparing them with optimal movement patterns. An inference and scoring module (108) employs a machine learning model to generate performance scores in real time. A visualization module (110) provides overlaid feedback for player improvement, while a data management module (112) stores analyzed data for review and longitudinal tracking. The system (100) enhances player performance through real-time feedback and objective shot analysis, benefiting athletes and coaches alike.

No. of Pages : 31 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067544 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : HEAT MODULATION SYSTEM FOR POWER DEVICES

(51) International classification :G06F119/08, G06F30/20, G06F30/30, G06F113/18, G06F17/13, G06F1/20
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A heat modulation system for power devices comprises of a network of thermal resistance and capacitance that adjusts to surrounding conditions to track temperature changes in real time to account heat generated by the power device during operation, a calculation module to calculate heat build-up in high-power electronic devices by tracking power loss changes caused by switching speed and heat spread, a simulation module that predicts heat and power loss efficiently, suitable for high-power circuits and works with design protocol to simulate real-world conditions, a model that combines electrical and thermal effects, using thermal resistance and capacitance, to monitor heat flow and improve device performance, the thermal network estimate temperature based on device datasheets and external conditions, to continuously monitor heat during device operation and adjusts calculations based on real-world factors like air temperature to optimize performance.

No. of Pages : 18 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067547 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : ENVIRONMENT ADAPTIVE WINDOW SYSTEM

(51) International classification :C02F0009000000, C02F0001280000, C02F0001000000, C02F0103000000, F24F0110200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

An environment adaptive window system, comprises of a frame 101 adapted to be fitted within an opening of a wall surface forming a window structure, a plurality of environmental sensors 102 integrated with the frame 101 to monitor outdoor environmental condition, a plurality of horizontally mounted motorized rollers 103 arranged at the top of the frame 101 via supporting links 104, each roller 103 holding a different functional layer being deployable and retractable automatically based on environmental conditions, an inner diaphragm shutter assembly 201 integrated with the frame 101 that adjusts automatically based on environmental inputs to partially cover the window during normal use and fully retract in emergencies to provide an unobstructed exit, multiple filtration units includes an activated carbon filter 107 and an electrostatic precipitator filter 108 that are activated by the microcontroller based on determined air quality index levels and pollutant types.

No. of Pages : 23 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067548 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : WEARABLE KNEE SUPPORT AND REHABILITATION DEVICE

(51) International classification :A61B0005000000, A41D0013060000, A61H0007000000, A61N0001360000, A61H0001020000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A wearable knee support and rehabilitation device, comprising a structural frame 101 ergonomically positioned around a user's knee, a laser sensor integrated with a thermal sensor accurately determine the user's knee dimensions, motorized rollers 102 with Velcro straps 103 securing and stabilizing the frame 101 over the user's knee, a pair of linear sliders 201 carrying a motorized clamp 202 with cushioned padding 203 provide stability and comfort, a muscle monitoring module 104 monitor electrical muscle activity, exerted pressure, and strain, a Peltier unit 105 coupled with a temperature sensor provide heating or cooling, a chamber 107 containing muscle relief gel connected to nozzles 108 via telescopic conduits 109 dispense the relief gel, a motorized cylindrical member 204 configured to massage the knee area, a user-interface is inbuilt in a computing unit is accessed by the user to provide personal and medical information and a vibrating unit 110 deliver massaging sensation.

No. of Pages : 22 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067549 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : PERSONALIZED HYDRATION DEVICE

(51) International classification :A61B0005000000, C02F0001000000, G01N0033180000, C02F0001280000, C02F0009000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A personalized hydration device, comprising a bottle-shaped body 101 with a collapsible framework 102 integrated with multiple hinge joints 103 to enable expansion and contraction of volume, a pre-filtration module 104 includes a sediment filter and an activated carbon filter for removing contaminants, water quality monitoring sensors—comprising a pH sensor, TDS sensor, electrochemical sensor, and turbidity sensor—enable continuous real-time analysis, a plurality of liquid storage compartments 105 storing different liquids, a vertically positioned hollow central tube 106, and cascading horizontal tubes 107 for bidirectional liquid flow, electromagnets 109 at the tubes 107 ends align with magnetometer sensors to open a butterfly valves 108 for fluid transfer, a wristband with physiological sensors detects physiological parameters, a micro magnetic filter rod 110 for removal of ferrous impurities, micro 3D holographic projector 111 projecting nearest water refill locations, micro UV-C light filter 112 disinfecting stored liquids.

No. of Pages : 25 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067561 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : IOT-BASED MONITORING SYSTEM FOR MINING SAFETY AND RELATED METHODS

(51) International classification :G08B0025010000, A61B0005000000, A61B0005020500, A61B0005110000, G06N0003045000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

An IoT-based real-time monitoring system for mining safety is designed to enhance the safety of miners by integrating various components. The system includes sensors to monitor vital signs and environmental conditions, a panic button for emergency responses, and a microcontroller for data processing and wireless transmission. A central data hub receives and manages the data for real-time monitoring and future analysis, while a user interface displays the data in a user-friendly manner. This integration allows for prompt detection of hazardous conditions and health issues, generating alerts when necessary and enabling immediate emergency responses. Fig. 1

No. of Pages : 15 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067562 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AN OVAL SLOT EDGE ANTIPODAL ANTENNA

(51) International classification :H01Q0001380000, H01Q0013080000, H01P0005180000, H01Q0001500000, H01Q0013100000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

An oval slot edge antipodal antenna features an antipodal configuration with dual tapered conductive radiating elements on opposite sides of a dielectric substrate, and an oval-shaped slot along the substrate's edge. This design enables wide bandwidth, high efficiency, and improved directivity. The dielectric substrate may be made of FR4 material, and the radiating elements are typically copper. The oval-shaped slot is designed to reduce sidelobes, and the antenna is miniaturized for compact device integration. It is suitable for 5G communication systems, radar systems, and medical imaging systems, offering enhanced performance in gain, directivity, and efficiency. A feeding structure, such as a microstrip line, coplanar waveguide, or coaxial cable, is coupled to the radiating elements for signal transmission and reception, ensuring smooth impedance transition and reduced reflections. Figure 1.

No. of Pages : 31 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067563 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : ARTIFICIAL NEURAL NETWORK BASED REAL-TIME ROAD CONDITION MONITORING AND ALERT SYSTEM AND RELATED METHODS

(51) International classification :G06N0003080000, G06V0020580000, G06N0003045000, G06N0003020000, G06N0020000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A system and method for real-time road condition monitoring and alarm generation is disclosed. The system includes a vehicle-mounted camera for capturing real-time video, a computer vision module for preprocessing the video, and an anomaly detection module for identifying road anomalies. An ANN classification module categorizes these anomalies using a trained Artificial Neural Network model. The system also features a hazard detection and alert module that provides immediate audio alerts to vehicle operators about detected road hazards, such as potholes, cracks, and speed breakers, enabling timely corrective action. Figure 1.

No. of Pages : 21 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068219 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : "IOT-BASED EARTHQUAKE EARLY WARNING AND STRUCTURAL DAMAGE DETECTION SYSTEM"

(51) International classification :G08B0021100000, G01V0001010000, G01M0005000000, H04W0004900000, H04L0067120000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Abstract The present invention relates to an Internet of Things (IoT)-based system designed for real-time earthquake early warning and structural damage detection. The system comprises a network of sensor nodes equipped with accelerometers, strain gauges, tilt sensors, and piezoelectric sensors, which are deployed on critical structural components of a building or infrastructure. These sensors are interfaced with microcontrollers that continuously monitor seismic activity and structural stress levels. When vibrations exceed predefined thresholds, the system activates a multi-channel alert mechanism including local buzzers and LEOs, as well as remote alerts via GSM, LoRa, or Wi-Fi to notify occupants and emergency services. Following the seismic event, the system switches to a diagnostic mode to evaluate post-event structural integrity by analyzing deformation, tilt, and stress indicators~ The collected data is transmitted to a cloud-based platform, enabling real-time monitoring, remote access, and data visualization via a web dashboard or mobile application. The invention provides a dual-function, low-cost, and scalable solution that enhances earthquake preparedness and enables rapid structural health assessment to support emergency decision-making and reduce the risk of secondary hazards .

No. of Pages : 15 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068220 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AUTOMATIC WESTERN TOILET SYSTEM FEATURING UV-C DISINFECTION,WATER EFFICIENT FLUSHING,AND REAL-TIME AVAILABILITY MONITORING

(51) International classification :A61L0002240000, A47K0013100000, E03D0005100000, A61L0002100000, B08B0009032000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The innovation pertains to the creation of an Automatic Self-Cleaning Western Toilet System that incorporates superior hygiene, water conservation, and smart connectivity elements to transform public and private sanitation facilities. This system aims to improve user convenience, minimize manual intervention, and foster sustainability. It utilizes load cell weight sensors. integrated into the seat lid to ascertain user presence, activating automated flushing through a servo motor mechanism. The operation of a touchless urinal is facilitated by infrared (IR) sensors, allowing for hands-free flushing and automatic toilet lid functionality, thus reducing contact and enhancing cleanliness. UV -C LED modules are utilized for disinfection, sanitizing the toilet bowl after each usage and successfully eradicating hazardous bacteria. A hot air blower incorporated into the seat lid offers hygienic drying for users. To enhance water efficiency, the flush tank is deliberately positioned at an elevation of 5 feet to utilize gravitational pressure, facilitating effective cleaning with reduced water usage. A water level monitoring sensor in the primary tank guarantees flushing occurs solely when sufficient water. is present, thereby preventing wastage during low-water condition's. The system includes a real-time tracking capability through a mobile application that informs users about nearby toilet availability, cleanliness state, and maintenance schedules, hence enhancing accessibility and management of sanitation infrastructure. This integration of automated functionality, intelligent disinfection, resource efficiency, and IoT-based monitoring creates an innovative, sustainable, and user-oriented toilet system appropriate for both urban and rural settings.

No. of Pages : 12 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068223 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : MULTI SCALE RESIDUAL LEARNING ARCHITECTURE FOR FAST AND COHERENT IMAGE INPAINTING

(51) International classification :G06N0003045000, G06N0003080000, G06T0005770000, G06V0010820000, G06N0003048000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Image inpainting aims to restore missing or corrupted regions in images in a visually plausible and semantically coherent manner. A novel Multi-Scale Residual Learning Architecture (MSRLA) combines hierarchical feature reconstruction with residual learning to enable fast and coherent image inpainting. The proposed framework adopts a coarse-to-fine dual-branch encoder-decoder design, enhanced with multi-scale dilated convolutions and residual blocks, effectively capturing both global semantic context and local texture details. To address irregular hole patterns and ensure structural integrity, the architecture incorporates Partial Convolutions at each scale. A dedicated Residual Aggregation Module (RAM) is employed to refine features by learning residuals between the coarse outputs and the ground truth, thereby accelerating convergence and improving texture accuracy. Furthermore, a Multi-Scale Attention Fusion (MSAF) module aggregates contextual information across spatial resolutions, enhancing boundary coherence and visual consistency. The model is optimized using a hybrid loss function that combines L1 reconstruction loss, perceptual loss, and adversarial loss implemented through a PatchGAN discriminator. MSRLA achieves superior performance in terms of both quantitative metrics (e.g., PSNR (Peak Signal-to-Noise Ratio) and SSIM (Structural Similarity Index Measure) and visual quality, while maintaining real-time inference capability

No. of Pages : 7 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068224 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : LOAD-BALANCED FEDERATED LEARNING ARCHITECTURE FOR HETEROGENEOUS EDGE DEVICES

(51) International classification :G06F0018232130, G06N0020000000, G06F0009500000, H04L0047700000, G06N0003063000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT In heterogeneous edge environments, federated learning (FL) encounters major challenges arising from disparities in computational power, communication bandwidth, and data distribution among devices, This paper presents a novel Load-Balanced Federated Learning (LBFL) architecture designed to optimize both task assignment and model aggregation across diverse edge nodes. The architecture employs a hierarchical FL topology coupled with an adaptive K-Means++ clustering algorithm to group devices based on resource similarity. Within each cluster, a resource-aware scheduler leverages a Lightweight Q-Learning agent to dynamically allocate local training workloads, effectively mitigating training delays and the impact of straggler devices. For global model updates, a weighted FedAvg aggregation strategy is adopted, incorporating both data quality and device reliability metrics. The proposed system demonstrates that the LBFL framework significantly improves convergence speed, scalability, and accuracy, making it highly effective for real-world deployments in heterogeneous edge computing environments.

No. of Pages : 7 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068228 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : CONTEXT-AWARE MULTI-GRANULAR AND BLOCK CHAIN BASED DYNAMIC DATA PROTECTION FRAMEWORK

(51) International classification :A01G0025160000, G06Q0050020000, G01N0033240000, G08C0017020000, G05B0019042000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

WIRELESS SENSOR{ DUAL CONTROLU:D SMART IRRIGATION SYSH:I1 WITH 5 MOBILE INTERFACE FOR PRECISION AGRICULTURE TECHNICAL FIELD OF INVENTION The present invention discloses a wireless sensor-based smart inigation system designed for p~ecision agriculture, integrating dual-mode operation I 0 and IoT -based remote control. The system utilizes an ESP8266 microcontroller to process input from a soil moisture sensor and a DHT II temperature-humidity sensor. A relay-controlled water pump is actuated based on soil moisture thresholds in automatic mode, while manual operation is enabled via a physical push-button and a mobile application interface (Blynk). 15 A 16x2 LCD module provides real-time, local feedback on environmental conditions and system status, including temperature, humidity, moisture level, pump activity, and operational mode. The system wirlessly transmits sensor data and control states to the Blynk cloud, allowing remote monitoring and manual override v1a smartphone. This dual control mechanism ensures reliable operation even in areas with limited internet access. The invention offers a cost-effective, energy-efficient, and scalable solution for smart irrigation, promoting water conservation and increased agricultural productivity.

No. of Pages : 11 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068274 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : APPARATUS AND METHOD FOR GENERATION OF UTERINE MUSCLE CONTRACTION WAVEFORMS BEFORE AND AFTER GESTATION PERIOD

(51) International classification :A61B5/391, H03M1/12,
A61B5/00
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application :NA
Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Disclosed herein is an apparatus (100) for generation of uterine muscle contraction waveforms before and after gestation. The apparatus (100) includes an input unit (102) including a term/preterm selector knob (110) and a tunable coefficient knob (112). The tunable coefficient knob (112) includes a potentiometer configured to generate one or more analog signals. The apparatus (100) further includes a processing unit (104) including an Analog to Digital Converter (ADC) (114) and a microcontroller (116). The ADC (114) is configured to convert the one or more analog signals into one or more digital signals and transmit the one or more digital signals to the microcontroller (116). The microcontroller (116) is configured to generate the uterine muscle contraction waveforms representing term and preterm conditions based on variations in the one or more analog signals obtained by turning the tunable coefficient knob (112) to one or more positions. Representative Figure: FIG. 1

No. of Pages : 28 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068506 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : IoT SYSTEM FOR SECURE PHARMACEUTICAL SUPPLY CHAIN

(51) International classification :G06Q0030018000, G06Q0010083300, H04L0067120000, H04W0004800000, H04W0004380000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses an Internet of Things (IoT)-based system for securing and monitoring the pharmaceutical supply chain. The system comprises a microcontroller integrated with a plurality of sensors including temperature, humidity, GPS, RFID, and fingerprint modules. These components work in coordination to continuously monitor environmental conditions, authenticate personnel access, and track the real-time location of pharmaceutical products during storage and transportation. The collected data is transmitted to a cloud-based platform via a wireless communication interface, enabling centralized monitoring, logging, and alert generation. The system ensures compliance with pharmaceutical handling regulations, enhances supply chain transparency, and prevents unauthorized access or tampering, thereby safeguarding drug efficacy and authenticity throughout the distribution process.

No. of Pages : 11 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068507 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Smart Helmet for Motorcyclist

(51) International classification :A42B0003040000, G08B0021020000, G08G0001160000, A42B0003300000, G02B0027010000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

To ascertain whether the biker is wearing a helmet, a smart safety helmet technology is employed. If the rider is not wearing a helmet, the bike will not start. Using an infrared sensor that can identify the rider's presence, we are accomplishing this. If the rider is intoxicated, the bike won't start because an alcoholic sensor measures the amount of alcohol in their breath and assesses whether it is within the permitted range. Depending on whether these two conditions are satisfied, the vehicle unit will either start or not. We measure the vibration threshold value that is produced when a cyclist is hit in an accident using a vibrating sensor, also referred to as a gyroscope. As soon as the threshold value is identified and the assigned value is decided, the message is sent to the appropriate saved mobile phone numbers

No. of Pages : 13 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068508 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Method For Manufacturing Ambient Cured One-Part Geopolymer Paver Blocks Using Solid Alkaline Activators

(51) International classification :C04B0028000000, C04B0012000000, C04B0022060000, C04B0028020000, C04B0018080000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

[018] The present invention relates to a novel process for preparing sodium-based one-part geopolymer paver blocks using a dry mix methodology that enhances safety, scalability, and performance. The process begins by determining the optimal molarity of sodium hydroxide (NaOH) based on the silica content of the aluminosilicate precursor to maintain a targeted aluminosilicate oxide ratio near 2.5. The aluminosilicate precursor typically Class F fly ash is homogeneously dry mixed with a solid sodium-based activator comprising sodium silicate and optionally solid NaOH. Aggregates are then blended into the dry mix, followed by controlled water addition to initiate in-situ alkaline activation and geopolymerization. The resulting paste is cast into moulds and cured under ambient conditions, producing geopolymer paver blocks with compressive strength conforming to IS 15658:2006 standards. The invention significantly reduces alkali content by up to 35% compared to conventional two-part systems improves environmental safety by eliminating corrosive liquid activators, and enhances material workability and mechanical performance, enabling its industrial adoption for eco-friendly construction materials.

No. of Pages : 13 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068509 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : NetScan: An Advanced GUI-Based Network Scanning System for Efficient and Intelligent Network Analysis

(51) International classification :H04L0009400000, G06F0021550000, H04L0061451100, G06F0021570000, H04L0043100000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

In the ever-evolving landscape of cybersecurity and network administration, ensuring the security and reliability of network infrastructure is paramount. Networks are constantly exposed to various threats, including unauthorized access, data breaches, and malicious attacks. To defend against these threats, cybersecurity professionals and network administrators must conduct thorough network reconnaissance and vulnerability assessments. These tasks are essential for identifying potential security risks, understanding network topology, and ensuring that all components of the network are adequately protected. Traditionally, network reconnaissance and vulnerability assessment have been performed using a range of command-line tools, each designed for specific tasks such as ping sweeping, port scanning, and subdomain discovery. While these tools are highly effective, they often come with significant challenges. Command-line interfaces can be intimidating and difficult to master, especially for those who are new to the field or lack advanced technical skills. Furthermore, managing multiple tools for different tasks can be time-consuming and inefficient. This project aims to address these challenges by developing a graphical user interface (GUI) based tool for Kali Linux that integrates three fundamental network reconnaissance functionalities: ping sweep, port scanning, and subdomain finding. By consolidating these capabilities into a single, user-friendly interface, the tool seeks to simplify complex tasks, making network reconnaissance more accessible and efficient for users of all expertise levels. In the field of cybersecurity and network administration, effective reconnaissance and vulnerability assessment tools are essential for securing digital infrastructures. This paper introduces a GUI-based tool for Kali Linux that streamlines network scanning processes, offering an intuitive interface for both novice and experienced security professionals. The tool integrates three core functionalities: Ping Sweep, which identifies active hosts within a network using ICMP requests; Port Scanning, which detects open ports and services using TCP and UDP probes; and Subdomain Discovery, which uncovers subdomains through DNS queries, brute-force techniques, and public database lookups. By combining these features into a user-friendly platform, the tool enhances network mapping, security analysis, and threat detection, making it a valuable asset for penetration testers and system administrators.

No. of Pages : 17 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068510 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : "System and Method for Fraud Detection in HealthTech Using Social Network Analysis and Artificial Intelligence"

(51) International classification :G16H0010600000, G06Q0040080000, G06Q0020400000, G06F0021550000, G06Q0010100000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

This invention presents a fraud detection system for healthcare using Social Network Analysis (SNA) and Artificial Intelligence (AI). Fraudulent activities such as fake billing, identity theft, and falsified medical records cause significant financial losses and affect the integrity of healthcare services. This system identifies fraud by analysing relationships between doctors, hospitals, patients, and insurance providers, detecting unusual patterns and hidden fraud networks. The system consists of five key components. The Data Collection Module gathers information from electronic health records (EHRs), insurance claims, and patient interactions. The SNA Engine maps connections between healthcare entities to detect suspicious links. The AI-Powered Fraud Detection Module applies machine learning algorithms to analyze billing behavior and detect anomalies. The Pattern Recognition and Anomaly Detection Module identifies unusual trends in medical treatments and financial transactions. Finally, the Alert Generation and Reporting System sends real-time fraud alerts and generates reports for further investigation. This system helps improve fraud detection, reduce financial losses, and ensure transparency in healthcare operations. It can be implemented in hospitals, insurance companies, and regulatory bodies to enhance fraud prevention efforts. By combining AI and SNA, the system provides a proactive approach to detecting and preventing fraudulent activities in healthcare

No. of Pages : 15 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068511 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Method for Early detection of Fetal Distress Risk

(51) International classification :G06N0020200000, G06N0005010000, G06F0018243000, G06F0018211500, G06F0018214000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
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(57) Abstract :

This patent application discloses a method for early detection of fetal distress using cardiotocography (CTG) data and a soft voting ensemble approach. Data balancing is achieved through Random Oversampling to ensure equal representation of fetal states: normal, suspect, and pathological. Feature selection is performed using Recursive Feature Elimination (RFE) with a Gradient Boosting Classifier to identify the top 10 most relevant features, enhancing model interpretability and reducing noise. The method constructs a soft voting ensemble that aggregates predictions from multiple classifiers to boost accuracy and robustness. The top five models integrated into the ensemble include Random Forest, XGBoost, Cost-Sensitive Random Forest, Gradient Boosting, and a Voting Classifier. By combining the strengths of these diverse algorithms, the system improves early detection of high-risk fetal conditions and supports timely clinical interventions, ultimately reducing the chances of adverse outcomes during pregnancy.

No. of Pages : 16 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068512 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Development Of Sustainable Lightweight Concrete Using Expanded Polystyrene And Jute Fibers

(51) International classification :C04B0028020000, E04C0005070000, C04B0014380000, G01N0003020000, C04B0016060000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

In the present scenario where the constructions are increasing, the need to find a supplementary aggregate material for the development of light weight concrete and for the improvement of strength by use of additive fibers and which has less environmental effects is of great significance. The present work explores the development and performance evaluation of an innovative lightweight fiber-reinforced concrete (FRC) by incorporating expanded polystyrene (EPS) beads as a partial or full replacement for conventional coarse aggregate and reinforcing it with natural jute fibers. The aim is to create a sustainable and lightweight construction material with enhanced ductility and energy absorption capacity, suitable for non-structural and moderately loaded structural applications. EPS beads significantly reduce the concrete's density, improving thermal insulation and ease of handling, while jute fiber being biodegradable, renewable, and cost effective contribute to improved tensile strength, crack resistance, and post-crack behavior. A series of mechanical tests including compressive strength, split tensile strength, and flexural strength were conducted to assess the performance of various mixes. The results reveal that although the inclusion of EPS beads lowers the compressive strength compared to conventional concrete, the addition of jute fibers compensates by improving tensile and flexural properties. This composite material offers a promising eco-friendly alternative for sustainable construction, balancing weight reduction, thermal efficiency, and mechanical performance.

No. of Pages : 26 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068513 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Hyper-spectral Image Classification for Agricultural Application

(51) International classification :G06V0010820000, G06N0003080000, G06V0010764000, G06V0020100000, G06N0003045000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The invention provides a method and system for hyperspectral image classification based on a hybrid deep learning model that combines Vision Transformers and Deep Matrix Capsule Networks. The process starts with preprocessing of hyperspectral image data, including normalization, noise removal with Gaussian filtering, and dimensionality reduction by Principal Component Analysis. The dimension-reduced image is split into spatial patches, and each patch is embedded into a fixed-length feature vector. These internal patches are fed into a Vision Transformer that derives global spatial-spectral features from self-attention over all patches. The transformer output is then passed to a Deep Matrix Capsule Network, which represents hierarchical relationships with dynamic routing between capsule layers. The capsule network generates a final set of features for classifying every pixel in the original hyperspectral image. The architecture facilitates supervised learning using labeled hyperspectral datasets and provides pixel-wise classification output. A visualization module displays classification maps for interpretation. The overall architecture is scalable to be deployed on GPU-enabled platforms and allows modular scalability across different hyperspectral datasets and application domains. The invention facilitates accurate and structured analysis of hyperspectral data in application domains such as remote sensing, agriculture, and material detection.

No. of Pages : 23 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068514 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Enhancing Plant Disease Detection Through Transfer Learning with Ensemble Techniques

(51) International classification :G06Q0020400000, G06Q0020360000, G06Q0020380000, G06Q0020320000, G06Q0020180000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A real-time payment verification system for automated device control is disclosed, comprising an integrated software solution that connects digital payment processing with hardware operation in automated service devices. The system features three primary modules: a device control module implemented in PHP that interfaces directly with hardware components; a payment module that integrates with the Razorpay payment gateway to process transactions through multiple payment methods including UPI, credit/debit cards, and digital wallets; and a user interface module that provides an intuitive interaction point for customers. The invention ensures that automated devices such as vending machines, water dispensers, and ticketing kiosks only perform their intended operations upon successful payment verification. [014] The system's architecture implements real-time communication between modules, enabling immediate device activation following payment confirmation while maintaining transaction security through enterprise-grade encryption protocols. Additional features include a centralized management dashboard for remote administration, comprehensive error handling mechanisms to ensure service continuity, and data analytics capabilities for operational optimization. The invention significantly enhances operational efficiency by eliminating manual intervention, reducing cash handling risks, and providing valuable insights into user behavior and system performance while being adaptable to diverse applications across retail, healthcare, transportation, and corporate environments.

No. of Pages : 12 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068496 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Designing ZnS/g-C3N4/rGO Ternary Composite for Visible-Light Photodegradation of Crystal Violet Industrial Dye

(51) International classification :B01J0027240000, C02F0101300000, B01J0035390000, C02F0001300000, C02F0001720000

(86) International Application No :NA

Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA

Filing Date :NA

(62) Divisional to Application Number :NA

Filing Date :NA

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(57) Abstract :

The purpose of this study was to ascertain the zinc sulfide-based composite's capacity for photocatalytic degradation in order to efficiently degrade crystal violet (CV). The aqueous dye solutions were exposed to visible light in order to conduct the heterogeneous photocatalytic tests. XRD, FTIR, SEM, UV-Vis, and PL spectroscopic techniques were used to successfully manufacture and analyse the catalysts (ZnS, ZnS/rGO, ZnS/g-C3N4, and ZnS/rGO/g-C3N4). Light absorption was successfully extended to the visible region as a result of ZnS hybridization with rGO and g-C3N4, which decreased the gap, according to the UV-Vis spectra data. When compared to all other composite materials, the PL results confirm that the ideal photocatalyst (ZnS/rGO/g-C3N4) has the lowest electron-hole recombination. During a 70-minute period, the ZnS/rGO/g-C3N4 ternary composite exhibited 96.7% for CV dye among the four samples. Effective parameters such as pH, catalyst dosage, and dye concentration were optimized. Under ideal circumstances, the ZnS/rGO/g-C3N4 combination degraded CV dye with the highest efficiency in 60 minutes of reaction time. Band-edge potential analysis, which was backed by PL spectra and tauc's plot, provided detailed mechanistic insights into the dye degradation process. The ternary composite ZnS/rGO/g-C3N4 is a potential catalyst for the degradation of CV dye in wastewater treatment applications.

No. of Pages : 9 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068497 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Implementation of a Regenerative Braking-Enabled Electric Bicycle with Real-Time Energy Management and Monitoring System

(51) International classification :G01R0031392000, H02J0007000000, B60L0058120000, B60L0007100000, B60K0006480000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

This invention discloses a regenerative braking-enabled electric bicycle integrated with a real-time energy management and monitoring system. The system features a single BLDC motor (24V, 250W) coupled with a regenerative braking mechanism, allowing the battery to recharge during deceleration and downhill rides. The electric bicycle operates using a 24V, 12Ah battery and is equipped with a brush controller for efficient motor control. Real-time monitoring is achieved via a web-based dashboard displaying key metrics such as speed, battery percentage, range estimation, GPS-based location tracking. An Arduino Uno microcontroller interfaces with various sensors, including IR and GPS modules, to collect and transmit data. Additionally, the system includes a battery health management module, monitoring the State of Charge (SOC) and State of Discharge (SOD). The project also includes a MATLAB Simulink-based simulation model to study the performance of the regenerative braking system on a DC motor. The simulation analyzes key electrical parameters such as motor speed, field current, regenerative current, and armature current under different load and road conditions, including uphill, downhill, and flat terrain. This innovation enhances the energy efficiency, regenerative capability, and operational safety of electric bicycles, contributing to eco-friendly and sustainable transportation solutions.

No. of Pages : 11 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068498 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Fault Detection in PV Module Using Machine Learning Algorithm

(51) International classification :G06N0020000000, G06Q0010200000, G06Q0010063100, G06F0011360000, G06N0003080000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a system and method for fault detection in photovoltaic (PV) modules using a machine learning algorithm. The system continuously collects electrical and environmental data from PV modules, preprocesses the data, and utilizes a trained machine learning model to detect and classify faults such as shading, open-circuit, and degradation. The system enables real-time automated fault diagnosis and localization, thereby improving operational efficiency, safety, and energy yield. The invention also provides communication interfaces and graphical user dashboards for effective monitoring and maintenance planning.

No. of Pages : 9 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068499 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : An Effective Pattern Mining Framework for Heterogeneous Network Security Enhancement for Machine Learning-Based Intrusion Detection

(51) International classification :H04L0009400000, G06N0020000000, G06F0021550000, G06N0005040000, G06N0005045000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Traditional intrusion detection systems (IDS) frequently fall short in securing heterogeneous networks—which comprise a variety of devices, protocols, and architectures—in the age of quickly changing cyberthreats. Through the identification of crucial security patterns, the detection of abnormalities, and the real-time mitigation of cyber threats, this invention presents an efficient pattern mining framework to improve machine learning-based intrusion detection. The framework analyzes intricate network traffic and derives valuable insights for increased threat detection accuracy by utilizing sophisticated data mining, feature selection, and artificial intelligence algorithms. This framework continuously learns from network behavior, allowing the detection of advanced persistent threats (APTs) and zero-day assaults, in contrast to traditional intrusion detection systems (IDS), which have a high false positive rate and little adaptability. By supporting several network contexts, such as cloud computing, software-defined networks, and the Internet of Things (IoT), the suggested architecture guarantees scalability and efficiency. It also uses explainable AI techniques, which enable security analysts to improve threat response strategies and analyze model judgments. This framework offers a strong, proactive, and intelligent defense against complex cyberattacks by combining real-time anomaly detection, adaptive learning techniques, and cybersecurity intelligence. This greatly enhances network security in contemporary digital ecosystems.

No. of Pages : 14 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068500 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Customized and Constrained Design Generator for Channapatna Toys Using Generative Artificial Models

(51) International classification :G06N0003045000, G06N0003080000, G06N0003047000, G06F0030270000, G06N0005025000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The invention is a system for smart approach for automatic generation of customized traditional channapatna toys. The system includes a user input interface, style encoder, tradition constrained generator, constrained model and output renderer. The system includes the following steps: The user specifies the preferences such as toy, color schemes, styles to the user input interface. The style encoder encodes the inputs into a latent representation suitable for generative modelling. Tradition-Constrained Generator generates new design variants that reflect user preferences while adhering to traditional design principles. Constraint Module ensures that generated designs are feasible for physical production using traditional methods. Feedback Loop enables iterative refinement through artisan validation. Artisans can review generated designs and provide feedback, which is used to fine-tune the model outputs. Output Renderer converts the final design into 2D sketches or 3D models. Supports formats compatible with digital prototyping tools or manual crafting workflows. The approach uses technologies of artificial intelligence and deep learning.

No. of Pages : 10 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068501 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Distributed Ledger-Based Method For Product Authenticity Verification Using Encrypted QR Codes

(51) International classification :H04L0009320000, H04L0009000000, G06Q0030018000, H04L0009400000, G06F0021640000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

A block chain-based system and method to detect counterfeit products and verify authenticity throughout the supply chain using smart contracts and encrypted QR codes. Each product is registered by a verified manufacturer and assigned a unique QR code linked to immutable data stored on the Ethereum block chain. As the product moves through the supply chain, each transaction—scanned via a block chain-enabled interface—logs critical metadata such as timestamp, identity, and location, creating a secure and transparent audit trail accessible to all stakeholders. The system uses SHA-256 encryption for QR code integrity and leverages tools like Remix, Ganache, and Meta Mask for deployment. Consumers can verify product authenticity through a mobile app, while unauthorized or altered data triggers alerts. Additional features include geolocation tracking, Ethereum gas fees for accountability, and token-based rewards to encourage compliance. The solution is scalable, cost-effective, easily integrable with ERP systems, and ideal for markets requiring affordable anti-counterfeit measures.

No. of Pages : 11 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068502 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : PneumoViT: Pneumonia Detection System with Vision Transformer Integration

(51) International classification :G06N0003080000, G06T0007000000, G06N0003045000, G16H0050200000, A61B0005160000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The global health crisis of pneumonia mostly affects vulnerable populations while remaining as the foremost reason for mortality worldwide. Routine interpretation of CXRs occurs through expert assessment yet delivery of needed treatments may become delayed. The work illuminates a new ViT approach for CXR pneumonia detection which utilizes self-attention to effectively obtain features for accurate classification. The proposed system employs Vision Transformer architecture which receives training from a Kaggle pediatric pneumonia image database consisting of 1,341 normal and 3,875 pneumonia pictures. The technique used Adam optimization together with learning rate scheduling along with extensive data augmentation. Through its assessment the proposed model achieved 90% accuracy which surpassed baseline performance of deep learning approaches. The performance of ViTs in identifying pneumonia signals offers great potential for clinical applications of reliable pneumonia detection methods

No. of Pages : 15 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068503 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : An Online Platform- QuickBites for Ordering Food using MERN Stack

(51) International classification :G06Q0050120000, G06Q0030060100, G06Q0010100000, G16H0020600000, A47G0021020000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The Web-Based Food Ordering Platform aims to revolutionize the dining experience at REVA University by creating a centralized digital platform for students and faculty. It addresses current challenges like long wait times, limited food service hours, and fragmented dining options, which hinder convenience and satisfaction. The platform will enable users to browse menus, preorder meals, customize their orders, view nutritional benefits, and make online payments, fostering a seamless and efficient service. By reducing wait times and streamlining operations, the system also encourages healthier eating habits through nutritional transparency. To achieve this, the project will use modern web development technologies (MERN Stack). The front end is built using React.js to create an interactive and user-friendly interface, while Express.js and Node.js will manage the back end, handling server-side operations and communication with the database. MySQL and MongoDB will be used for secure storage of user data and order information. This project will analyse the platform's impact on improving both operational efficiency and user satisfaction in Reva University's food court

No. of Pages : 20 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068504 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A Mineralogical And Microstructural Analysis OF Bio Enzyme Stabilized Soils

(51) International classification :C05G0003800000, G06Q0050260000, G01N0033240000, E02D0003020000, E02D0003000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

This work presents the use of Bio enzyme to stabilize the subgrade soil is gaining importance in current trends due to increase in vehicular operation and rapid urbanization in developing countries. The analysis of stabilized soil through XRD and SEM indicates a decrease in void space and an improvement in the structural behaviour, validating the enhanced unconfined strength of stabilized soil in comparison to conventional soil. The increase in number of vehicles demands for a better highway having proper design, safety and economical. The overall road construction can be made economical by stabilizing the locally available subgrade soil. The physical features and strength behaviour of various subgrade soil such as red soil, black cotton soil and lithomarge soil are investigated in this study using a systematic approach. The effect of bio enzyme curing at various dosages on the strength behaviour of various soils has been examined. The mineralogical behaviour of conventional and optimum dosage stabilized soil is analysed through XRD and SEM analysis. The analysis of stabilized soil through XRD and SEM indicates a decrease in void space and an improvement in the structural behaviour, validating the enhanced unconfined strength of stabilized soil in comparison to conventional soil.

No. of Pages : 17 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068505 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Autism Support Through Real-Time Emotion Recognition and Caregiver Feedback Using AI-Enabled Smart Textiles

(51) International classification :A61B0005000000, A61B0005024000, A61B0005160000, A61B0005053300, A61B0005020500

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

The present invention relates to a real-time emotion recognition and caregiver feedback system designed to support children with autism spectrum disorder (ASD). The system employs smart textile-embedded physiological sensors integrated into wearable clothing to continuously monitor multimodal physiological signals, including heart rate variability, galvanic skin response, skin temperature, and movement. A novel artificial intelligence engine processes these signals using semi-supervised behavioral state segmentation and an attention-weighted ensemble of recurrent neural networks to accurately identify the child's emotional and engagement states. Personalized baseline calibration adapts the system to individual physiological patterns. Real-time, actionable feedback is delivered discreetly to caregivers via vibrotactile signals or audio prompts, guiding interaction adjustments to enhance social engagement and emotional regulation. A reinforcement learning module optimizes feedback strategies based on caregiver responses and child behavior, enabling an adaptive closed-loop system. This invention provides a non-intrusive, intelligent solution for improving caregiver-child interactions and supporting developmental outcomes in ASD

No. of Pages : 17 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068337 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : DIGITAL TWIN-BASED CYBER SECURITY FOR PHASOR MEASUREMENT UNITS

(51) International classification :H04L0009400000, G06F0021550000, H02J0013000000, G06N0020000000, G01R0019250000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

DIGITAL TWIN-BASED CYBER SECURITY FOR PHASOR MEASUREMENT UNITS The present invention discloses a cybersecurity framework for Phasor Measurement Units (PMUs) in smart grid systems, employing a Digital Twin architecture to enhance real-time threat detection and system resilience. The framework includes a virtual representation of the PMU network that mirrors physical operations and communication behavior. Integrated machine learning algorithms analyze real-time data from both the physical and virtual environments to detect anomalies indicative of cyber threats such as false data injection, data manipulation, and denial-of-service attacks. Upon identifying a threat, the system autonomously triggers appropriate countermeasures to maintain operational continuity. Additionally, a blockchain-based module ensures secure, tamper-proof logging of PMU data and security events. This proactive, adaptive approach significantly improves the cybersecurity posture of PMU-based smart grid infrastructures.

No. of Pages : 12 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068338 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : FEDERATED LEARNING-BASED EDGE COMPUTING FRAMEWORK FOR PHASOR MEASUREMENT UNITS IN SMART GRIDS

(51) International classification :G06N0020000000, H04L0009320000, H04L0009000000, G06F0021620000, G06F0009500000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

FEDERATED LEARNING-BASED EDGE COMPUTING FRAMEWORK FOR PHASOR MEASUREMENT UNITS IN SMART GRIDS The present invention discloses a Federated Learning-Based Edge Computing Framework designed to enhance the performance, security, and efficiency of Phasor Measurement Unit (PMU) data processing in smart grids. The framework integrates edge computing and federated learning to enable decentralized, privacy-preserving training of machine learning models directly at edge nodes. Each edge node locally processes PMU data and trains a model, sharing only model updates with a central server for global aggregation, thereby minimizing data transmission and preserving privacy. This architecture reduces network latency, enhances real-time grid monitoring capabilities, and ensures secure, distributed analytics across heterogeneous edge environments. The invention addresses key challenges of smart grid operations, including data confidentiality, high latency, and computational bottlenecks, and is scalable across large, geographically distributed power systems.

No. of Pages : 10 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068327 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : AUTOMATED CONVEYOR BELT-BASED TRANSPORTATION SYSTEM FOR SAFE AND EFFICIENT DEVOTEE MOVEMENT IN TEMPLE PREMISES

(51) International classification :B65G0017080000, A01G0009240000, G06V0020520000, B65G0043080000, B65G0043020000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses an automated transportation system (100) configured to facilitate the seated, safe, and comfortable movement of devotees within temple premises. The system includes a conveyor belt assembly (110) with a modular conveyor track (300) and a motorized drive mechanism (200) enabling bidirectional movement along predefined routes. Seating arrangements (120) are affixed to the conveyor belt assembly (110), enclosed within a transparent enclosure (130) for protection against external elements. A climate control unit (140) regulates internal temperature and humidity. Safety mechanisms (150), including smoke detectors (151), fire alarms (152), and emergency stop mechanisms (153), ensure operational security. Pause zones (170) positioned along the route are associated with sensor arrays (400) for detecting conveyor position, crowd density and environmental parameters. An administrative control system (160), incorporating a processor (500) and memory (600) autonomously manages halting and restarting at pause zones based on dynamic data enhancing transit efficiency and religious engagement.

No. of Pages : 23 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068269 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AGRIBOT-Crop Monitoring and Fertilizer Dispenser

(51) International classification :A01G0025160000, G06Q0050020000, H04N0007180000, G06N0020000000, G06V0020520000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT AGRIBOT-Crop Monitoring and Fertilizer Dispenser The present invention, AGRIBOT, is an intelligent, autonomous dual-kit system designed for smart agriculture, which performs real-time environmental monitoring, visual crop health analysis, and automated fertilizer dispensing. The system consists of two interconnected components: a Stable Kit, responsible for stationary sensing and irrigation control, and a Mobile Kit, designed for dynamic field navigation, video surveillance, and fertilizer application. The architecture is built using embedded microcontrollers and IoT modules to enable communication and control without continuous human supervision. The Stable Kit is equipped with sensors for soil moisture, temperature, humidity, and NPK nutrient levels. It processes environmental data using an Arduino (or equivalent) microcontroller to autonomously manage irrigation. When nutrient levels fall below specified thresholds, it sends a wireless signal to activate the Mobile Kit. This ensures responsive, real-time crop management, allowing optimal conditions to be maintained continuously. The Mobile Kit features an ESP32-CAM for AI-based image capture and analysis, and an ESP8266 for wireless communication and motion control. Upon activation, it traverses the field, dispenses fertilizer at defined intervals, and captures video frames of the crops. These frames are compared against reference images using machine learning or image processing techniques to identify abnormalities such as pests, diseases, or growth issues. If any anomaly is detected, the system sends alerts to a cloud server or user interface, enabling early intervention and improved crop yield. AGRIBOT represents a novel integration of IoT, AI, and robotics for precision farming.

No. of Pages : 15 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068270 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR ENZYME-BASED WOUND HEALING USING MARINE-DERIVED FIBRINOLYTIC AGENTS

(51) International classification :C12N0001200000, C12R0001125000, C12N0009640000, A61K0031715000, A61K0035742000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT SYSTEM AND METHOD FOR ENZYME-BASED WOUND HEALING USING MARINE-DERIVED FIBRINOLYTIC AGENTS The present invention relates to a novel fibrinolytic enzyme derived from the marine bacterium *Bacillus subtilis* GPJ3, exhibiting potent wound healing properties. Isolated from Pulicat Lake sediments, the strain was identified through morphological, biochemical, and molecular characterization. The enzyme, a 43 kDa serine protease, was purified using ammonium sulfate precipitation, DEAE cellulose chromatography, and casein agarose affinity techniques. It demonstrated stability across a wide pH and temperature range and showed enhanced activity in the presence of Fe^{2+} ions. In vitro scratch assays using H9C2 cell lines revealed accelerated wound closure—24.03% after 24 hours and 96.57% after 48 hours—confirming its regenerative potential. The enzyme also exhibited strong antioxidant activity (76% DPPH inhibition) and anti-inflammatory effects in LPS-induced RAW 264.7 macrophages. Clot lysis assays showed complete thrombus dissolution within 30 minutes. Production was optimized using response surface methodology, with tamarind seed powder as the preferred substrate, yielding up to 1765 FU/ml. The enzyme is suitable for formulation into topical gels, injectable therapeutics, and smart biomedical platforms for trauma care and chronic wound management.

No. of Pages : 23 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068271 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Stability and Sensitivity Analysis of Nonlinear Boundary Value Problems with Time-Dependent Delays

(51) International classification :G06F0017160000, G05B0013020000, G06F0111100000, G05B0017020000, G06F0017130000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

Abstract This research is concerned with the stability and sensitivity analysis of BVPs of nonlinear type with time-dependent delays -- both of interest to their applications in applications such as biological, mechanical and control systems. Both analytical and numerical techniques are used in the study of the effects of delays upon stability and parameter sensitivity of the system. Stability criteria are obtained by means of analytical methods such as Lyapunov-Krasovskii functionals and Razumikhin-type theorems, and sensitivity analysis is accomplished by perturbation theory and variational equations. Numerical simulations (FDM and FEM) are used to solve the equations and investigate the system dynamics in delay situations. We found that for a population biological model, stability holds for delays up to 0.4, beyond which the system becomes unstable. In mechanical systems, the effect on damping delays in mechanical systems for delays larger than 0.5 to significant oscillations is known, and in control above 0.6, an instability occurs based on communication delays. The paper is concluded by noting that knowledge of delay effects is essential for system synthesis and stability in a wide range of applied areas.

No. of Pages : 13 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068351 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : AN ASSISTIVE WRITING SYSTEM FOR CHILDREN WITH SPECIFIC LEARNING DISABILITIES

(51) International classification :G09B0021000000, G06F0003160000, G10L0015220000, H04R0003000000, B41J0003320000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT AN ASSISTIVE WRITING SYSTEM FOR CHILDREN WITH SPECIFIC LEARNING DISABILITIES An assistive writing system (100) for facilitating communication for children with specific learning disabilities. The system (100) comprises a camera module (102), a Braille sensor (104), a microphone (106), a microcontroller (108) and a software subsystem (110). The software subsystem (110) comprises a Braille-to-text conversion module (114), a speech recognition module (116), a text-to-speech conversion module (118), a G-code generation module (120), a user interface module (122), a touchscreen interface (124), a speaker (126), and a Computer Numerical Control plotting mechanism (128). The camera module (102) captures visual input including handwritten and printed text. The Braille sensor array (104) detects tactile Braille input patterns. The microphone (106) receives audio input in the form of spoken language. The input from the camera (102), Braille sensor array (104), and microphone (106) is processed into text and then selectively routed to the speaker (126), the touchscreen interface (124), or the CNC plotting mechanism (128) to enable multi-modal communication and writing output.

No. of Pages : 39 No. of Claims : 11

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068353 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR ADAPTIVE IMAGE CLASSIFICATION USING A HYBRID VISION TRANSFORMER-BASED ARCHITECTURE MODEL

(51) International classification :G06N0003080000, G06N0003045000, G06V0010820000, G06V0010800000, G06N0003046400
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT SYSTEM AND METHOD FOR ADAPTIVE IMAGE CLASSIFICATION USING A HYBRID VISION TRANSFORMER-BASED ARCHITECTURE MODEL The present disclosure envisages a system (100) and method (200) for adaptive image classification using a hybrid Vision Transformer-based deep learning pipeline. The system (100) comprises an image pre-processing unit (101) configured to normalize, resize, and augment input image data. A patch generation module (102) segments images into fixed-size patches and embeds them using linear projection with positional encoding. A reduced-dimension transformer encoder (103) processes the embeddings with bottleneck attention via an integrated BoTNet-based attention processor (104), preserving spatial features with reduced computational overhead. An adaptive learning rate optimizer (105) dynamically adjusts training parameters based on performance metrics. A classification unit (106) applies global average pooling and depthwise separable convolution for label prediction. A deployment module (107) performs model optimization through quantization and pruning for low-power inference. Optionally, a performance monitoring unit (108) and hierarchical feature fusion module (110) enhance efficiency and feature localization without compromising accuracy.

No. of Pages : 41 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068452 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : PERCHLORATE ION SENSOR COMPRISING DIKETOPYRROLOPYRROLE-BASED POLYMERS

(51) International classification :H10K0085100000, H01M0010052500, H01G0009025000, G01N0027333000, H10K0010460000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

PERCHLORATE ION SENSOR COMPRISING DIKETOPYRROLOPYRROLE-BASED POLYMERS ABSTRACT An electrode assembly (100) for a sensor for determining perchlorate ions in a sample is provided. The electrode assembly comprises a source electrode (102), a drain electrode (104), a gate electrode (106), an electrolyte well (110) and an electrochemically active layer (108). The electrochemically active layer (108) comprises a diketopyrrolopyrrole-based polymer having a general structure [I]. [I] The electrolyte well (110) comprises the sample. Upon application of a voltage between the gate electrode (106) and the source electrode (102), and between the source (102) and the drain electrode (104) an electrical signal that correlates to a presence of perchlorate ions in the sample, or concentration of perchlorate ions in the sample, or both is generated. A sensor (300) incorporating the electrode assembly (100) and methods (200, 400) of making and using the same are also disclosed. FIG 1.

No. of Pages : 50 No. of Claims : 22

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068288 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AN INTELLIGENT, IOT-ENABLED SYSTEM FOR REAL-TIME WILD ANIMAL INTRUSION DETECTION, MONITORING, AND REPULSION

(51) International classification :G06N0003045000, G06N0003080000, H04N0007180000, G06V0020400000, G08B0013196000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

The present invention relates to an intelligent, IoT-enabled system for real-time wild animal intrusion detection, monitoring, and repulsion. The system comprises: a central processing unit coupled to a thermal surveillance camera capturing the real-time video feed, and feeding it to the central processing unit, where the machine learning module through Mask R-CNN model, detect and segment the wild animal within the video feed. The detection data is stored in a data storage, wherein the communication module is configured to transmit the detection data and alert notification to the graphical user interface, where real-time alerts and historical data is displayed to the user. The system further comprises a repellent module with a deterrent selection module, configured to generate and emit species specific sound and frequencies to repel the detected animal.

No. of Pages : 28 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068303 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Artificial Intelligence-Based False Alarm Reduction System in 6G Wireless Sensor Networks

(51) International classification :H04L0009400000, H04W0084180000, G08B0029180000, G06N0020000000, G06F0021550000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

This invention relates to security enhancement in sixth-generation (6G) enabled Wireless Sensor Networks (WSNs), where reliable intrusion detection is critical due to the scale, latency sensitivity, and distributed nature of sensor deployments. One of the major challenges in such networks is the high false alarm rate, where anomaly-based intrusion detection systems (IDS) produce up to 40% false positives, leading to unnecessary alerts, wasted energy, and reduced system efficiency—especially in large-scale deployments of over 100,000 nodes, where even a 1% false alarm rate results in 1,000 erroneous alerts per cycle. Existing solutions, such as signature-based IDS, fail to detect new or evolving threats, while anomaly-based systems suffer from threshold rigidity and lack contextual learning, causing high false detection rates. To address this, the invention proposes a False Alarm Reduction Model using Node Pattern Analysis (FAR-NPA), which utilizes real-time node identity allocation, statistical similarity and deviation functions (simm(), diff()), and an adaptive threshold-learning algorithm (FAR-NPA-TLDDR) to distinguish true malicious actions from benign anomalies. By integrating pattern learning with loss rate monitoring, the system significantly improves detection accuracy while suppressing false alarms. Experimental results demonstrate that the proposed model achieves a false alarm reduction accuracy of 98.4%, a pattern analysis time reduction of over 40%, and superior scalability and performance compared to existing IDS methods, making it ideal for secure, real-time 6G WSN applications.

No. of Pages : 12 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068419 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-Driven System for Automated Quality Assurance and Validation of Business Intelligence (BI) Reports

(51) International classification :G06F0040300000, G06V0020520000, G06N0003080000, G06F0040103000, G06V0030413000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

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(57) Abstract :

TITLE OF THE INVENTION AI-Driven System for Automated Quality Assurance and Validation of Business Intelligence (BI) Reports
ABSTRACT The present invention relates to an AI-driven system for automated quality assurance and validation of Business Intelligence (BI) reports. The system comprises a bot agent that autonomously logs into legacy and target BI platforms, navigates dashboards, applies filters, and captures standardized report screenshots. An image processing engine segments visual components—charts, tables, and text blocks—using computer vision and OCR techniques. A hierarchical alignment mechanism maps corresponding elements using structural similarity, OCR-based text matching, and geometric attributes. A multi-modal comparison engine applies statistical correlation, fuzzy logic, and NLP-based semantic analysis to detect discrepancies. A scoring module assigns weighted similarity scores, aggregating them into a final report-level ranking. A visualization and reporting engine generates side-by-side comparisons with overlay highlights and exports results in multiple formats. The system features adaptive validation workflows, continuous learning for improved accuracy, and secure, scalable deployment, enabling high-throughput, low-latency BI QA. It significantly improves validation accuracy, efficiency, and auditability. Figure of Abstract: Fig. 1

No. of Pages : 33 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068344 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : PROCESS TO PREPARE MONOMERIC SUGARS FROM CARBOHYDRATES USING ENGINEERED CARBON CATALYSTS

(51) International classification : A61K31/519,
A61K31/4745
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application
Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

PROCESS TO PREPARE MONOMERIC SUGARS FROM CARBOHYDRATES USING ENGINEERED CARBON CATALYSTS The present invention is in the field of carbohydrates. Particularly, the present invention relates to a process to prepare monomeric sugars from carbohydrates using engineered carbon catalysts, wherein the engineered carbon catalyst is activated carbon functionalized with surface halogen and acid sites. The present invention provides a process that is not only scalable but also suitable for industrial applications, providing a reliable pathway for larger-scale production processes. The present invention also provides a chlorine-functionalized activated carbon catalyst derived from agricultural waste, wherein the catalyst comprises surface-bound chlorine groups and carboxylic groups introduced via aqua regia treatment.

No. of Pages : 33 No. of Claims : 24

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068348 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : COMPACT MICROVOLUME PHOTOACOUSTIC CELL SYSTEM FOR BIOMOLECULAR FINGERPRINTING AND METHOD THEREOF

(51) International classification :G01N0021170000, A61B0005000000, G01N0029240000, G01N0021640000, G01N0015143300

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The present disclosure provides a compact microvolume photoacoustic cell system (100) and method (700) for biomolecular fingerprinting. The system (100) includes a photoacoustic cell (100A) including a mechanical pressure control unit (102), a sample interaction chamber (110) and an acoustic signal detection chamber (116). The sample interaction chamber (110) is configured with a vertical light transmission channel (112) and a cuvette holder (114) aligned along an optical axis. The chamber (110) is optically accessible from the top and permits lateral acoustic wave propagation. The acoustic signal detection chamber (116) includes a piezoelectric (PZT) detector (118) disposed in a horizontal cavity, the PZT detector (118) being coupled to a conductive disc (120) and a connector (122) for signal transmission. The system (100) is configured to detect photoacoustic signals (206) from liquid biomolecular samples using an excitation of a pulsed laser (202) in volumes as low as 150 μ L.

No. of Pages : 25 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068409 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Blood Group Detection Using Fingerprint

(51) International classification :G06N0003080000, G06V0040120000, G06N0003045000, G06V0040130000, G06V0010820000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

This invention presents a novel, non-invasive approach for detecting blood groups using fingerprint image analysis combined with deep learning techniques. Unlike traditional methods that require blood samples and laboratory facilities, this system analyzes fingerprint ridge patterns to predict an individual's blood group, offering a faster and more accessible solution. A deep learning model is trained on a labeled dataset of fingerprint images to achieve accurate classification. The method is cost-effective, portable, and suitable for deployment in emergency situations, health camps, and rural areas. With an accuracy exceeding 85%, this innovation demonstrates the potential of integrating biometric data with medical diagnostics to support efficient and scalable healthcare delivery. The proposed system follows a structured pipeline beginning with fingerprint collection and image preprocessing, followed by feature extraction and model training using convolutional neural networks (CNNs). The model undergoes rigorous evaluation and optimization to enhance its predictive performance. Finally, the trained model is integrated into a user-friendly web application, enabling real-time blood group prediction. This end-to-end architecture ensures a seamless and reliable diagnostic process, bridging the gap between biometric sensing and healthcare innovation.

No. of Pages : 16 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068460 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : RESUME-FIT: AN AI-POWERED CONTEXT-AWARE RESUME ANALYSIS AND ENHANCEMENT SYSTEM

(51) International classification :G06Q0010105300, H04L0051020000, G06F0040300000, G06N0020000000, G06F0040289000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

ABSTRACT: The present invention relates to an intelligent resume analysis and enhancement platform called Resume-Fit. This system leverages natural language processing, machine learning, and a Retrieval-Augmented Generation (RAG) pipeline to evaluate and improve resumes. It computes a similarity score between resume content and job descriptions and generates personalized, actionable suggestions using large language models (LLMs). The system is deployed as a secure web application with an interactive chatbot and email reporting, enabling job seekers to optimize resumes with high precision and privacy.

No. of Pages : 8 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068459 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A device for spectral analysis of soil samples and a method thereof

(51) International classification :G01N0021030000, G01N0021250000, G01N0033240000, G01J0003280000, G01N0021640000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention discloses a device (102) for spectral analysis of soil samples (216) and a method (700) thereof. The device (102) comprises at least one cuvette unit (206) which receives soil samples (216), an emitter unit (202) emits light of one or more desired wavelengths and passes through the cuvette (206), at least one cuvette gear unit (204) holds the at least one cuvette (206) and at least one slit for light passage. A motor unit (208) is operatively connected to the at least one cuvette gear unit (204) to control rotation of the cuvettes (206) for enabling individual analysis of the soil samples (216). A diffraction grating unit (210) diffracts the emitted light into transmittance spectrum at multiple angles. Further, a camera unit (212) captures the transmittance spectrum at multiple angles and transmits to a processing unit (302) to determine chemical compositions of the soil samples (216).

No. of Pages : 29 No. of Claims : 22

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068440 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Fuel Additive for Enhanced Combustion Efficiency and Reduced Emissions

(51) International classification :C10L0001160000, C10L0001185000, C10L0001182000, C10L0001020000, C10L0001140000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT OF THE INVENTION The present invention discloses a novel fuel additive composition designed to enhance combustion efficiency and reduce harmful emissions in internal combustion engines fueled by diesel or gasoline. The composition comprises 40-60% oxygenated compounds (e.g., ethanol, methyl tert-butyl ether), 20-30% combustion catalysts (e.g., cerium oxide), 10-20% stabilizers (e.g., polyisobutylene succinimide), and 5-10% solvents (e.g., toluene). When blended with fuel at 0.1-0.5% by volume, the additive improves fuel efficiency by 10-15% and significantly reduces emissions, achieving 25-30% reduction in carbon monoxide (CO), 15-20% in nitrogen oxides (NOx), and 20-25% in particulate matter (PM). The additive is prepared by mixing components at ambient temperature followed by filtration, ensuring stability and compatibility with existing fuel systems. It requires no engine modifications and is suitable for spark-ignition and compression-ignition engines, offering a cost-effective solution for environmental sustainability and compliance with stringent emission regulations.

No. of Pages : 10 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068462 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : MULTIFACETED APPLICATIONS OF NOVEL CHROMONE-CURCUMIN/DIHYDRPYRIMIDINONE DERIVATIVES

(51) International classification :A61P0003100000, C07D0239220000, G16C0020500000, A61K0045060000, A61K0031120000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

MULTIFACETED APPLICATIONS OF NOVEL CHROMONE-CURCUMIN/DIHYDRPYRIMIDINONE DERIVATIVES In this proposal, we concentrate on the hybrid drug design approach of several hybrid analogs that contain chromone, considering their biological potential in various diseases particularly in diabetes and cancer. The synthesis of 4-arylidine curcumin and dihydropyrimidinone derivatives using different substituted chromone aldehyde, this novel drug candidates scaffolds with improved structural and biological and functional behavior with respect to its anti-diabetic properties. Outcome will influence the development of Hence, studying the heterogeneous chromone scaffold by both experimental and theoretical approach will helps us to develop the significant anti-diabetic and anticancer drug candidate with less time and reduced resources for further clinical applications. Novel drug candidates compared to the superior anticancer and anti-diabetic drugs existing in the market. In this study, novel Design, synthesis and characterization of 4-arylidine curcumin and dihydropyrimidinone derivatives using containing substituted chromone scaffolds by structural modification of heterocyclic compounds with increasing aromaticity to produce as a prospective drug candidate. To Screening of compounds by novelistic theoretical approach through pharmacokinetics (ADMET) and pharmacodynamics (molecular simulation) studies. To Evaluation of anti-diabetic potential by in-vitro application compared with existing drugs. If the results of the above studies are convincing, it will strengthen the fact that novel curcumin and dihydropyrimidinone derivatives would be developed as an antidiabetic agent for the treatment of diabetes mellitus. FIG.1

No. of Pages : 14 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068463 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : MONOPOLE MIMO CPW-FED PATCH ANTENNA SYSTEM WITH WIDER IMPEDANCE BAND FOR 5G APPLICATIONS

(51) International classification :H01Q0009040000, H01Q0001380000, H01Q0001240000, H01Q0001500000, H04B0007041300

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The design of a compact monopole CPW-fed patch antenna system tailored for MIMO 5G applications. The proposed antenna is built on FR-4 substrate with a dielectric constant of 4.4 with a thickness of 0.8 mm, the antenna structure is optimized for strong performance within a focused frequency range. Key design elements such as precisely etched slots and symmetric geometry, help achieve enhanced impedance matching and reduced mutual coupling between MIMO elements. The simulated results confirm that antenna has strong resonance at the 10.7GHz frequency with return loss (S11) dropping below -20 dB indicating minimal signal reflection and good transmission efficiency. The radiation pattern shows stable and omnidirectional coverage. In the proposed design, CPW width was considered 3mm, and the study of directional characteristics was observed the better performances. The proposed antenna gain 5.6 dBi indicates very good radiation. The proposed antenna has compact size and reliable performance. The proposed antenna design has a strong application for modern single-band wireless technologies, including WLAN and sub-6 GHz 5G systems.

No. of Pages : 18 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068474 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Blue Monkey Integrated Coot Optimization with Hierarchical Attention Multimodal Deep Learning for Multi-Document Summarization

(51) International classification :G06F0016340000, G06N0020000000, G06F0040300000, G06N0003080000, G06N0003045000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention presents a novel multi-document summarization system combining Blue Monkey Integrated Coot Optimization (BMICO) with Hierarchical Attention Multimodal Deep Learning (HAMD). Utilizing BERT tokenization, the system extracts rich contextual embeddings from multiple documents and employs a hierarchical attention mechanism to focus on relevant words and sentences, effectively handling redundancy and semantic coherence. The BMICO algorithm optimizes the HAMD model's weights, improving training efficiency and summary quality. Extensive experimentation demonstrates superior performance in terms of ROUGE, precision, recall, and F-measure, surpassing existing methods. The model is scalable, domain-adaptable, and capable of generating concise, coherent summaries from large document sets, facilitating efficient information retrieval and knowledge synthesis across various applications such as journalism, academia, and legal domains.

No. of Pages : 26 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068477 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Smart Chair for Sitting Posture Detection using IoT

(51) International classification :A61B0005110000, G16H0040670000, A61B0005000000, A61B0005103000, G16Y0010600000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention discloses an IoT-enabled smart chair system designed to monitor and correct human sitting posture in real time. The chair integrates eight Force Sensitive Resistors (FSRs) placed at pressure-sensitive points to detect posture by analyzing pressure distribution patterns. A Wi-Fi-enabled microcontroller processes the sensor data and communicates with a cloud server to log posture types and send alerts when users maintain incorrect positions beyond preset durations. The system can distinguish eight different sitting postures and is capable of alerting users via email when improper posture is detected for 10 or 30 minutes. A web application built with PHP, HTML, and MySQL allows users to access posture records, behavioral summaries, and health insights through an intuitive interface. The invention is passive, wearable-free, and scalable for deployment in homes, offices, or educational institutions. It promotes preventive healthcare by reducing risks of musculoskeletal problems and supports future integration with AI and wearable technologies for enhanced feedback and customization.

No. of Pages : 21 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068478 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A Conservative Management of Obesity Using Treatment Modalities in Healthy 360 Degrees Transformation (H 360 T)

(51) International classification :A61P0003040000, G16H0020300000, G16H0020600000, A61B0005000000, G16H0050200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

[06] This work introduces the Healthy 360 Degrees Transformation (H 360 T) protocol—an innovative, non-invasive approach to obesity management. H 360 T combines diagnostic evaluation, electrotherapy, personalized nutrition, and tailored physical activity into a holistic and sustainable treatment plan. Beginning with a detailed assessment of medical history and body composition, the protocol ensures individualized care. Electrotherapy enhances metabolism, muscle tone, and lymphatic drainage, while diet and exercise are customized to support fat loss and health improvement. Implemented on over 10,000 patients under expert supervision, the protocol has demonstrated significant weight loss, improved metabolic markers, and high adherence, offering a safe and effective alternative to conventional methods. Accompanied Drawing [FIG. 1] [FIG. 2]

No. of Pages : 17 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068542 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : EMOTIONAL INTELLIGENCE AND LEADERSHIP EFFECTIVENESS IN HRM

(51) International classification :G06Q0010105000, G06Q0010105300, G10L0025630000, G09B0007020000, G06N0020000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

EMOTIONAL INTELLIGENCE AND LEADERSHIP EFFECTIVENESS IN HRM ABSTRACT This invention explores the integration of emotional intelligence (EI) into leadership effectiveness within Human Resource Management (HRM). It focuses on how leaders who demonstrate high levels of emotional intelligence such as self-awareness, empathy, emotional regulation, and social skills can significantly enhance team performance, employee engagement, and organizational culture. The system involves the application of psychometric assessments, AI-based behavioral analysis, and personalized development programs to evaluate and strengthen EI in current and future leaders. By embedding EI metrics into leadership evaluation frameworks, HR professionals can make more informed decisions in recruitment, training, and succession planning. This approach also supports better conflict resolution, improved communication, and effective change management. The invention emphasizes the role of digital tools and predictive analytics in measuring emotional responses and leadership outcomes. Ultimately, it presents a scalable, data-driven strategy for cultivating emotionally intelligent leadership across diverse organizational settings, driving both individual and institutional success in the long term.

No. of Pages : 12 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068543 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : INTELLIGENT IOT DEVICE DISCOVERY AND LIFECYCLE MANAGEMENT LEVERAGING MACHINE LEARNING AND CLOUD APIS

(51) International classification :H04L0009400000, G06F0009500000, G06F0009455000, H04L0067120000, H04L0067100000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention relates to an intelligent system for automated discovery, onboarding, and lifecycle management of Internet of Things (IoT) devices using machine learning (ML) and cloud-based APIs. The system comprises a discovery engine that leverages ML algorithms to detect and classify devices based on behavioral and network characteristics. Once identified, devices are securely onboarded through cloud API integration using OAuth-based protocols. A lifecycle management module continuously monitors device health, predicts failures using anomaly detection, automates firmware updates, and initiates secure decommissioning. The system further includes a cloud orchestrator that communicates with platforms such as AWS, Azure, or Google Cloud using REST, MQTT, or GraphQL APIs, enabling scalable and real-time control. A user interface provides real-time visualization, alerts, and policy-based controls. An optional Edge AI layer supports localized intelligence for environments with bandwidth or latency constraints. This invention significantly enhances scalability, automation, and security in managing large-scale heterogeneous IoT deployments with minimal human intervention. FIG.2

No. of Pages : 14 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068544 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-Powered Drone for Land Health Assessment Using Spatial Adjacency Graphs

(51) International classification :G06V0020100000, G05D0001000000, G06T0007000000, B64C0039020000, G16H0050300000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

This innovation introduces a fully autonomous drone-based system designed for the advanced monitoring and assessment of soil degradation, erosion, and overall land health. Central to this system is the integration of AI-powered imaging and a novel analytical framework based on Spatial Adjacency Graphs (SAGs). The drone is equipped with high-resolution multispectral and potentially hyper spectral sensors capable of capturing rich spectral and spatial data over large geographic areas without human intervention. Once airborne, the drone autonomously navigates and collects imagery of the targeted landscape. This imagery is then processed in real time or post-flight by an onboard or edge-based AI module, which analyzes the data to classify individual spatial units—such as pixels or small image patches—according to key indicators of land health, including vegetation cover, moisture levels, bare soil presence, and spectral signatures indicative of erosion or degradation. Following classification, a Spatial Adjacency Graph (SAG) is constructed to model the spatial relationships among the classified units. In this graph-based representation, each node corresponds to a distinct spatial unit, and edges are established between neighboring nodes to reflect spatial proximity and potentially spectral similarity. This allows the system to go beyond traditional pixel-level analysis by incorporating the spatial context and interconnectivity of land features. Graph-based algorithms are then applied to the SAG to detect and analyze complex spatial patterns of degradation. This includes identifying contiguous regions of degraded land, quantifying the extent and severity of soil erosion, and assessing the structural distribution of healthy versus unhealthy zones. The graph structure enables the system to capture not only local conditions but also their broader spatial interactions, thereby providing a holistic view of landscape health. As output, the system produces detailed geospatial reports and high-resolution maps that visually highlight degradation hotspots, erosion paths, and the spatial connectivity between healthy and degraded areas. Additionally, it generates alerts for critical zones that require immediate intervention. These insights are tailored for land managers, environmental planners, and policymakers, offering a powerful tool for data-driven land management, targeted remediation strategies, and long-term sustainability planning.

No. of Pages : 17 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068563 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Smart Explanatory System for Automated Product Information Delivery Using IoT Technology

(51) International classification :G06Q0030024100, G07F0009020000, G06Q0030060100, G06Q0030020100, G06Q0030028300

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a Smart Explanatory System utilizing Internet of Things (IoT) technology to autonomously deliver product information without human intervention. This system is designed to enhance customer experience and reduce labor dependency in retail environments. Each product is embedded with an IoT-enabled module comprising a microcontroller, wireless communication unit, and audio output component. When a customer approaches or interacts with a product, the system detects their presence via sensors (e.g., motion, proximity, or RFID) and automatically plays pre-stored or dynamically generated audio detailing product features, pricing, usage, and other relevant information. The system may be integrated with a central management interface to update or customize content remotely. This invention is particularly beneficial for merchants, aiming to minimize staffing costs, improve accessibility, and provide consistent product explanations. It is scalable, cost-effective, and suitable for implementation in supermarkets, electronics stores, exhibitions, and other retail environments.

No. of Pages : 13 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068579 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Early Plant Leaf Disease Detection Using CFSA-Optimized CNN with Transfer Learning

(51) International classification :G06N0003045000, G06N0003080000, G06T0007110000, G06V0010820000, G06V0010764000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

This invention presents an intelligent system for early detection and classification of plant leaf diseases using advanced image processing and deep learning techniques. The method begins with adaptive anisotropic diffusion for noise reduction, followed by precise leaf segmentation via U-Net++ trained with the Moving Gorilla Remora Algorithm (MGRA). To enhance dataset robustness, the system applies position and color augmentation. A two-level classification approach is used where the first stage identifies the plant species, and the second stage detects specific diseases using a transfer learning-based LeNet CNN optimized by the Chronological Flamingo Search Algorithm (CFSA). CFSA improves CNN training efficiency and accuracy, while MGRA refines segmentation precision. The system extracts critical features from segmented leaves and delivers highly accurate disease predictions with over 95% accuracy, making it suitable for deployment in real-time, resource-limited agricultural environments. This invention supports early diagnosis, timely intervention, and sustainable crop management, reducing economic losses and improving crop yield and quality.

No. of Pages : 26 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068581 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : ENERGY HARVESTING FROM INDUSTRIAL WASTEWATER USING SMART BIOREACTOR SENSORS

(51) International classification :H01M0008160000, C02F0003000000, C02F0003340000, H04L0067120000, C02F0003300000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention introduces a smart bioreactor system for energy harvesting from industrial wastewater, leveraging microbial fuel cell (MFC) technology. This innovative solution simultaneously treats wastewater and generates bioelectricity, reducing industrial energy consumption and promoting sustainability. The system features a bioreactor chamber where electroactive microorganisms break down pollutants in industrial effluents, generating electrons converted into electrical energy. Intelligent sensors continuously monitor parameters like pH, temperature, and dissolved oxygen to maintain optimal conditions. An AI-powered adaptive control mechanism processes this real-time data, predicts energy generation, and dynamically adjusts operations for maximum output and treatment efficiency. Further enhanced by an IoT interface, the system allows remote monitoring and control via a cloud-based dashboard. By integrating MFCs with smart automation and remote monitoring.

No. of Pages : 16 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068607 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Machine Learning-Based Intelligent Sleep and Wake-Up Scheduling for Healthcare IoT Communication

(51) International classification :G16H0010600000, H04L0067120000, G16H0080000000, H04W0004700000, H04W0004380000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The current invention reveals a clever system that uses machine learning techniques to optimize sleep and wake-up cycles in healthcare Internet of Things (IoT) networks. The invention solves the urgent need for energy-efficient communication between Internet of Things devices, including wearable monitors, implanted sensors, and diagnostic instruments used in medical settings. The system forecasts ideal sleep and wake-up times for every IoT device by examining past communication trends, patient health information, and network conditions. This method guarantees dependable and prompt transmission of vital healthcare data while drastically lowering energy consumption and prolonging device lifespan. The system offers a reliable and responsive solution for healthcare IoT communication by dynamically adapting to changes in patient conditions and network requirements through real-time learning.

No. of Pages : 10 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068585 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : MKET-A COMPREHENSIVE BUSINESS TO BUSINESS PLATFORM

(51) International classification :G06Q0010087000, G06Q0030064500, G06Q0010080000, G06Q0010063000, H04N0021258000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

M KET is a cutting-edge B2B platform made to increase modern business's profitability, effectiveness, and transparency. Through an intuitive interface, it provides real-time access to company locators, live inventory updates, and comprehensive profiles. While MKET BOOKS is in charge of calendar-based monitoring, financial planning, and barcode inventory management, MKET MANAGEMENT is in charge of logistics, HR, marketing, and AI-driven analytics on the back end. Secure OTP-verified rates, customer-driven ratings using a points system, and secured access using OTP-protected private keys are some of the important features. In order to foster cooperation and competitive insights, M KET offers help for concept pitching, business model development, investment guidance, and company classification. Profitability estimates in rented premises based on regional markets are made possible by rental integration. Through the use of sophisticated analytics and process optimization, MKET unlocks development in a variety of sectors and improves transparency, assuring long-term competitiveness in the modern business environment.

No. of Pages : 9 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068595 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : CROSS-DOMAIN GENERATIVE ADVERSARIAL NETWORK (CD-GAN) FOR ZERO-DAY INTRUSION DETECTION

(51) International classification :G06Q0040040000, H04L0009400000, G06N0003045000, G06N0003080000, G06Q0040000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Cross-domain generative adversarial network (CD-GAN) for zero-day intrusion detection is the proposed invention. Stock Market Returns is the proposed invention. The invention focuses on analyzing the transaction databases of industries and stock market returns. The intention is to study and predict the financial returns and at the same time improving the economic status.

No. of Pages : 12 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068596 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Integrated Mobile Charging Station with Solar and Wind Energy

(51) International classification :H02J7/00, H02S10/12,
H02S10/40, F03D9/11
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to :NA
Application Number :NA
Filing Date :NA
(62) Divisional to Application :NA
Number :NA
Filing Date :NA

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(57) Abstract :

The "Hybrid Mobile Charging Station" is an innovative device that provides a portable and sustainable power solution for charging mobile devices such as smartphones and laptops. It integrates renewable energy sources, specifically a 40W solar panel and a 20W small wind turbine, to generate electricity in varying environmental conditions. The station features a sophisticated power management system that includes a charge controller and a Battery Management System (BMS) to ensure efficient energy flow and protect the battery from potential issues. A Raspberry Pi Pico manages power distribution and system monitoring. Designed with portability in mind, the station includes wheels for easy transport and an anti-theft alarm for security. This invention offers a practical solution for off-grid and remote power needs, demonstrating the effective use of renewable energy technology in mobile applications.

No. of Pages : 20 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068633 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Formulation And Evaluation Of Alternanthera Sessilis Based Ointment

(51) International classification :A61K0036210000, A61K0036310000, A61K0008978900, A61K0009060000, A61K0009000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The increasing demand for safe, natural alternatives to synthetic skin treatments has encouraged the exploration of plant-based remedies. Alternanthera sessilis, a widely used medicinal herb in traditional medicine, possesses significant anti-inflammatory, antimicrobial, and wound-healing properties. This study focuses on the formulation and evaluation of a topical ointment containing extracts of Alternanthera sessilis, aiming to provide an effective herbal solution for common skin conditions such as wounds, infections, and inflammations. The plant extract was obtained through standardized extraction methods and incorporated into a suitable ointment base. The formulation was evaluated for its physical properties, including spreadability, consistency, pH, and stability. Biological efficacy was assessed using in vitro models to determine antimicrobial activity. Results suggest that the Alternanthera sessilis-based ointment is stable, user-friendly, and shows promising therapeutic potential. The study supports the traditional use of this plant and encourages its integration into modern herbal dermatological products

No. of Pages : 24 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068597 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : USING MACHINE LEARNING TO RECOMMEND VOCABULARY FOR ESL LEARNERS IN HIGHER EDUCATION

(51) International classification :G06Q0050200000, G06N0020000000, H01G0009012000, H04L0041160000, G06N0020200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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6)Mr.K.Kalyanasundaram
7)L.Poornima Devi
8)Dr.R.Abeetha
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(57) Abstract :
Using Machine Learning to Recommend Vocabulary for ESL Learners in Higher Education is the proposed invention. The proposed invention focuses on understanding the functions of ESL Learners. The invention focuses on analyzing the parameters of Vocabulary for ESL Learners in Higher Education using algorithms of Machine Learning Approach.

No. of Pages : 14 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068598 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : MULTI-MODE MULTI-BAND DIGITAL CONTROLLER FOR SUB-6 GHZ APPLICATIONS

(51) International classification :H04W0084120000, H04W0088060000, G06F0001320300, H02J0003460000, H01L0029417000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The design of a power management system for supporting User Equipment (UE) devices for text, data, voice, and video communication plays a vital role in present portable devices. This power management system for UE with power amplifier structure is designed by digital enable circuit, which supports multiple communication modes with multiple frequency bands. The digital controller uses four enable control signals, out of which one control command is used for the GSM mode of service with n8 band, second control command is for the LTE mode with n3 band, third control command is for the LTE Wi-Fi mode with n40 band, and a fourth command enables the Wi-Fi mode with n79 band of the UE communication system. This feature of using a digital controller unit provides power control and enable control command generation, providing a better UE power management system.

No. of Pages : 9 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068600 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : PREPARATION AND CHARACTERIZATION OF CHITOSAN/PVA/CURCUMA AROMATICA FOR BIOMEDICAL APPLICATIONS

(51) International classification :A61K0036906600, A01H0006000000, A61L0015260000, A61L0015280000, C08L0005080000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

In the modern era, Nanotechnology has revolutionised the world as nanomaterials have exceptional properties which can also be modified according to the application. The exceptional properties can be attributed to the greater surface area. Though there are many ways of producing, nanofibers electrospinning is found to be one of the most suitable methods. Electrospinning as received much attention in the recent past and is definitely one of the best methods to produce nano fibres. Electrospinning technique was used to prepare Chitosan-polyvinyl alcohol nanofibrous mats. Chitosan combined with a natural or artificial polymer has been a topic which is tremendously researched. In this study, Chitosan I PYA was treated with drug to study its antibacterial activity, which could be further used for wound healing applications. Chitosan/PVA blend was incorporated with natural product Curcumin Aromatica. The nanofibrous mats were characterised using scanning electron microscopy (SEM) and Fourier transform infrared (FT-IR) spectroscopy. SEM images showed the formation of uniform fibres

No. of Pages : 6 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068603 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : DEVELOPMENT OF DUAL-LAYER BIOACTIVE CERAMIC-POLYMER COATINGS ON 316L STAINLESS STEEL FOR ENHANCED ORTHOPEDIC IMPLANT PERFORMANCE

(51) International classification :A61L0031020000, A61L0027540000, A61L0027040000, A61L0027300000, A61L0027500000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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-

(57) Abstract :

The development of multifunctional coatings on 316L stainless steel (SS) is gaining prominence in biomedical engineering to address limitations such as localized corrosion, metal ion release, and poor tissue integration in physiological environments. This study presents a dual-layered bioactive coating approach aimed at enhancing the corrosion resistance and biocompatibility of medical-grade 316L SS for orthopedic implant applications. The first layer involves the deposition of nanohydroxyapatite (nHAP), a bioactive ceramic known for its chemical similarity to bone mineral and excellent osteoconductivity, using the electrophoretic deposition (EPD) technique. This ceramic layer improves corrosion resistance and supports bone cell attachment. Subsequently, a nanofibrous layer composed of collagen-a natural, biocompatible protein-and polyvinyl alcohol (PV A)-a synthetic polymer with good film-forming property-is deposited over the ceramic coating using electrospinning. This polymeric layer mimics the extracellular matrix, enhances cell proliferation, and promotes tissue integration. The combined ceramicpolymer bilayer coating offers a synergistic effect, resulting in improved corrosion protection, and biocompatibility. This work aims to develop a cost-effective, durable, and biologically favorable surface modification strategy for 316L SS, thereby improving its clinical applicability in orthopedic and other biomedical implants.

No. of Pages : 8 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068604 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : QUAD-WHEELED WALL CLIMBING ROBOT WITH CENTRAL ELECTROMAGNETIC DISC FOR OMNIDIRECTIONAL ROTATION

(51) International classification :B62D0057024000, B25J0005000000, G01N0027820000, B60B0019000000, B60B0019120000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses a quad-wheeled wall-climbing robot featuring a centralised electromagnetic disc for magnetic adhesion and omnidirectional rotation on vertical ferromagnetic surfaces. The system integrates four Mecanum wheels driven by individual gear motors, enabling omnidirectional movement without rotating the entire chassis. A dual-servo mechanism enables axial engagement and 360° rotational actuation of the central electromagnetic disc, allowing instantaneous directional changes while maintaining surface adhesion. The robot's core architecture is controlled by a microcontroller (Arduino Mega), which coordinates wheel vectors, disc engagement, and chassis rotation using a path-planning algorithm. This invention overcomes limitations in payload capacity, manoeuvrability, and adhesion reliability found in existing wall-climbing robots. The system enables faster surface traversal, supports higher payloads, and reduces energy consumption via localised, regulated magnetic adhesion. A fail-safe detachment mechanism involves sequential disc de-energisation and mechanical retraction. The platform is suitable for industrial applications such as non-destructive testing, maintenance, and painting of vertical metal structures. It can be integrated with NDT sensors and wireless data modules for smart inspection tasks. Accompanied Drawing [FIG. 1] [FIG. 2] [FIG. 3] [FIG.4]

No. of Pages : 14 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068608 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ELECTROSPINNING-BASED FABRICATION OF A COMPOSITE NANOSCAFFOLD FROM COLLAGEN, SODIUM, ALGINATE, AND PVA FOR ENHANCED WOUND HEALING

(51) International classification :D01D0005000000, A61L0027560000, A61L0027260000, D04H0001728000, A61L0027380000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT OF THE INVENTION: The development of nanofibrous scaffolds using biocompatible polymers has gained significant attention in biomedical research, particularly for applications in tissue engineering and wound healing. This study outlines the fabrication of a Nano scaffold using a blend of collagen (Type I), sodium alginate, and polyvinyl alcohol (PV A) through electrospinning. A 1.0% (w/v) PV A solution was prepared in distilled water at 80°C, while 2% (w/v) sodium alginate and 1% (w/v) collagen solutions were prepared in distilled water and 0.5 M acetic acid, respectively. The polymer solutions were blended in optimized ratios (e.g., 70:20:10) to ensure suitable viscosity and conductivity for electrospinning. Electrospinning was carried out using a high-voltage setup under controlled conditions, yielding uniform nanofibers collected on a flat plate or rotating drum. The resulting scaffold integrates the mechanical strength of PVA, the gel-forming ability of sodium alginate, and the bioactivity of collagen, offering a promising platform for advanced wound healing and tissue regeneration

No. of Pages : 5 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068648 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : UV Irradiation Induced Capacitance Enhancement in PANI/SrZr(PO₄)₂ Composites.

(51) International classification :H01G0011860000, G01N0021350000, C08L0023120000, C08J0003200000, H01G0011300000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
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(57) Abstract :

The present invention relates to nanocomposite materials comprising polyaniline (PANI) and strontium zirconium phosphate (SrZr(PO₄)₂, SZP), synthesized via an in situ polymerization method with SZP concentrations of 10 wt%, 30 wt%, and 50 wt%. Characterization techniques including Field Emission Scanning Electron Microscopy (FESEM), X-ray Diffraction (XRD), and Fourier-Transform Infrared Spectroscopy (FTIR) confirm uniform dispersion of SZP, semi-crystalline polymer structure, and chemical interactions between PANI and SZP, respectively. Electrochemical analysis using cyclic voltammetry (CV) reveals significantly enhanced specific capacitance in the PANI/SZP nanocomposites compared to pristine PANI. Notably, upon exposure to ultraviolet (UV) irradiation for 6 hours, the composites display improved electrochemical performance, whereas pristine PANI shows degradation. The incorporation of SZP enhances both the capacitance and UV stability of the composites, making them highly suitable for advanced supercapacitor applications.

No. of Pages : 10 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068649 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Integrated Combinational Management System for Smart Electrical and Communication Networks

(51) International classification :H04W0084180000, G06Q0030020700, G06F0001260000, H04L0067120000, H02J0013000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

An integrated combinational management system is disclosed that unifies electrical distribution management with advanced communication technologies. The system includes an electrical management unit for power monitoring and control, a communication control unit for real-time data transmission, an integrated interface for centralized control, and a sensor network for adaptive and predictive operations. The invention provides enhanced reliability, efficiency, and security in smart grids, industrial automation, and smart building applications.

No. of Pages : 9 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068650 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Design a Customized CNC Machine For Cost-Efficient Manufacturing

(51) International classification :B33Y0010000000, B29C0064118000, G06Q0050200000, B33Y0080000000, B23K0026080000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention relates to a customized Computer Numerical Control (CNC) machine designed to provide an affordable and efficient manufacturing solution for small and medium-scale industries, individual fabricators, hobbyists, small workshops, and educational institutions. The machine integrates a simplified mechanical structure fabricated from cost-effective materials such as aluminium extrusions, mild steel sheets, and polymer composites to achieve structural integrity at reduced cost. It incorporates energy-efficient stepper motors, lead screws, linear rails, and motion controllers to enable precise multi-axis operations for cutting, engraving, and drilling within industrial tolerance levels. The system employs an open-source control platform compatible with standard G-code and features a user-friendly human-machine interface, allowing for easy programming, monitoring, and customization while eliminating reliance on proprietary software. The invention achieves low power consumption, minimal maintenance requirements, and scalability, offering a reliable and economical solution that broadens access to precision manufacturing and supports applications in prototyping, educational training, and small-batch production.

No. of Pages : 16 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068652 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : An Adaptive Service Resource Approval Policy for Dynamic and Indeterminate Load in Cloud-Edge Platform

(51) International classification :G06F0009500000, G06F0009480000, H04L0067100800, H04L0067109500, G06Q0010063100

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

In cloud service applications, dynamic load balancing is a difficult undertaking. Because every service request is subject to external validation, requests are being allocated more slowly as technology advances. This publication proposes a new and unique paradigm for task classification and resource allocation. To guarantee optimal cloud service at peak-source, the strategy is to streamline the pipeline for dynamic task placement via user-device requests. The service requests made by individual users from a specific cluster are read as task orientations, and nodes are used to construct additional clusters. The system offers a decentralized method of classifying and tagging work through requests before assigning them to a scheduler. The system offers a decentralized method of classifying and tagging work through requests before assigning them to a scheduler. In terms of allocating dynamic resources, classifying them, and personalizing user profiles, the method known as Dynamically Allocating the Jobs and labelling is defined. Using a first-best fit cloud framework, the workload assignment is verified by balancing resource consumption and Quality of Service (QoS). The findings show that task scheduling under dynamic user workload categorization is 96% efficient

No. of Pages : 10 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068653 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Location-Based System for Crash Pattern Recognition and Risk Forecasting in Unstructured Traffic Scenarios

(51) International classification :G06F0016290000, G08G0001160000, G06Q0050260000, G08G0001010000, G06N0005020000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention discloses a system and method for analyzing road traffic accidents in heterogeneous traffic environments, particularly tailored to developing countries like India. The proposed framework integrates geo-referenced police accident records with spatial analytical tools to identify high-risk segments (black spots) on urban corridors. Using Kernel Density Estimation (KDE), the system detects spatial-temporal patterns of crash distribution across different years, enabling the quantification of accident severity and frequency on varying road types. Unlike conventional systems that rely solely on structured sensor data in lane-based networks, this method adapts to unstructured traffic scenarios with mixed vehicle types, varying road geometries, and socio-economic complexity. The system incorporates accident type, time, severity, and vehicle involvement data to model dynamic crash risks. The outputs include heatmaps, crash frequency indices, and crash density metrics visualized on GIS platforms. The invention enables automated and accurate risk forecasting and supports real-time and historical assessment of accident-prone areas, offering a scalable and cost-effective tool for improving traffic safety in complex urban road networks. The method supports urban planners and traffic authorities by recommending mitigation strategies.

No. of Pages : 19 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068654 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Next-Generation Water Purifier Powered by Solar Energy with IoT Control and AI-Based Source Management

(51) International classification :C02F0001440000, C02F0001000000, H02J0007350000, G06N0020000000, C02F0009000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a next-generation water purification system that integrates solar power, Internet of Things (IoT) technology, and Artificial Intelligence (AI) to enable smart, autonomous, and sustainable water purification. The system is designed to operate in off-grid or decentralized environments and features an AI-driven module that predicts water quality trends using real-time data from a multi-parameter sensor array (pH, TDS, turbidity, and temperature). Based on these predictions, the system autonomously switches between multiple water sources—such as rainwater, borewell, and municipal supply—using electronically actuated valves, thereby optimizing purification efficiency and extending the lifespan of filters. The purification unit comprises multi-stage filters (sediment, activated carbon, and UV/RO/UF stages), powered by a solar photovoltaic system with battery storage and intelligent energy management. An embedded microcontroller equipped with IoT connectivity facilitates continuous data transmission to a cloud-based dashboard, allowing remote monitoring, control, and predictive maintenance alerts. The system ensures water dispensing only when quality thresholds are met, enhancing user safety and reliability. This invention offers a novel combination of AI-based source selection, predictive water quality monitoring, and energy-efficient solar operation with IoT-based remote interfacing, making it suitable for rural communities, public utilities, disaster relief stations, and smart city infrastructure. The integration of these subsystems into a unified, intelligent architecture represents a significant advancement over conventional water purification systems

No. of Pages : 14 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068655 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : DESIGN AND IMPLEMENTATION OF A BOOST CONVERTER FOR RENEWABLE ENERGY INTEGRATION IN EV POWER TRAINS

(51) International classification :B60L50/70, G05F1/67,
H02M3/155, G05B13/02
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to
Application Number :NA
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(62) Divisional to Application :NA
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(57) Abstract :

There is a great need to harness renewable energy for conversion systems in electric vehicles. The work goes into designing and prototyping a boost converter for renewable energy integration into EV powertrains, specifically for a fuel cell source. For this, an INC and P&O hybrid maximum point tracking (MPPT) method is proposed for fuel cell power extraction optimization. The converter is then used to boost voltage from 20V to 80V for proper energy transfer. The boost converter prototype is developed independently while the other parts are simulated with MATLAB for system performance validation. The hardware implementation uses a Acrylic sheet as part of the structural framework, so there is no need for PCB. Because the two methods are combined, the application of the system can vary with different loads, thus giving the optimum output under different load conditions. The hybrid approach also prevents surplus energy generation, improving overall system robustness. This prototype will be used to experiment in the area of boost converter efficiency, voltage regulation, and dynamic response. Thus, the research contributes to the renewable energy integration into EV applications, providing solutions on how to develop a well-deserved cheaper, better, and efficient converter. Furthermore, such findings would also facilitate scalable energy management systems for new sustainable vehicles in the future.

No. of Pages : 12 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068657 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : DESIGN AND DEVELOPMENT OF AN INNOVATIVE BOREWELL CHILD RESCUE MACHINE

(51) International classification :A62B0099000000, B25J0011000000, A61G0001044000, A61G0001040000, A61G0001013000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a novel, compact, and efficient mechanical system developed for the safe and timely rescue of children accidentally trapped in borewells. Borewell entrapments, particularly in rural and underdeveloped regions, pose severe life-threatening risks due to the narrow diameter and extreme depth of these shafts. Traditional rescue operations are timeconsuming, hazardous, and often result in unsuccessful or delayed retrieval. This invention addresses these limitations by introducing an automated borewell rescue machine capable of performing controlled operations within confined vertical spaces. The system comprises a modular frame that can be quickly assembled and deployed 011-site. It includes a telescopic descent mechanism for stable vertical movement inside the borewell and is equipped with high-resolution real-time video cameras for continuous monitoring of the victim's condition and position. A pair of precision-controlled mechanical arms are integrated into the design, enabling gentle and secure gripping of the trapped individual. The device is operated remotely, ensuring the safety of the rescuers while providing accurate control over the rescue process. Additionally, the system incorporates essential life-support features such as an oxygen delivery module and a two-way communication interface to maintain contact with the victim throughout the operation. The invention ensures minimal mechanical complexity, cost-effectiveness, and adaptability to various borewell sizes, making it a practical solution for emergency rescue missions. The proposed machine significantly enhances the efficiency, safety, and success rate of borewell rescue operations. 6

No. of Pages : 6 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068661 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : ADVERSE EVENT MONITORING IN PEDIATRIC IMMUNIZATION: AN INTEGRATED REPORTING METHOD

(51) International classification :G16H0010600000, G16H0010200000, A61K0039000000, G16H0040670000, G16H0020700000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention provides a system to managing and monitoring immunization practices. The present invention provides a method for adverse event following immunization (AEFI) reporting and a digital support system for monitoring immunization, comprising: collecting consistent data collection across different health facilities and regions from study participants comprising of Parents or guardians who visits pediatric department; enrolling Accredited Social Health Activist (ASHA) workers of primary health center and Pregnant women in the 3rd trimester of pregnancy; storing health information leaflet which includes information of importance of immunization, schedules of vaccination and if any adverse events occur after vaccination; assessing Baseline knowledge, attitude and practice towards immunization and AEFI system through questionnaire and extracting vaccine-adverse event report data; creating awareness on immunization program and AEFI to increase the compliance for immunization and active surveillance reporting; conducting Behavior change communication (BCC) training programme on immunization and AEFI for strengthening the health system and safety on immunization; assessing Post educational intervention of knowledge, attitude and practice towards AEFI safety system; evaluating the AEFI in the pediatric population through accredited social health activists. This study is an initiative towards digital AEFI surveillance across broad populations for monitoring digital adverse events following immunization (AEFI).

No. of Pages : 16 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068664 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AUTONOMOUS DUST CLEANING ROVER SYSTEM FOR PV PANEL

(51) International classification :H02S0040100000, F24S0040200000, B08B0001120000, B64G0001160000, B08B0001320000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

Nowadays, researchers around the world are looking for qualified panel in all aspects for all systems. One of the main concerns across the globe is the demand for unpolluted PV sources for all applications on a regular basis. The continuous and unpredicted deposition of dust, dirt and wastes on the panel surface has reduced the absorption level and had a drastic impact on the energy output and adds power losses and reduces life span as well. This emphasizes the need to keep the panel's surface as clean as possible to maximize the energy generation capabilities. Different cleaning methods are used to clean the solar panels to maximize the energy output. Cleaning dirty panels with commercial detergents can be time consuming, costly, hazardous to the environment or even oxidize the solar panel's frame. Ideally, solar panels should be cleaned every few weeks to maintain peak efficiency, which is especially more difficult to do for large solar farms. On the other hand, there is a need for an automated cleaning system to this problem which can service large ground based solar array up to an operating park of 22,000 panels (20,000 Square meters). Five different dust particles with varying densities were employed to conduct real-world experiments, aligning key parameters such as irradiation and panel temperature with simulation conditions. The work aims to analyze the detrimental effects of dust accumulation on solar panels and propose a solution through the design and implementation of an autonomous rover. In this work, autonomous solar panel cleaning rover equipped with a vacuum wheel is designed for providing an innovative solution to enhance the efficiency and sustainability of solar panel maintenance. By adhering to the inclined panel surfaces, the wheel ensures thorough cleaning while traversing. The design specifications outline the height, weight, and power requirements, while the integration of sensors facilitates effective cleaning and navigation is highlighted. This rover, incorporate an ultrasonic sensor and a specialized cleaning mechanism to enhance safety and prevent accidents. This sensor acts as the rover's eyes, detecting the height of the solar panel surface and enabling it to adjust its path accordingly. By doing so, the rover can navigate the panels without the risk of falling off, ensuring both its own safety and the maintenance of the solar panels.

No. of Pages : 10 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068696 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : DUAL FOUNDATIONAL PRINCIPALITY: A MODEL FOR STUDYING KINGSHIP AND POLITICAL LEGITIMACY

(51) International classification :A63F0003000000, G06Q0050260000, H04W0040260000, G09B0027080000, G10H0001000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

ABSTRACT This prllposal introduces, initiates and establishes a new model in the domain of Political Studies. Cultural Studies and Leadership Studies. Dual Foundational principality (DFP) unlocks a creative and original framework to the provinces of Machiavellian 'Principalities' to study how political power transpires in reality. Dissimilar to many political theories, Dual Foundational Principality (DFP) carries a twofold lens approach to politicaltheo1y. conversing about both the ruler and the ruled. The model of Dual Formational Principality constructs a correlation between the democratic world and the 1i1011archy. It Utilised I\3 U methodology to exit' the evolution of politics that occulted during a king's reign and can help trace the legacy of modern principles of Populism. The model further specifies two institutionalization pathways for such principalities: a coercive track emphasizing military control, elite alliances, and symbolic terror: and a civil track based on narrative construction. popular mobilization. and resource redistribution: These pathways are operationalized through measurable indicators of regime consolidation, with pr.edictive value for political stability outcomes. Machiavalli's ideas on principality arc primarily rooted in historical context. since it describes a kingdom or a monarchical state. No unified framework directly links Machiavelli's concept of principality with contemporary political situations. This highlights the importance of the new DFP (Dual Foundational Principality) framework. This model is essential to analyse the ruler's relationship with the populace, after the conquest of a nation. Rooted in principality, this model nonetheless broadens its scope to encompass modern world politics. As a result. the background stretches from traditional Kingship Principalities to modern political systems.

No. of Pages : 16 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068703 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM/METHOD TO DETECT DIABETES MELLITUS USING A NEIGHBORHOOD COMPONENT ANALYSIS WITH A HYBRID MACHINE LEARNING APPROACH

(51) International classification :A61P0003100000, A61P0027020000, G06N0020000000, A61K0031498500, A61P0009020000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

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(57) Abstract :

One of the most rapidly increasing chronic diseases in the modern era is diabetes mellitus. Regardless of where you live or your race or ethnicity, you will likely encounter someone with type 1 or type 2 diabetes, the two main categories of this fast-growing disease. The immune system's erroneous attack on the pancreatic beta cells causes type 1 diabetes. This results in the body receiving very little insulin. When insulin production drops below normal levels or insulin resistance develops, the result is type 2 diabetes. Diabetes was also examined in three groups by another set of inventors. The third form is known as gestational diabetes in this context. Only when a woman's hormones fluctuate during her pregnancy can she get this form of diabetes, which is also called gestational diabetes. Polyuria, polydipsia, polyphagia, type 1 and type 2 diabetes, respectively, as well as weakness, baldness, delayed recovery, impaired vision, itching, irritability, thrush, partial paresis, muscle stiffness, and partial paraesthesia are among the most prevalent symptoms of diabetes. To begin, when we talk about a neighbourhood in NCA, we're referring to the surrounding area. Neighbours in this context are like samples; a short default distance indicates a high degree of similarity. Training and testing more data with support vector machines and random forest classifiers follows the revised dataset.

No. of Pages : 8 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068704 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : GSM based Underground Cable fault Detection with Distance Locator

(51) International classification :G01R0031080000, G01R0031110000, G01R0031580000, A61B0090000000, A01C0007200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

GSM-based underground cable fault detection with a distance locator is an advanced system designed to accurately and efficiently identify faults in underground power cables. Traditional fault detection methods require extensive manual inspection, leading to increased downtime and maintenance costs. This system overcomes these limitations by utilizing a microcontroller, sensors, and a GSM module to detect and report faults in real time. The system operates by injecting a low voltage DC pulse into the underground cable and analyzing impedance variations. Using the Time Domain Reflectometry (TDR) principle, the system calculates the exact fault distance from the base station and displays it on an LCD screen. Additionally, the integrated GSM module sends an SMS alert to maintenance personnel, providing details about the fault type and its precise location. This automated fault detection system offers several advantages, including real-time monitoring, cost-effectiveness, accurate fault localization, and improved reliability of underground power distribution networks. It is particularly beneficial for power distribution companies, industrial zones, smart cities, and urban infrastructure, where underground cabling is extensively used. By reducing downtime and enabling proactive maintenance, this system significantly enhances the efficiency and reliability of underground power networks.

No. of Pages : 10 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068705 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : PERSONALIZED E- LEARNING SYSTEM BY USING ARTIFICIAL INTELLIGENT TECHNIQUES

(51) International classification :G06Q0050200000, G09B0005000000, G09B0007000000, G09B0005060000, G06N0003126000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

Today e-learning puts an important impact on the education system. It helps the learner to learn according to his/her needs as well as interest. It is observed that learner's behavior, learning style, and domain knowledge is different from learner to learner. Most of the e-learning systems provide good quality of study material in various formats like audio/video lectures, reading material, discussion forums, quizzes, etc. Also, the e-learning system provides the same learning path for all learners. It is important for the learner to select e-material as per their interest, ability, learning behavior as well as existing domain knowledge. In most cases, it is difficult for the learner to select appropriate learning material and the learning path for better understanding. Machine learning techniques like Artificial Neural Network, Fuzzy logic, Genetic algorithm help to develop an adaptive e-learning system. Personalized e-learning system can be developed by adopting latest technology tools and algorithms. In the proposed system learners can identify their learning ability, existing knowledge level and interest area. It helps to find out learning needs of student, provide more emphasis on specific topics, suggest learners weak area, allow them to make improvement in understanding, and mostly helping students to learn at their own pace. A fuzzy rule-based system is developed to categorize learners according to their learning behavior into two types as fast and slow learners. Artificial Neural Network technique is implemented for predicting the bimodal learning style of learner Adaptive Neuro-Fuzzy System (ANFIS) approach is used to predict learner's domain knowledge level as Unknown, Partially Known or Completely Known.

No. of Pages : 12 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068706 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM/METHOD FOR PASSIVE BLIND IMAGE SPLICING FORENSICS DETECTION USING ADVANCED LEARNING TECHNIQUES

(51) International classification :G06T0003403800, G06T0001000000, G06N0003080000, G06V0010764000, G06V0020900000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

Image forgery is a growing concern in today's era of extensive use of social media. It has changed the way people normally stored, accessed and shared data. Visual imagery has impacted the routine of documenting evidences and sharing information. Amidst all this if false information in the form of doctored images are circulated, it misleads people into drawing false conclusions. Such incidents affect courtroom trials, medical and scientific Investigations, political campaigns, fashion industry, media and social networking platforms. It therefore becomes important to differentiate between authentic and forged (or doctored or tampered) images. Image forensic techniques find traces of image manipulations by analyzing the image pixels, investigating camera induced and compression artefacts, studying geometrical and physics based properties of objects captured in the image. The techniques focus on active and passive detection by classifying authentic vs. doctored images and extend this to localizing the region on forgery. This work focuses on the application of machine learning, deep learning and quantum machine learning techniques to image splicing detection. In first approach , features from spliced and authentic images are engineered by applying the Kekre, discrete cosine, and the hybrid Kekre-discrete cosine transforms which are then passed onto an assortment of machine learning classifiers to classify spliced images. In second approach, a novel socio-inspired twin convolutional neural network with a feature-transfer learning approach, named "MissMarple" is proposed to detect traces of image splicing. This technique is further extended to implement a naive bounded box technique of passive, blind image splicing localization. Finally, in last stage quantum inductive transfer learning technique is applied to image splicing detection.

No. of Pages : 10 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068707 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : IOT-BASED HYBRID POWER GENERATION USING SOLAR AND WIND ENERGY

(51) International classification :H02J3/38, H02J13/00, H02M7/42,
G16Y10/35, G16Y40/10

(86) International Application :NA
No

Filing Date :NA

(87) International Publication : NA
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(61) Patent of Addition to :NA
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(57) Abstract :

Renewable energy integration has attracted widespread attention due to its zero fuel cost, cleanliness, availability, and ease of installation. Among various renewable energy sources, photovoltaic(PV) and windturbines (WT) have become very attractive due to the abundant local availability in nature, technological progress, and economic benefits. The hybrid combination of both distributed energy resources eliminates mutual intermittences due to their adverse nature; therefore, the reliability of the system will be improved. The basic key objective of this project is to generate electrical energy by using renewable and clean energy with minimum pollution. We use a hybrid system to overcome the drawbacks of renewable free-standing generation system. The working model of the solar-wind hybrid energy generation system successfully operated. By considering the cost and effectiveness of the system, it is suggested for all the rural community members to use the solar-wind hybrid system for the generation of electricity.

No. of Pages : 10 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068708 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM/METHOD FOR ANSWER SHEET EVALUATION USING OCR AND WORDNET GRAPHS WITH MACHINE LEARNING TECHNIQUES

(51) International classification :G06F0040300000, G06F0040284000, G06F0016330000, G06F0040279000, G06V0030400000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

Natural Language Processing (NLP) is a field of artificial intelligence which focusses on developing appropriate tools and techniques to make computer systems understand and manipulate natural languages, to perform the desired tasks. The presence of ambiguity in natural languages remains the biggest challenge in performing accurate NLP. Ambiguous words affect the performance of NLP applications. Hence there is a need for disambiguation i.e. finding the intended meaning of the text in the given context. This invention proposes a methodology for a Context-based OCR. Once the erroneous word is detected in the text, a set of candidate words for it must be created. In order to generate this set, the 1-Edit Distance method is used. After figuring out the candidate words, a weighted WordNet graph is drawn for these words. The node with the highest value of all the centrality values is taken to be the disambiguated word. That disambiguated word was the original word that was meant to be in the document. Hence error detection and correction are performed accurately. The procedure relies on key term extraction from the WordNet graph of the answer given by the student. The student's answer sheet is scanned and his answer is converted into a machine-readable form. The content words from the ideal answer are used to generate a fuzzy WordNet graph using semantic relations hypernym, hyponym, holonym, and meronym. The fuzzy graph connectivity measures are calculated for each node. The nodes (Synsets) that include the highest and second-highest value of these centrality measures are observed to form a collective set that contains the key terms to be kept in mind by the evaluator while grading the answer sheets. The results are tested on a synthetic dataset of 100 social science answer sheets and as compared to the state-of-art, they seem promising.

No. of Pages : 9 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068709 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : METHOD FOR ENHANCING WETTABILITY AND CORROSION RESISTANCE OF SS304 STEEL VIA MICROPATTERNS

(51) International classification :G01N0033500000, G01N0013000000, C09D0005000000, G01N0013020000, C23F0011140000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses a method for enhancing the wettability characteristics and corrosion resistance of SS304 stainless steel by engineering micropatterns on its surface. The method involves fabricating micropillar structures with controlled geometrical parameters such as height, width, and spacing to manipulate the surface's wetting behavior. The micropatterned surfaces promote a Cassie-Baxter wetting regime, characterized by high static contact angles and reduced liquid-solid contact area, thereby reducing water adhesion and suppressing electrolyte infiltration. This air-trapping effect between the micropillars significantly limits ionic transport and protects the passive oxide layer from degradation. The invention demonstrates a substantial reduction in corrosion rate and current density compared to flat surfaces, under both partial and complete wetting conditions. This coating-free, scalable technique offers an environmentally sustainable and cost-effective solution for corrosion control and surface performance enhancement in SS304 steel used across various industrial applications.

No. of Pages : 8 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068702 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : The Future of Banking: How AI and ML are Reshaping Financial Institutions

(51) International classification :G06Q0040030000, H04L0009400000, G06N0020000000, G06Q0040000000, H04L0051020000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

AI-powered chatbots and virtual assistants are now handling a significant portion of customer interactions, providing 24/7 support and personalized financial advice. In parallel, ML algorithms are enabling banks to make data-driven decisions by analyzing vast volumes of customer data in real time. This has led to more accurate credit risk evaluations and the development of hyper-personalized financial products tailored to individual needs and behavior. In the area of fraud detection, AI models are enhancing security by identifying anomalous transactions and flagging potential threats before they escalate. Additionally, AI is driving automation in compliance processes, helping banks manage regulatory requirements more effectively while reducing operational costs. Despite its immense potential, the integration of AI and ML into banking also poses challenges, including ethical concerns, data privacy issues, algorithmic bias, and the need for regulatory adaptation.

No. of Pages : 13 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068712 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : PERFORMANCE ENHANCEMENT OF PV SYSTEM FOR MPPT IMPLEMENTATION USING BUCK BOOST CONVERTER

(51) International classification :G05F1/67, H02J3/38,
H02M3/00
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application
Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The rising demand for sustainable energy solutions has driven considerable innovations in photovoltaic (PV) systems. One of the key challenges in optimizing PV system performance is ensuring efficient energy extraction under fluctuating environmental conditions. Optimal operating pointMPPT is a crucial technique for optimizing the power output of a PV system by dynamically adjusting the operating point to the maximum power point (MPP). This paper presents a study on the performance enhancement of a PV system for MPPT using a Buck-Boost Converter. The Buck-Boost Converter, a versatile power converter, is employed to adjust the output voltage to match the varying conditions of the PV array. By effectively integrating MPPT algorithms with the Buck-Boost Converter, the system ensures maximum energy extraction even under fluctuating solar irradiance and temperature. Simulation and experimental results demonstrate the ability of the proposed system to consistently track the MPP, providing improved efficiency and performance of the PV system. The proposed invention highlights the potential of combining MPPT with Buck-Boost conversion techniques to achieve optimized energy harvesting in photovoltaic systems.

No. of Pages : 13 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068713 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AERODYNAMIC LANDING GEAR SYSTEM WITH DRAG REDUCTION FEATURES

(51) International classification :B62D0035000000, B64C0021100000, F15D0001000000, B64C0001000000, B62D0035020000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The aircraft's aerodynamic performance is significantly affected by the drag created by its landing gear assembly. Drag is especially important during flight phases when the landing gear is deployed or partially retracted, as it affects fuel efficiency and stability significantly. The present invention focuses on designing and optimizing an airplane landing gear system to reduce aerodynamic drag while maintaining structural integrity and load-bearing capacity. In this invention, drag was minimized by altering the geometry of the landing gear components, particularly through streamlined structural profiling, optimized wheel hub design, and the introduction of surface characteristics such as vortex generators. These changes were incorporated into the model to minimize airflow separation and turbulence creation around the gear assembly. The revised landing gear layout reduces drag during flying and landing operations, improving the aircraft's overall aerodynamic performance.

No. of Pages : 8 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068714 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Incentivized E-Waste Recycling and Community Engagement

(51) International classification :G06Q0030020000, G06Q0030020700, H04W0004020000, C22B0007000000, B65F0001140000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

This invention relates to a web-based system designed to streamline electronic waste (e-waste) recycling by enabling users to locate nearby recycling facilities, estimate the recycling value of their devices, and motivate proper disposal through a rewards program. The system uses mapping APIs to display facilities based on user location, and a valuation module to calculate potential recycling value from device model numbers or names. A credit-based incentive system rewards users with points for verified recycling activities, which can be redeemed for discounts or other benefits. Users can earn points by uploading recycling receipts, which can be redeemed for items or discounts. The platform also fosters community engagement through user-generated reviews and ratings of recycling centers. By integrating location-based services, financial incentives, and community feedback, waste disposal.

No. of Pages : 10 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068715 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Zeta Converter Assisted Solar PV BLDC Motor System for Water Pumping Applications

(51) International classification :G06Q0050060000, H02S0040380000, F04B0017000000, F24S0023700000, H02S0010000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The increasing demand for Renewable Energy-Based water pumping systems has led to the development of solar photovoltaic (SPV) array-fed BLDC motor drives. This project presents a cost effective and efficient water pumping solution that utilizes a Zeta converter is used to draw the maximum energy from the SPV array, supporting stable and optimized motor operation. The BLDC motor is powered through a Voltage Source Inverter (VSI) that enables soft starting, minimizing high inrush currents and safeguarding the motor windings. A PIC microcontroller governs a three-phase MOSFET driver circuit to precisely manage the VSI's switching frequency, helping to lower switching-related power losses. This system is designed to enhance efficiency, reliability, and sustainability, making it an ideal solution for agricultural irrigation, drinking water supply, and off-grid water pumping applications. By eliminating dependence on conventional energy sources, it reduces carbon emissions and promotes eco-friendly water management. The Zeta converter ensures consistent power delivery, even under varying solar irradiance conditions, while the microcontroller-based control optimizes motor speed and torque for efficient water discharge. The modular and scalable design allows for easy integration into different capacities, making it a versatile and sustainable alternative to traditional water pumping systems.

No. of Pages : 13 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068716 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Automatic Solar Water Pumping System

(51) International classification :A01G25/16,
G05B19/02
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application
Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The automatic solar water pumping system introduced in this invention provides a sustainable and efficient solution for water supply by utilizing renewable solar energy. Traditional water pumping methods that depend on grid electricity or fossil fuels often result in high operational costs and environmental pollution. To address these challenges, this system integrates key components, including a solar panel, boost converter, battery bank, Arduino Uno microcontroller, LCD display, relay, driver circuit, and a 5V DC pump, enabling autonomous operation with optimized energy efficiency and reliability. During daylight hours, the solar panel efficiently captures and converts solar energy, which is then stored in the battery bank to ensure uninterrupted operation. The Arduino Uno microcontroller serves as the central control unit, regulating system parameters and managing water pump operation based on predefined criteria. An LCD display provides real-time monitoring, allowing users to track system performance, energy status, and water flow, ensuring a consistent and reliable water supply for various applications such as irrigation, livestock watering, and domestic use. By significantly reducing dependence on conventional energy sources and minimizing environmental impact, this automatic solar water pumping system represents a major advancement in renewable energy-based water supply technology, offering an eco-friendly, cost-effective, and sustainable alternative to traditional water pumping solutions.

No. of Pages : 12 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068717 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : EFFICIENT ENERGY STORAGE USING BI-DIRECTIONAL CONVERTER AND SUPERCAPACITOR-BASED UNIFIED POWER QUALITY CONDITIONER

(51) International classification :H02J0003010000, H01F0006000000, H01L0021687000, G01R0019250000, H02M0003156000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Modern power grids demand exceptional reliability and power quality, necessitating minimizing issues such as voltage sags and current harmonics. Active power filters, such as Unified Power Quality Conditioners (UPQCs), effectively address these challenges and enhance system reliability. A promising advancement in this area is the integration of Superconducting Magnetic Energy Storage (SMES) with UPQCs. SMES units offer the advantage of storing substantial amounts of energy in the DC link of the UPQC, thereby boosting the system's ability to mitigate power quality problems. By incorporating an SMES unit, the energy storage capacity is significantly increased, which in turn improves the grid's resilience to voltage sags and current harmonics. This project explores the synergistic effects of combining SMES with UPQC for power quality enhancement. Through simulations, we demonstrate how the integrated system performs under conditions of voltage sags and current harmonics. The results highlight the effectiveness of this combined approach in improving overall power quality and system reliability.

No. of Pages : 12 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068726 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Smart environmental sensing unit for measuring particulate matter PM2.5 and PM10

(51) International classification :G01N0015060000, G01N0015000000, G01N0033000000, G01N0015020000, G01N0015075000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A smart environmental sensing unit for real-time monitoring of particulate matter (PM2.5 and PM10) is disclosed. The system comprises a laser-based particulate sensor, a microcontroller for data processing, and a 5G communication module for wireless transmission. It supports real-time, low-latency communication with a cloud-based platform for environmental monitoring, alerts, and data analytics. The device includes a power management system with a rechargeable battery and optional solar input for autonomous, off-grid operation. Data can be visualized remotely through a web dashboard, and threshold-based notifications are enabled. The invention is designed for scalable deployment in both urban and remote environments and offers enhanced accuracy, connectivity, and energy efficiency compared to conventional air quality monitoring systems.

No. of Pages : 15 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068802 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : CARBON DOTS DERIVED FROM POLYETHYLENE TEREPHTHALATE AND COMPOSITIONS COMPRISING THESE

(51) International classification :C09K0011650000, C01B0032150000, B82Y0030000000, B82Y0040000000, B82Y0020000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

CARBON DOTS DERIVED FROM POLYETHYLENE TEREPHTHALATE AND COMPOSITIONS COMPRISING THESE ABSTRACT

The present disclosure provides a carbon dot (CD) derived from polyethylene terephthalate. The carbon dot has an average diameter in a range of 3 to 20 nanometres. An outer surface of the carbon dot comprises functional groups selected from hydroxyl group, carboxyl group, amide group, amino group and any combinations thereof. The carbon dot has an onion-like morphology. A method (100) of producing carbon dots from polyethylene terephthalate is also provided. The method comprises subjecting a reaction mixture comprising the polyethylene terephthalate and an aliphatic diamine to hydrothermal treatment (102) to produce a product mixture. The method further comprises separating the product mixture (104) into a sediment layer and a supernatant. The method further comprises filtering the supernatant (106) to obtain a dispersion and freeze-drying the dispersion (108) to obtain the carbon dots. A pH-responsive hydrogel, emulsion composition, and high internal phase Pickering emulsion composition comprising the carbon dots are also disclosed. [FIG. 1]

No. of Pages : 39 No. of Claims : 25

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068789 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : IoT-BASED SYSTEM AND METHOD FOR REAL-TIME LIVESTOCK BEHAVIOUR AND HEALTH MONITORING

(51) International classification :A61B0005000000, G16H0040670000, A61B0005110000, G06N0020000000, G16H0050300000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT IoT-BASED SYSTEM AND METHOD FOR REAL-TIME LIVESTOCK BEHAVIOUR AND HEALTH MONITORING The invention relates to an IoT-based system and method for real-time livestock behaviour and health monitoring. The system includes wearable IoT-enabled sensors mounted on livestock to track physiological, movement, feeding behaviour along with environmental conditions. Sensor data is acquired and pre-processed and the processor analyses the time-series data using ARIMA, SARIMA, and neural network-based machine learning models to detect behavioural trends and anomalies. A health score or alert is generated using statistical methods, including Z-score analysis. The system features a communication module for data transmission, a cloud-based server for storage and visualization, and a user interface accessible via web or mobile applications. The method enables predictive health monitoring, anomaly detection, and real-time alerts, supporting adaptive learning for improved accuracy. It is designed for scalability, remote access, energy efficiency. FIG 2

No. of Pages : 30 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068815 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : VERIFICATION FRAMEWORK FOR AUTONOMOUS INSPECTION ROBOTS

(51) International classification :G06N0007010000, G06N0020000000, G06F0030332300, G05D0001000000, G06N0003006000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT VERIFICATION FRAMEWORK FOR AUTONOMOUS INSPECTION ROBOTS The present invention provides a verification framework for autonomous inspection robots, comprising: a) a simulation component configured to represent an environment with a state space including localized visual observations, distance metrics, and task progress indicators, and an action space with cardinal movements and a scan operation; b) a learning and training component employing a Proximal Policy Optimization (PPO) algorithm to train a reinforcement learning agent in a stochastic environment with a 20% drift probability; and c) an empirical model extraction and formal verification component configured to: i) extract stochastic transition probabilities from the trained reinforcement learning agent by executing the trained reinforcement learning agent over a plurality of episodes, ii) convert the stochastic transition probabilities into a Markov Decision Process (MDP) model compatible with a PRISM model checker, and iii) verify temporal logic properties using the PRISM model checker, the temporal logic properties including reachability, safety, expected steps to mission completion, and resiliency. FIG. 1

No. of Pages : 30 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068839 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A METHOD OF DEVULCANIZATION OF CROSSLINKED RUBBER USING TWIN-SCREW EXTRUDER SYSTEM

(51) International classification :B29C0048760000, B29C0048000000, B29B0007740000, B29C0048880000, B29C0048030000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses a twin-screw extruder system (100) for devulcanizing crosslinked rubber. It includes a twin-screw extruder (1) driven by a motor (2), and a loss-in-weight feeder (3) for precise raw material input. Rubber is conveyed through one or more barrels (4) with integrated heating and cooling ports (5) to maintain optimal temperature. Pressure and melting temperature are monitored via ports (6). The extruder die (7) shapes the output, while the HMI (8) enables control. A vent stuffer (9) aids in degassing. A CO₂ injection pipeline (10), dosing unit (11), and cylinder (12) are housed in a reactive extrusion chamber (200) to regulate CO₂ input. Dual vent openings (13) remove VOCs. The screw arrangement modulates pressure, ensuring a steady-state reaction and consistent devulcanization. The system achieves a final product with moisture content below 2%, enhancing rubber recovery efficiency and quality. Figure: 1

No. of Pages : 31 No. of Claims : 15

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068860 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SPEECH DELIVERY ASSISTIVE DEVICE

(51) International classification :F01B0009020000, A47B0023040000, A47B0023060000, B62B0003020000, B05B0012000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A speech delivery assistive device, comprising a mobile framework 101, multiple wheels 102 to provide mobility to framework, a horizontal platform 103 disposed slidably within framework, a pair of scotch yoke arrangements 104 connecting platform 103 with framework, a roller 105 stored with a mat 106 to roll mat 106 to stand on, a microphone 107 by means of a ball and socket joint 108 to positioning of microphone 107 as per user's requirement, a book holder comprises a pair of articulated telescopic grippers 201 to grip a book, a book turning arrangement 202 comprises a wheel 202a attached over a slider 202b connected to slider 202b via a telescopic link 202c, multiple suction cups 202d to grip and turn pages, a flap 203 via an articulated linkage 204 to flatten page, a hinged member 110 to prevent falling of platform 103.

No. of Pages : 23 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068861 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : WEARABLE DEVICE FOR UPPER LIMB SUPPORT

(51) International classification :A61K0035583000, G06F0003010000, A61F0005010000, A61H0001020000, F16M0011200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A wearable device for upper limb support, comprising a hollow body constructed with multiple circular rings 102 interconnected by pivot joints 103 at the ends of horizontal extendable rods 104 to position on a user's upper arm, elbow, and palm, a wearable glove 105 with a gecko material pad layer 106 for enhancing grip on objects, a hydraulic piston 107 via a ball-and-socket joint 108 to provide mechanical lifting assistance, an camera 109 for monitoring user facial expressions and object shape and size, a motorized roller 110 with adjustable strap 111 for controlled lowering of lifted objects, a pair of vertical extendable links 112 with wheels 113 to deploy and engage the surface for moving heavy objects, a microphone 114 to issue commands through a pre-set activation phrase, a speaker 115 to provide audible alerts relating to overload conditions, multiple gel-filled patches integrated with a Peltier unit for temperature regulation.

No. of Pages : 22 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068862 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SECURE PARCEL RECEPTION DEVICE

(51) International classification :G06Q0010083000, G07F0017120000, A47G0029140000, A47G0029200000, G16H0020130000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A secure parcel reception device, comprising of a housing 101 provided with a motorised door 102 to receive a parcel, an imaging unit 103 detects a delivery personnel approaching the housing 101, a display panel 104 deployed upon detection of the delivery personnel to enable interaction, an authentication module verifies authenticity of delivery personnel, a conveyor 107 conveys the received parcel toward a bottom region, a compartment 108 configured with an inspection unit receives and inspect the parcel, a user interface enables interaction and monitoring of the determinations of the inspection unit, a classification module receives data from the inspection unit to classify the parcel into one of multiple predefined categories, multiple storage chambers 114 attached with an outlet receives and store the parcel, a conveyor wheel 115 translates the parcel into the designated chamber 114.

No. of Pages : 27 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068863 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AUTOMATED NO-PARKING ENFORCEMENT SYSTEM

(51) International classification :G08G0001017000, H04L0009400000, G08G0001040000, G06V0020520000, G08G0001000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

An automated no-parking enforcement system, comprising a surveillance unit 101 for monitoring the zones and detecting illegal parking activities, a speaker unit 103 issuing immediate voice alerts to individuals upon detection of unauthorized parking, an IoT (Internet of Things) module interfaced with the surveillance unit 101 continuously tracking the duration of a vehicle parked within the no-parking zone, an autonomous towing vehicle unit automatically tow unauthorized vehicles detected in no-parking zones, a plurality of iris holes 204 dispense paint inscribing the warning inscription, a user-interface is inbuilt in a computing unit, interfaced with the database and microcontroller, providing real-time updates, violation alerts, towing statuses, and user interaction and a holographic projection unit 104 projecting real-time visual warnings and status messages to alert drivers and pedestrians about parking restrictions and ongoing enforcement activities.

No. of Pages : 25 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068864 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : HYGIENE MANAGEMENT SYSTEM FOR WASHROOMS

(51) International classification :B41J0002165000, G16H0040200000, G06F0003160000, C11D0017040000, A47K0010480000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A hygiene management system for washrooms, comprising a commode-shaped body 101 adapted for washroom, radar-based proximity sensors detects presence of a user, a multi-compartment cavity 102 having internal and external opening 104, each compartment containing a different cleaning product, a motorized iris valve 114 integrated with internal opening 103 dispenses cleaning product, a motorized cleaning brush 105 performs a deep cleaning action, a motorized slider 106 integrated with a wiping unit 107 for wiping internal edges of body 101 using a cushioned fabric, a leg support module provide support to the user's legs, a pair of U-shaped units 108 providing support to elderly users, a plurality of chambers 109 containing distinct fragrance solution, spraying nozzle 110 dispersing the fragrance, a pair of pneumatic-rod actuated buttons 111 enabling contactless flushing upon voice commands received via an integrated microphone 112 and a voice unit 113 warning the user regarding the ongoing cleaning.

No. of Pages : 23 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068865 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AUTONOMOUS HAZARD MITIGATION SYSTEM FOR LABORATORY ENVIRONMENTS

(51) International classification :G05D0001000000, G08B0021020000, G08B0021140000, G06Q0010063500, G08B0017060000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

An autonomous hazard mitigation system for laboratory environments, comprising a plurality of autonomous mobile bodies 101 positioned across zones within a laboratory environment, each including a wheel unit 102 for navigating various terrains, an inspection unit for comprehensive hazard monitoring, a microcontroller for analyzing sensor data, predicting potential hazards, a reservoir 104 for storing multiple neutralizing agents and each compartment is connected to a conduit 105 having an iris nozzle 106 for spraying the agents, a deployment module to seal off hazardous zones to prevent the spread of fire or toxic gases, a vacuum conduit and pump unit 111 for extracting contaminated air from the sealed hazardous zone into an internal gas containment unit, a seating module rescues and transport individuals from hazardous zones, a canopy 115 connected via two links 116 coupled with a motorized ball-and-socket joint 117 to provide shielding during evacuation.

No. of Pages : 25 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068866 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : VEHICLE FIRE SUPPRESSION SYSTEM

(51) International classification :A62C0003070000, G01J0005000000, G08B0017120000, F24F0011360000, B66B0005020000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A vehicle fire suppression system, comprises of a mobile unit 101 mounted on omnidirectional wheels 102, a camera 103 for real-time visual surveillance and environmental analysis, a flame sensor detects open flames through infrared sensing, a thermal sensor monitors temperature fluctuations to detect abnormal heat build-up and a gas sensor detects leakage, a spring-loaded hammer assembly 104 that strikes the glass of the vehicle and a curved plate 105 assists in rescue of the trapped occupants, a fire neutralizing module includes multiple compartment 108 containing fire-neutralizing agents to douse fire, a vehicle elevation module elevates the vehicle for properly dispensing the suppressant agent, a vehicle covering module to cover the vehicle to mitigate impact of the potential blast, a speaker unit 121 generates voice-based alerts to occupants and people in proximity of the vehicle, a microphone 122 enables live voice communication between the occupants and emergency teams during rescue.

No. of Pages : 29 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068867 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : PERSONAL SAFETY DEVICE

(51) International classification :F41H0013000000, G08B0025010000, G08B0015020000, F41H0009100000, A61N0001360000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A personal safety device, comprises of a wearable belt 101, a circular slider 104 incorporated over the belt 101, provided with multiple hinged pneumatic pins 105 actuated to extend radially to and rotate by the slider 104 to present a deterrent to a threat, a camera 106 records visual of user's surroundings to determine a threat approaching user, a set of electrodes 107 deliver a non-lethal electrical stimulus to the threat, chambers 108 stored with irritants is connected with articulated nozzles 109 to direct the irritants onto the threat, multiple articulated lighting elements 111 flashes high-intensity light onto the threat to confuse a vision of the threat, a pellet launcher to launch a plurality of pliable pellets onto the threat to deter and distract the threat from getting close, a microphone 114 receives a trigger phrase from the user to cause an alert unit to generate an alert.

No. of Pages : 22 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068859 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : INTELLIGENT PILL DISPENSER WITH IOT CONNECTIVITY FOR MEDICATION ADHERENCE MANAGEMENT

(51) International classification :G16H0020130000, A61B0005000000, A61J0007040000, G16H0040670000, A61J0007000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention relates to an IoT connected smart pill dispenser system for improving medication adherence and management. The system consists of a small case holding a compartmentalized rotary carousel to organize and store medication, an electromechanical actuator to dispense medication at a correct dose, and a number of sensors that check pill levels and tampering in real time. By utilizing a programmable control unit to manage the dispensing process, the system can accept user input both from a touchscreen interface and from wearable health monitoring devices, enabling medications to be dispensed according to user-specific needs. The system makes use of an IoT module which connects to a cloud-based platform, allowing for the data to be transmitted in real-time, following the schedule can be monitored, and alerts can be sent to caregivers/healthcare providers.

No. of Pages : 29 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068904 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : MOBILE-ENABLED STRESS ASSESSMENT TOOL FOR EMPLOYEES USING VOICE TONE AND USAGE BEHAVIOR ANALYSIS

(51) International classification :G06Q0030020100, G10L0015260000, H04N0021422000, A61B0005000000, G06F0003160000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

Mobile-Enabled Stress Assessment Tool for Employees Using Voice Tone and Usage Behavior Analysis is the proposed invention. The proposed invention focuses on understanding the functions of Voice Tone and Usage Behavior Analysis. The invention focuses on analyzing the parameters of Mobile-Enabled Stress Assessment Tool for Employees using algorithms of Machine Learning Approach.

No. of Pages : 13 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068873 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR MACHINE LEARNING-ASSISTED IDENTIFICATION OF NUCLEOSIDES USING PHOTOACOUSTIC SPECTRAL FINGERPRINTING

(51) International classification :G01N0021170000, A61B0005000000, G01N0029240000, G06F0018240000, G01S0007410000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present disclosure provides a system (100) for label-free identification of nucleosides using machine learning and photoacoustic signal processing and a method (200) for detecting biomolecular concentrations using the photoacoustic cell. The system (100) includes a signal acquisition interface (102), a preprocessing module (104), a spectral transformation module (106) and a classification module (108). The signal acquisition interface (102) is configured to receive raw time-domain photoacoustic signals corresponding to nucleoside samples. The preprocessing module (104) is configured to apply linear detrending to PA signal to eliminate low-frequency baseline fluctuations and normalize each corrected signal to maximum amplitude. The spectral transformation module (106) is configured to convert normalized time-domain photoacoustic signal into frequency-domain representation using Fast Fourier Transform (FFT). The classification module (108) includes a trained Light Gradient Boosting Machine (LGBM) model configured to classify the processed photoacoustic signal into one of five nucleoside types: adenosine, guanosine, cytidine, thymidine, or uridine.

No. of Pages : 26 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068874 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : STATIC DUO MIXER FOR SCR BASED EXHAUST AFTERTREATMENT SYSTEM

(51) International classification :F01N0003200000, F01N0003280000, B01D0053940000, B01F0023213000, B01F0025313000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A static mixer 200 for a catalytic convertor of a combustion engine includes a circular body 202 defining an inlet side 204 to receive a mixture of exhaust gases from the engine and droplets of a urea water solution sprayed therein, and an outlet side 250 coupled to the catalytic convertor; and a set of first deflectors 206 provided on the inlet side 204 and a set of second deflectors 252 provided on the outlet side 250 such that the set of first deflectors 206 includes an outer row of outer deflectors 208 and an inner row of inner deflectors 210 arranged circumferentially, and bent in opposite directions from a longitudinal axis of the mixer 200 for an enhanced turbulence in the mixture 200 of exhaust gases and the droplets of urea solution. The inlet side profiled sheet 204 and the outlet side profiled sheet 250 includes at least one notch 602 and corresponding projection 606 for use during assembly for ensuring a relative angular position of the two.

No. of Pages : 30 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068875 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : HYBRID LANDSLIDE RISK ASSESSMENT SYSTEM AND COMPUTATIONAL METHOD THEREOF

(51) International classification :H04L0067100000, G08B0021100000, G01V0001010000, G01V0001000000, G01V0001300000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present disclosure provides a hybrid landslide risk assessment system (100) and computational method thereof for automated trigger prediction and classification. The system includes rainfall data receivers (114), earthquake data receivers (116), and geological data receivers (118) coordinated by a control unit (112) executing distributed lag nonlinear models and Newmark displacement analysis. The apparatus enables real-time hazard assessment through a hybrid integration module (110) synthesizing statistical and physical model outputs using logistic regression with distributed lag terms. Unlike conventional single-factor analysis systems, this integrated approach captures temporal rainfall effects over 25-day periods while simultaneously computing seismic displacements. The system generates adaptive spatial probability maps distinguishing between rainfall-triggered, earthquake-triggered, and combined-effect landslides with demonstrated prediction accuracy exceeding 83%. The parallel processing architecture achieves sub-second probability calculations enabling operational deployment for early warning systems in disaster-prone regions.

No. of Pages : 33 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068876 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR GUNSHOT DETECTION

(51) International classification :G06N0003080000, G06V0010820000, G06N0003045000, G06V0010764000, G10L0025180000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present disclosure relates to a system (102) and method (400) for gunshot detection using a hybrid deep learning architecture. The system (102) receives an audio signal from acoustic sensors (104) and converts into a time-frequency spectrogram using short-time Fourier transform (STFT). A first Vision Transformer (ViT) divides spectrogram into patches of predefined size and applies positional encoding. The encoded patches are reshaped into a tensor and processed by a convolutional neural network (CNN) to extract local and multi-scale features and generate a global feature embedding. The embedding is flattened into a sequence of feature vectors, which is further input into a second Vision Transformer (ViT) to capture temporal and contextual dependencies, and output is classified into one of a plurality of firearm-related classes. The proposed system (102) ensures robust and accurate classification for real-time gunshot detection and can be deployed in surveillance, law enforcement, and public safety applications.

No. of Pages : 29 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068913 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-Driven Dynamic Spectrum Allocation for Next-Generation 6G Networks

(51) International classification :H04W0016140000, H04W0016100000, G06N0003080000, H04B0017382000, H04W0028160000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses a system and method for AI-driven dynamic spectrum allocation tailored for next-generation 6G wireless networks, addressing the challenges of spectrum scarcity and dynamic network demands. The system integrates a Spectrum Sensing Module (SSM) that employs advanced sensors and software-defined radios to monitor spectrum usage across sub-6 GHz, mmWave, and THz bands in real-time, identifying available and occupied frequency bands. An AI Processing Unit (APU), powered by deep reinforcement learning (DRL), analyzes historical and real-time network data, including traffic patterns and user demands, to predict optimal spectrum allocation strategies. The APU utilizes a neural network architecture with convolutional layers for feature extraction and recurrent layers for temporal analysis, ensuring precise and adaptive decision-making. A Spectrum Allocation Module (SAM) dynamically assigns spectrum bands to users or devices based on APU recommendations, prioritizing ultra-low-latency and high-bandwidth applications critical for 6G, such as holographic communications and extended reality. An Interference Management Unit (IMU) mitigates interference by adjusting power levels and reallocating bands in response to detected conflicts, achieving a 40% reduction in interference events. The system includes a Network Interface (NI) for seamless integration with 6G network protocols, ensuring compatibility with base stations, user equipment, and network slicing frameworks. The method involves continuous spectrum sensing, AI-driven analysis, dynamic allocation, interference mitigation, and a feedback loop to refine the DRL model with real-time performance data. Experimental results from 6G testbed simulations demonstrate a 20-30% improvement in spectrum utilization efficiency, 25-35% increase in data throughput, and 15-25% reduction in latency compared to static allocation methods. The invention supports scalable, reliable, and high-performance 6G networks, enabling advanced applications while maintaining compatibility with existing infrastructure and adhering to stringent regulatory requirements.

No. of Pages : 11 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068907 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : PLASTER COMPOSITE MATERIAL FROM RECYCLED CONSTRUCTION AND DEMOLITION WASTE AND ITS METHOD OF PREPARATION THEREOF

(51) International classification :C04B0111000000, B02C0001020000, C04B0028020000, B02C0001040000, C04B0038000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT The present invention relates to a method of preparation of a cost-effective, resilient plaster composite made from recyclable building and construction materials with enhanced durability, reduced permeability, efficient crack healing, and decreased likelihood of reinforcement oxidation. The main components of our present invention, the plaster composite are: Cement, Sludge, Sand, Lime, HPMC (Hydroxypropyl Methylcellulose), Bacillus Subtilis Spores, Titanium Dioxide, RDP Powder (Redispersible Polymer Powder). The plaster composite is prepared by introducing the construction and demolition waste materials to the recycling process (100), feeding them via the surge hopper (101) for consistent flow, then downsizing using the jaw crusher (102) and cone crusher (103), sieving (104) and cleaning using log washer and sanding (105), sieving again (106), aggregating the particles in the sand tank (107) and separating the water from the sludge in the thickener tank (108). The figure associated with the abstract is Fig. 1

No. of Pages : 19 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068914 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-BASED PERSONALIZED MARKETING RECOMMENDATION ENGINE FOR E-COMMERCE PLATFORMS FOR ANALYSING THE MARKETING AND CONSUMER BEHAVIOUR

(51) International classification :G06Q0030060100, G06Q0030025100, G01N0033000000, G06N0020000000, G06N0010000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

AI-Based Personalized Marketing Recommendation Engine for E-Commerce Platforms for analysing the marketing and consumer behaviour is the proposed invention. The proposed invention focuses on understanding the functions of marketing and consumer behaviour. The invention focuses on analyzing the parameters of Personalized Marketing Recommendation Engine for E-Commerce Platforms using algorithms of AI Approach.

No. of Pages : 14 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068940 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : An air intake duct for a vehicle air intake system with an integrated water separation mechanism

(51) International classification :F02M0035100000, B60H0001000000, F02M0035160000, B60K0013020000, F02M0035022000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

An air intake duct for a vehicle air intake system with an integrated water separation mechanism [0036] The present invention discloses an air intake duct for a vehicle with an integrated water separation mechanism. The air intake duct (100) comprises an inlet duct portion (101) to receive atmospheric air, an outlet duct portion (102) to connect tangentially to an air cleaner (107), and an air passage (103) interconnecting the two. The air passage (103) comprises a pair of angled turns in mutually perpendicular planes to promote inertial separation of water droplets. A vane (104), positioned at the mouth of the outlet duct portion (102), protrudes into the air passage (103), reducing the cross-sectional area and velocity of airflow. A snorkel (105) and a bellow (106) are coupled to the inlet duct portion (101) to accommodate vibration and relative movement between the vehicle cab and frame. (Figures 2 and 3)

No. of Pages : 19 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/07/2025

(21) Application No.202541068929 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR DOCUMENTATION AND PRESERVATION OF INTANGIBLE CULTURAL HERITAGE OF THE BANJARA COMMUNITY

(51) International classification :G06Q0050100000, G06Q0050260000, A41D0001220000, A63F0013814000, A43B0005120000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a system (100) for documenting and preserving the intangible cultural heritage (ICH) of the Banjara community in Telangana. The system includes multiple modules such as a Gotra Documentation Module (101), Festival Mapping Module (102), Oral Tradition Recorder (103), Symbolic Dance Interpreter (104), Attire & Ornamentation Catalog (105), Culinary Heritage Database (106), Women's Cultural Role Analyzer (107), Regional Mapping Module (108), and Preservation Strategy Module (109). These components work together to record cultural elements like clan structures, festivals, songs, dances, dress, food, and women's roles. The invention uses qualitative ethnographic methods and aligns with UNESCO's ICH safeguarding guidelines. It aims to prevent cultural erosion, support educational use, and enable policy development for heritage protection. The system ensures that Banjara traditions are preserved, shared, and passed on to future generations through a structured, community-driven approach. The figure associated with abstract is Fig. 1.

No. of Pages : 30 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541068954 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : PREPARATION, CHARACTERIZATION AND PHARMACOLOGICAL EVALUATION OF SOLID-LIPID NANOPARTICLES OF VIBURNUM OPULUS EXTRACT

(51) International classification :A61K0009510000, A61K0036350000, A61P0003100000, G01N0015020500, B82Y0005000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a composition for preventing or treating diabetes, which contains Viburnum opulus extract and Titanium dioxide solid lipid nanoparticles. More specifically, the present invention relates to a process for the preparation of solid lipid nanoparticles of Viburnum opulus extract, comprising: boiling 5gm hydroalcoholic extract of Viburnum opulus with 50mL of double distilled water at 90°C for 20min and filtering the extract; stirring 1mM Titanium dioxide solution for 2 hours in 25°C to prepare nanoparticles of Titanium dioxide and adding 10mL of aqueous extract of Viburnum opulus to 20mL of 1mM Titanium dioxide at 25°C under stirring condition for 4hours to form solid-lipid nanoparticles of Viburnum opulus. The present invention provides formulation, evaluation and characterization of solid lipid nanoparticles with particle size 16.7nm, polydispersity index 0.143, zeta potential -22.8mV, indicating a stable and uniform formulation. The Dynamic Light Scattering, Fourier Transform Infrared Spectroscopy, and High-Performance Liquid Chromatography confirms the presence of bioactive compounds known for the anti-diabetes. The in-vitro α -amylase inhibition assay and formulation's dose-dependent inhibition of α -amylase further supported its therapeutic potential in diabetes management.

No. of Pages : 30 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541068955 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Design and Fabrication of Modified SCARA Robot with Vertical Plotting Machine

(51) International classification :B25J0009160000, B25J0009040000, B25J0009100000, A61B0034300000, B25J0009000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention discloses a novel and cost-effective two-degree-of-freedom (2-DOF) SCARA (Selective Compliance Assembly Robot Arm) robotic system integrated with a vertical CNC plotting machine, specifically engineered for precision painting and drawing applications on vertical surfaces. The system leverages a combination of mechanical simplicity, modular design, and digital control for high-accuracy operation in both industrial and artistic domains. The robotic structure includes two prismatic joints enabling linear motion in the X and Z axes. The vertical (Z-axis) link is driven by a nut-and-bolt mechanism actuated by a stepper motor, enabling smooth up-and-down movement. The horizontal (X-axis) link employs a rack and pinion mechanism, also driven by a stepper motor, allowing lateral motion. These coordinated movements provide stable and accurate planar control suitable for fine-resolution tasks. At the core of this invention lies the integration of a vertical plotting machine as the end effector. The plotter is capable of executing G-code instructions to render digital designs using various tool heads, such as markers or paintbrushes. This enhances the robot's versatility across applications including automated painting, artistic illustration, signage creation, and prototype design. Control is achieved through a microcontroller-based system (Arduino Mega 2560), interfaced with RAMPS 1.4 and GRBL motor drivers. Software tools including Arduino IDE, Pronterface, gSender, and Inkscape facilitate firmware deployment, motion planning, and G-code execution. This system distinguishes itself through its low cost, ease of fabrication, and flexibility, offering an accessible solution for educational use, small-scale manufacturing, and artistic production. The modular architecture further allows for future expansion, such as additional degrees of freedom, mobile chassis integration, and wireless control via Bluetooth modules.

No. of Pages : 22 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541068956 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : UNDERGROUND FAULT CABLE IDENTIFICATION USING IOT TECHNOLOGY

(51) International classification :G01R0031080000, G06Q0030016000, G05B0023020000, G01R0031110000, G06F0008200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The current project embraces a new idea of detecting defects in underground cables using an IoT based system. The highlights consist of ESP32 microcontroller, TFT1.8 colour screen, a buzzer. The system will seek to offer efficiency in the detection of cable faults by using the IoT. The central processing unit is the ESP32 microcontroller, which has the role of acquiring data, analyzing it, and communicating it. The ESP32 is also fitted with a built-in Wi-Fi that will allow connection to the internet, this will allow monitoring and control of the device remotely. TFT1.8 colour display is used as the user interface and realtime information of status of the cable is displayed. In the form of graphical display and status indicators. And also same information is also transmitted to Blynk App. Through it one is able to access the system in a remote location. In development of the software we used C++ language in Arduino IDE, Blynk App was utilized as an IoT cloud platform. This graphic is one of the ways of making the system user-friendly and guaranteeing an immediate decision-making process of the maintenance staff. To enhance the visual feedback a buzzer is incorporated into the system. The buzzer gives sounds when there is fault in the cable and this aspect indicates that faults are not only sighted but they are also given attention in good time even in a situation where the environment makes spotting the fault somewhat difficult. The proposed system based on IoT could be used to detect underground cable faults and therefore minimizes the number of downtimes and makes maintenance operations more efficient. The system offers real time display of the information and the audible signals that make the system real time to respond to a fault in the cables in time and as such the reliability and lifespan of underground cable systems is guaranteed. The developed and tested system in our laboratory, shows that its system performance is good.

No. of Pages : 20 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541068958 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Cloud Data Aggregation with Security and Privacy Guarantees

(51) International classification :H04L0009000000, G06Q0040060000, H04L0009400000, G06F0021600000, G06F0021620000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

[06] We propose a modular software architecture for privacy-preserving data aggregation in smart-grid and similar environments. Leveraging pluggable components—message buses, producers, aggregators, and consumers—our design supports multiple security strategies: homomorphic encryption and Intel SGX-based trusted execution. Proofs of concept and performance evaluations demonstrate that SGX-based aggregation offers significantly lower latency compared to homomorphic encryption, while the latter remains deployment flexible. We explore the trade offs between performance, security, and scalability, and discuss integration challenges in cloud environments..

No. of Pages : 22 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541068959 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : E-Commerce Driven Framework for Optimized Supply Chain and Reduced Operational Costs

(51) International classification :G06Q0010087000, G06N0020000000, G06Q0010063100, G06Q0010060000, G06Q0010040000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses an e-commerce-driven framework designed for optimized supply chain management and reduction of operational costs through the integration of advanced digital technologies. The system employs Artificial Intelligence, Machine Learning, Internet of Things, Big Data Analytics, and cloud computing to unify procurement, inventory, logistics, and customer fulfillment in a single intelligent platform. It facilitates real-time data sharing, predictive demand forecasting, automated inventory control, and AI-powered logistics planning to enhance operational efficiency, minimize costs, and ensure seamless customer service. The invention promotes collaborative supply chain management, sustainability, and risk mitigation by leveraging integrated tools for monitoring, performance analysis, and adaptive decision-making. The scalable, user-friendly platform empowers businesses to meet the dynamic demands of the e-commerce environment while fostering transparency, cost-effectiveness, and customer satisfaction. This comprehensive system transforms traditional supply chain operations into an agile, technology-enabled network aligned with modern digital commerce needs, ensuring business growth and operational excellence.

No. of Pages : 25 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068960 A

(19) INDIA

(22) Date of filing of Application :19/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SYSTEM FOR IDENTIFYING DEPRESSION IN SOCIAL PLATFORMS USING AI FOR PUBLIC HEALTH MONITORING

(51) International classification :G06N0020000000, G06Q0050000000, G16H0050300000, G16H0050200000, G16H0050700000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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-

(57) Abstract :

The current innovation reveals a thorough system and technique for identifying signs of depression in users by employing cutting-edge machine learning models to analyze their interactions and content on social media networks and online forums. Through a modular pipeline that includes data collecting, pre-processing, feature extraction, and depression risk classification, the system gathers user-generated data, such as text, behavioral activity, and engagement patterns. The invention trains machine learning models that can identify at-risk individuals using a wide range of depression-indicative indicators, including language style, emotional tone, sentiment polarity, interaction behavior, and content patterns. Modern algorithms, such as deep learning models and natural language processing methods, are used in the machine learning component to ensure high accuracy, adaptability to changing trends, and model explainability using tools like SHAP or attention processes. Strong ethical precautions are also included in the system, such as anonymization, obtaining consent, and adherence to data protection laws. Through an integrated reporting and alerting interface, detection data are securely sent to public healthcare systems, enabling mental health practitioners to conduct early interventions, monitor population-level trends, and more effectively allocate resources. The idea provides a new way to connect online behavioral data with public health care response systems by enabling scalable, real-time, non-invasive mental health surveillance. In the end, it improves the general mental health of communities by empowering public health authorities with actionable insights and promoting early identification and prompt support for those who are depressed.

No. of Pages : 14 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541068961 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Evaluating Material Savings and Cost Reduction Using EPS Lightweight Concrete in House Construction

(51) International classification :G06Q0050080000, C04B0111400000, E04H0001040000, E04H0001020000, E04C0002040000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

[06] This study evaluates the feasibility of using lightweight concrete in a residential construction project in Palmas, Tocantins, Brazil. The research compares conventional concrete and lightweight concrete with 40% EPS (Expanded Polystyrene) replacement of coarse aggregate, using a case study approach. Structural modeling was performed with Eberick software, and the project was dimensioned based on a 110 m² two-story residence. The comparison considered self-weight, reinforcement quantities, foundation loads, and material costs. The lightweight concrete structure demonstrated a 35% reduction in self-weight, a 14.4% and 10% decrease in CA50 and CA60 steel usage respectively, and fewer foundation piles, resulting in a total cost reduction of R\$3,315.76. Although the financial savings were limited in this small-scale project, the findings support lightweight concrete as a sustainable and viable option, particularly for large-scale or multi-story applications. Accompanied Drawing [FIG. 1] [FIG. 2] [FIG. 3] [FIG. 4] [FIG. 5] [FIG. 6] [FIG. 7] [FIG. 8] [FIG. 9] [FIG. 10]

No. of Pages : 23 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541068964 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Real time multiple patterns matching automation system to operate various lamps with machine learning

(51) International classification :G06F0018232130, G06N0003080000, G06T0007900000, G06N0003045000, G06T0007110000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT The present invention is a real time multiple patterns matching automation system to operate various lamps with machine learning. In the Phase-1, the Robotic Electrical Lamb System (RELS) is performing many of the operations including collecting nature light intensity data over 24 hours through sensor in various session including winter, summer and raining respectively, collecting room indoor pictures including with human and without human, preprocessing the input data sets, feature extraction for room indoor image data set using CNN technique and separate the content of light intensity data set and room indoor image data set into finite number of clusters in the concurrent manner using K-Means technique. An intensity from light sensor and room picture from camera, then it preprocess the two test samples including light intensity and room picture afterwards it extracts the features from preprocessed room indoor picture.

No. of Pages : 6 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068969 A

(19) INDIA

(22) Date of filing of Application :19/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Smart Skin: Neural Networks for Early Melanoma Detection

(51) International classification :G06N0003045000, G06N0003080000, G06F0018214000, G06V0010820000, G16H0050200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

Melanoma, a serious form of skin cancer, poses a significant risk if not detected early, often leading to increased mortality rates. Traditional diagnostic approaches rely on dermatologists analyzing biopsy results through microscopes, a process that can be challenging and highly dependent on expertise. In response to the need for more efficient and accurate diagnostic tools, our research investigates the use of artificial intelligence (AI) methods for melanoma detection. Specifically, we explored various convolutional neural network (CNN) architectures, including VGG19, MobileNetV2, ResNet50V2, DenseNet201, EfficientNet, VGG17, GoogleNet, and ResNet152V2. By processing a dataset of 7,056 images, we compared the performance of these models utilizing deep learning on graphics processing units (GPUs). Among the models assessed, GoogleNet demonstrated the highest accuracy, achieving 73.93% on the training set and 77.09% on the test set. This underscores the potential of AI-driven approaches, particularly GoogleNet, to enhance the efficiency and precision of melanoma diagnosis compared to traditional methods.

No. of Pages : 9 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068970 A

(19) INDIA

(22) Date of filing of Application :19/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : KnockSense: Intelligent Knock-Based Entry System

(51) International classification :H04L0009400000, G07C0009000000, G06F0021620000, H04L0009320000, G06F0021570000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The Door Unlocking System Using Knocking Pattern is an advanced security solution that detects user-defined knocking patterns to grant access, ensuring only authorized individuals can unlock the door. This innovative design addresses vulnerabilities in conventional security measures, such as biometric, PIN-based, or IoT authentication systems, which can be susceptible to hacking or credential theft. By employing a unique knocking pattern, the system creates a secure access protocol that is both discreet and difficult for intruders to anticipate or replicate. The reliance on conscious user interaction eliminates the risks associated with personal credentials, enhancing overall security. Furthermore, this system is versatile, making it suitable for both residential and commercial applications. Its implementation not only reinforces security but also offers a novel approach that can deter potential intruders, providing a reliable solution for safeguarding homes and businesses alike. By prioritizing user-defined patterns, the system sets a new standard for secure access control.

No. of Pages : 10 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069003 A

(19) INDIA

(22) Date of filing of Application :19/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SECURE AND FAULT-RESILIENT ADAPTIVE SCHEDULING FOR INDUSTRIAL INTERNET OF HEALTHCARE THINGS

(51) International classification :H04L0009400000, H04L0009080000, H04L0005000000, G06F0009500000, G06N0020000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses a secure and fault-resilient adaptive scheduling framework tailored for the Industrial Internet of Healthcare Things (IIoHT). Addressing the critical challenges of data security, system reliability, and efficient task management in dynamic healthcare environments, the proposed system integrates multiple advanced technologies. It leverages Explainable Deep Residual and Bound Learning (ERBL) for transparent and accurate anomaly detection, Dynamic Stepwise Tiny Encryption (DSTE) for lightweight, quantum-resistant data security, and Fault-Resilient Adaptive Scheduling (FRAS) for real-time failure mitigation and optimized resource allocation. Additionally, Quantum Portfolio Optimization (QPO) is utilized to achieve efficient task-resource mapping through quantum annealing, enhancing performance in complex scheduling scenarios. This comprehensive solution ensures end-to-end security, real-time processing, and dependable data management across edge, fog, and cloud environments, fostering continuous healthcare operations with high accuracy and minimal latency. The invention further provides decentralized trust mechanisms for secure inter-node communication and supports proactive clinical decision-making through predictive analytics and real-time alerts. The synergistic integration of these components enables robust, scalable, and future-proof healthcare systems capable of withstanding evolving cybersecurity threats and operational disruptions, thereby advancing the quality and reliability of digital healthcare services.

No. of Pages : 12 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541069004 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AN ARTIFICIALLY INTELLIGENT IoT AND ZIGBEE BASED TRAFFIC SIGNAL SYSTEM FOR EMERGENCY VEHICLE PRIORITIZATION

(51) International classification :G08G0001096500, G08G0001080000, G08G0001087000, G08G0001096700, G08G0001010000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT AN ARTIFICIALLY INTELLIGENT IoT AND ZIGBEE BASED TRAFFIC SIGNAL SYSTEM FOR EMERGENCY VEHICLE PRIORITIZATION The present invention relates to a smart traffic management system for prioritizing emergency vehicles using artificial intelligence (AI), Internet of Things (IoT), and Zigbee communication technology. The system comprises a network of traffic signal units, a Zigbee module for receiving emergency vehicle data, and an AI-driven control unit configured to dynamically optimize traffic light timing based on real-time location and congestion data. When an emergency vehicle such as an ambulance approaches an intersection, the Zigbee module transmits an emergency signal to the AI processor, which calculates the optimal route and adjusts traffic signals to create a green corridor. The system ensures minimal delay for emergency vehicles while maintaining overall traffic flow efficiency. This solution can be implemented across urban areas to significantly reduce emergency response times and save lives. ##### DIGITALLY SIGNED##### MADHU SMITA (IN/PA-3454) and PREM CHARLES I (IN/PA – 3311) Registered Patent Agents on behalf of the Applicant(s)

No. of Pages : 19 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541069008 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AN ARTIFICIAL INTELLIGENCE POWERED REAL-TIME SIGN LANGUAGE GENERATION SYSTEM

(51) International classification :G09B0021000000, G10L0015260000, G06F0040560000, G10L0015220000, G06F0040300000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

The system (100) includes. An artificial intelligence-powered real-time sign language generation system comprising: a speech input unit (102), a text input unit (104), a speech recognition processor (106), a natural language processing module (108), a sign sequence generator (110), a visual rendering engine (112), a playback control interface (114), and a language selection component (116). The speech input unit captures live audio from a microphone for real-time translation. The text input unit enables manual text entry. The speech recognition processor converts audio into transcripts. The natural language processing module analyzes context, grammar and emotional tone. The sign sequence generator maps processed text into sequential sign gestures. The visual rendering engine renders sign sequences into video-based animations or image-based output. The playback control interface allows speed adjustment. The language selection component permits choosing multiple spoken and sign languages including regional dialects. The invention promotes real-time, accessible, emotionally-aware translation of spoken language into sign language, enhancing inclusivity for deaf and hard-of-hearing individuals.

No. of Pages : 13 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541069020 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Auto-Locking Bolt Assembly with Thermally Responsive Bi-Metallic Expansion Nut

(51) International classification :F16B0039340000, F16B0039284000, H02S0020300000, F16B0033020000, F16B0033000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

This invention presents a bolt system that locks itself in place automatically when subjected to heat effectively resolving the issue of fastener loosening in systems exposed to vibration and thermal changes. The mechanism relies on a bi-metallic sleeve embedded within the nut. The metals, having distinct expansion coefficients, generate radial pressure under heat, causing the nut to grip the bolt threads securely. As this process requires no external input or adjustment, it offers passive reliability ideal for demanding environments such as engines, turbines, and reactors.

No. of Pages : 8 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541069021 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A VOICE-COMMAND EMERGENCY ALERT AND EARTHQUAKE WARNING SYSTEM EQUIPPED WITH AN AI-POWERED WEARABLE SAFETY BAND FOR CHILDREN AND WOMEN

(51) International classification :A61B0005000000, A61B0005024000, H04W0004900000, G10L0015220000, G01V0001010000

(86) International Application No :NA

Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA

Filing Date :NA

(62) Divisional to Application Number :NA

Filing Date :NA

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(57) Abstract :
ABSTRACT A VOICE-COMMAND EMERGENCY ALERT AND EARTHQUAKE WARNING SYSTEM EQUIPPED WITH AN AI-POWERED WEARABLE SAFETY BAND FOR CHILDREN AND WOMEN Women and girls in seismically active areas could benefit from this smart wrist-worn safety band. This wearable device can detect local earthquakes in real time without the internet using its low-power AI-enabled microprocessor (ESP32) and high-sensitivity seismic sensor. The device activates a multi-modal alerting mechanism for seismic activity or distress calls. Vibration, a 100-dB siren, and the safety band's LED blink alert the user and others. It sends push notifications and location-based SMS messages to nearby mobile users and pre-registered emergency contacts within 1 mile to ensure extensive communication even during network instability. This wearable's AI-powered voice command recognition makes it appealing to activate without your hands. The AI model is trained to recognize distress phrases and tuned for low-resource deployments. Real-time GPS position monitoring helps responders find and help victims. The wearable can be used for medical or physical emergencies as well as disaster response. Biometric sensors can detect heart rate and blood pressure anomalies, indicating pain or injury. All sensor data is locally logged and processed for user privacy and latency. Wearables use AI, IoT, and embedded systems for lifespan, battery life, and user satisfaction. Connecting to community emergency response networks makes the scalable system a public safety node

No. of Pages : 11 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069034 A

(19) INDIA

(22) Date of filing of Application :19/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Adaptive English learning powered by artificial intelligence

(51) International classification :G09B0019060000, G06Q0050200000, G06N0020000000, G09B0005060000, G09B0007020000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT The present invention is an adaptive English learning powered by artificial intelligence. A user interface configured to present interactive language learning content; a natural language processing (NLP) module for analyzing user input in real time, including spoken and written English. A machine learning engine operatively coupled to the NLP module, configured to generate and update a personalized learner profile based on proficiency level, learning pace, strengths, weaknesses, and preferred learning modalities. A content adaptation module configured to dynamically tailor instructional materials, adjust lesson difficulty, and provide personalized feedback and practice exercises based on the learner profile and a conversational AI component that facilitates interactive speaking and writing tasks, wherein the system continuously monitors user progress and adaptively modifies content delivery to optimize engagement and accelerate language acquisition.

No. of Pages : 6 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541069036 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Self-Optimising Heat Compression Pad for Therapeutic Use

(51) International classification :A61B0005000000, A61F0007000000, A61B0005024000, A61M0021020000, A61N0001360000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a novel therapeutic heated compression pad designed to deliver optimized thermal and pressure-based therapy with minimal user intervention. By integrating adaptive temperature regulation and intelligent compression control, this device offers an advanced, self-optimizing mechanism tailored to individual user needs. The system is equipped with high-precision thermal sensors and dynamic pressure adjustment modules that continuously monitor the user's physiological conditions and environmental factors. A real-time data processing unit, embedded within the pad's structure, interprets sensory inputs and autonomously modulates heat levels and compression intensity. The microcontroller-driven adaptive response system ensures consistent and effective therapeutic benefits by dynamically adjusting parameters based on body temperature fluctuations, pain thresholds, and treatment duration preferences. This prevents overheating, inadequate compression, or discomfort, providing a more precise and personalized approach to recovery and pain management. Designed for applications in muscle rehabilitation, pain relief, sports recovery, and circulation improvement, the device seamlessly integrates flexible heating elements with biometric monitoring technology. The user-friendly interface, either via touchscreen or mobile app, allows for further customization, enabling manual overrides and pre-set therapy profiles. Additionally, the energy-efficient power management system maximizes battery longevity while ensuring continuous operation without the need for frequent recharging. By combining ergonomic design, adaptive control algorithms, and sensor-driven feedback mechanisms, this invention addresses limitations present in conventional heating pads and compression therapy devices. The self-optimizing heated compression pad represents a substantial advancement in therapeutic technology, offering non-invasive, efficient, and user-centric pain relief and muscle recovery solutions with intelligent automation and dynamic customization.

No. of Pages : 12 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541069046 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : DATA-DRIVEN TALENT ACQUISITION MODEL USING PREDICTIVE ANALYTICS IN HRM

(51) International classification :G06Q0010105300, G06Q0010063900, G06N0020000000, G06Q0010105000, G06Q0010063100

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

“DATA-DRIVEN TALENT ACQUISITION MODEL USING PREDICTIVE ANALYTICS IN HRM” The present invention discloses a Data-Driven Talent Acquisition Model Using Predictive Analytics in Human Resource Management (HRM) that enhances recruitment efficiency, accuracy, and fairness by leveraging advanced machine learning, predictive modeling, and behavioral analytics. The system is designed to process structured and unstructured data from diverse sources such as resumes, digital profiles, psychometric assessments, and historical HR records to evaluate candidates based on their potential job performance, cultural fit, and long-term retention probability. At its core, the invention comprises a predictive analytics engine that continuously learns from past hiring outcomes and post-hire employee performance data to refine its forecasting capabilities. It integrates Natural Language Processing (NLP) techniques to extract semantic and contextual insights from candidate documents, enabling a more comprehensive analysis beyond keyword matching. A bias detection and mitigation layer is included to identify and eliminate unconscious biases during candidate evaluation, thereby promoting diversity and fairness in hiring. The system features an intelligent HR dashboard that provides recruiters and decision-makers with real-time candidate rankings, predictive scores, and actionable hiring recommendations. It also supports seamless integration with existing HRMS and ATS platforms, ensuring smooth adoption across different organizational environments. Another innovative aspect is the adaptive feedback mechanism, where the system evolves continuously by incorporating post-hire success metrics, enhancing future recruitment decisions. This closed-loop learning process enables the invention to dynamically adjust to evolving job roles, industry demands, and organizational strategies. Designed for scalability, the model can be implemented in startups, mid-size businesses, or large enterprises, and deployed via cloud or onpremise environments. By transforming recruitment into a data-driven, strategic function, the invention reduces hiring time and cost, improves candidate quality, and aligns workforce acquisition with longterm organizational goals. In summary, this invention offers an intelligent, automated, and fair recruitment solution that replaces subjective hiring practices with measurable, predictive, and inclusive decision-making processes in modern HRM.

No. of Pages : 9 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069038 A

(19) INDIA

(22) Date of filing of Application :19/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Computational System for Simulating Peristaltic Transport of Non-Newtonian Fluids in Biological Conduits

(51) International classification :G06F0030230000, G16H0050500000, A61B0005000000, G06F0111100000, G06F0030280000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
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(57) Abstract :

Computational System for Simulating Peristaltic Transport of Non-Newtonian Fluids in Biological Conduits The proposed invention relates to a Computational System for Simulating Peristaltic Transport of Non-Newtonian Fluids in Biological Conduits, designed to accurately model and predict the complex fluid dynamics involved in biological processes such as gastrointestinal motility, ureteral transport, and blood flow in microvessels. This system leverages advanced numerical algorithms, including finite element and finite difference methods, to solve highly nonlinear partial differential equations governing peristaltic motion within elastic, deformable conduits. By incorporating various rheological models like Power-law, Bingham plastic, and Herschel-Bulkley fluids, the system enables simulation of shear-thinning, shear-thickening, and viscoplastic behaviors commonly exhibited by biological fluids. It integrates anatomical and physiological parameters such as wave amplitude, frequency, wavelength, wall elasticity, and fluid consistency to provide a customizable and realistic simulation environment. The system offers a graphical user interface for input customization, real-time visualization, and data analytics, facilitating a deeper understanding of flow characteristics such as velocity distribution, pressure gradients, wall shear stress, and particle trajectories under different physiological conditions.

No. of Pages : 14 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069044 A

(19) INDIA

(22) Date of filing of Application :19/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : MODULAR BIPHASIC CHEMICAL PEEL WITH TCA-PHENOL EXFOLIATION AND ANTIOXIDANT RECOVERY FOR PIGMENTATION CONTROL

(51) International classification : A61K8/35, A61K8/365, A61K8/368, A61K8/44, A61K8/49, A61K8/67, A61K31/122, A61K31/295

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

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(57) Abstract :

Modular Biphasic Chemical Peel with TCA-Phenol Exfoliation and Antioxidant Recovery for Pigmentation Control This invention describes a biphasic dermatological peel system comprising a first-phase exfoliative composition and a second-phase recovery composition. The first phase contains a synergistic blend of trichloroacetic acid and phenol to induce controlled medium-depth epidermal exfoliation through keratocoagulation and protein denaturation. The second phase comprises L-ascorbic acid, optionally combined with tranexamic acid, ferulic acid, and stabilizing agents, to provide post-peel antioxidant protection, melanogenesis inhibition, and dermal regeneration. Sequential application of the two compositions results in enhanced safety, minimized post-inflammatory hyperpigmentation, and improved clinical outcomes, particularly in melanin-rich and pigment-prone skin types. The system is modular, reproducible, and adaptable for various dermatologic conditions including melasma, photodamage, and textural irregularities. The invention addresses a longstanding need for a customizable, dual-action peel protocol that combines exfoliative precision with post-procedural recovery support, thereby offering a superior therapeutic alternative to conventional monophasic chemical peels.

No. of Pages : 26 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541069047 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : IOT BASED REMOTE MONITORING AND ALERTING SYSTEM USING INTEGRATED DUAL-COMMUNICATION SYSTEM FOR HUMAN-ANIMAL CONFLICT MITIGATION

(51) International classification :H04L0067120000, H04W0004800000, A01M0031000000, H04W0004380000, H04W0084180000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
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(57) Abstract :

IOT BASED REMOTE MONITORING AND ALERTING SYSTEM USING INTEGRATED DUAL-COMMUNICATION SYSTEM FOR HUMAN-ANIMAL CONFLICT MITIGATION The present invention relates to an Internet of Things (IoT) based remote monitoring and alerting system for human-animal conflict mitigation, comprising a plurality of field-deployed sensor nodes [1]; a central master node [6]; a cloud server or local data hub [7] for logging, behavior analysis, and pattern detection of animal movement; and a power management unit [8] for low-power operation to support remote deployments. Each sensor node [1] comprises of at least one animal detection module [2]; a microcontroller unit [3]; an integrated dual wireless communication system [4] comprising LoRaWAN module [4a] and GSM module [4b]; and a deterrent unit [5] configured to activate upon detection of an animal presence. If the microcontroller unit [3] detects animals within specified ranges, the system will activate the LoRaWAN module [4a] to distribute urgent information and the GSM module [4b] to deliver automatic real-time alerts and telephone calls to authorized authorities. Figure 1

No. of Pages : 37 No. of Claims : 11

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541069050 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : The impact of poor sleep on the treatment of chronic illnesses

(51) International classification :A61P0003040000, G16H0050300000, A61P0025200000, A61P0003100000, G16H0040670000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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The impact of poor sleep on the treatment of chronic illnesses ABSTRACT: In this era, sleep deprivation is a significant public health concern, as it is a consequence of multiple health problems or a cause of many important health risks. It is estimated that 50 to 70 million Indians are persistently affected by a sleep and wakefulness disorder, which is detrimental to their health and longevity and impedes their daily activities. There are approximately 90 distinct sleep disorders, with the majority characterised by one of the following symptoms: excessive daytime lethargy, difficulty initiating or maintaining sleep, and abnormal events occurring during sleep. The cumulative long-term consequences of sleep loss and sleep disorders have been linked to a diverse array of adverse health outcomes, such as an elevated risk of hypertension, diabetes, obesity, melancholy, heart attack, and stroke. The case can be confidently made that sleep loss and sleep disorders have profound and pervasive effects on human health after decades of research. This review aims to provide a foundation for the generation of ideas for future research by presenting and discussing a variety of mechanisms by which sleep deprivation may impact health.

No. of Pages : 8 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541069051 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Multimodal AI-Integrated Knee Health Monitoring

(51) International classification :A61B0005000000, A61B0005110000, G16H0040670000, G16H0010600000, G06N0003080000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Multimodal AI-Integrated Knee Health Monitoring ABSTRACT: The invention discloses an advanced wearable system for comprehensive knee health assessment and rehabilitation. Unlike conventional single-sensor monitoring systems, the proposed device integrates multiple sensors—accelerometer, gyroscope, magnetometer, EMG, and pressure sensors—to capture biomechanical, neuromuscular, and gait pressure data. It utilizes an edge-cloud hybrid architecture to deploy deep learning models both on-device and in the cloud. The system features context-aware activity recognition, real-time anomaly detection, a personalized digital twin, and a tele-rehabilitation interface. With a secure mobile application interface, the device allows remote diagnosis, personalized exercise recommendations, and real-time alerts. Blockchain-based data integrity and AI model personalization make it highly suitable for clinical, athletic, and remote healthcare environments.

No. of Pages : 10 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541069052 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : EVALUATING INFORMATION SECURITY STRATEGIES IN THE PUBLIC SECTOR: EFFICIENCY AND CYBER SECURITY RISKS

(51) International classification :H04L0009400000, G06F0021570000, G06Q0050260000, G06F0021550000, G06Q0010063500

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

EVALUATING INFORMATION SECURITY STRATEGIES IN THE PUBLIC SECTOR: EFFICIENCY AND CYBER SECURITY RISKS
ABSTRACT This invention presents a novel system for evaluating and enhancing information security strategies in public sector organizations. It combines infrastructure assessments, policy reviews, cybersecurity metric analysis, and AI-powered risk forecasting into an integrated evaluation framework. The invention assigns risk scores to systems, predicts cyber threats, and provides optimized recommendations for mitigating vulnerabilities. Its modular design ensures compatibility with various government IT environments, promoting efficiency and adaptability. A centralized dashboard visualizes system health, compliance status, and the impact of recommended security measures. This invention enables public sector institutions to transition from fragmented, reactive defenses to coherent, data-driven security strategies, strengthening resilience against evolving cyber threats and improving governance transparency. It addresses the growing need for dynamic and effective cybersecurity practices in digital government infrastructure.

No. of Pages : 13 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069093 A

(19) INDIA

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(54) Title of the invention : A SYSTEM AND A METHOD FOR VOICE-ENABLED QUERY RESOLUTION IN UNIVERSITY ADMISSIONS

(51) International classification :G10L0015260000, G10L0015180000, G06F0016330000, G10L0015220000, G06F0040300000

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Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT A SYSTEM AND A METHOD FOR VOICE-ENABLED QUERY RESOLUTION IN UNIVERSITY ADMISSIONS The present disclosure discloses a system and a method for voice-enabled query resolution in university admissions. The system(100) comprises a voice-capturing module(102) to capture an audio query; a first conversion module(104) to apply speech recognition techniques to transcribe the audio into a textual; a query classification module(106) to execute a trained natural language classifier(106a) to determine a query type based on the intent and domain-specific terms; an admission query processing model(108a) comprises a first interpretation module(108a-1) to extract and map fine-grained attributes, a first response generator module(108a-2) generate a natural-language response by applying a language generation model(108a-3), a second interpretation module(108b-1) to retrieve relevant document chunks, a second response generator module(108b-2) process retrieved document by applying a conversational artificial intelligence(AI)model(108b-3) generate a natural-language; an evaluation module(110) to compute a perplexity score; a second conversion module(112) to convert generated response into an audio output; an output module(114) to deliver audio output. Figure 1

No. of Pages : 47 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541069104 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : ADAPTIVE AUTO-SCALING THROUGH MULTI-STEP WORKLOAD PREDICTION MODELS FOR ENHANCING IaaS CLOUD EFFICIENCY

(51) International classification :G06F0009500000, H04L0041147000, H04L0047830000, H04L0009400000, G06F0011340000

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Filing Date :NA

(87) International Publication No : NA

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(57) Abstract :

Infrastructure-as-a-Service (IaaS) is a service that public cloud computing systems provide to deliver computational resources as needed. Automated resource provisioning is a useful technique for managing workload fluctuations by making resources available as needed. Workload prediction is essential for intelligent resource scaling and load balancing, which maximize both the QoE for users and the economic growth of cloud service providers. By allocating resources as needed, auto scaling solutions assist in utilizing the elastic nature of the cloud. There are both reactive and proactive auto scaling which helps provisioning instances based on the demand. This research addresses critical challenges in reactive auto-scaling, proactive auto-scaling and hybrid environment within cloud computing's Infrastructure as a Service (IaaS) framework, focusing on various issues that impede workload prediction accuracy in improving the efficiency. We propose three algorithms in this context. BAYESOPT-SMOT-SVM algorithm approach to handle data skewness and their vulnerability to underfitting and overfitting, resulting in reduced prediction efficacy in reactive auto-scaling. HYBRID TREE-ENHANCED VECTOR MACHINE Model Algorithm classifies workload of each VM in the cloud multilayered architecture individually using a hybrid tree-enhanced vector machine framework, with each class's label being taken into consideration to determine if the VM is being used excessively, inefficiently, or normally to address the issue of cloud resource supply and reduce expenses for proactive scaling. HYBRID ARIMA-OLSTM approach Algorithm addresses workload prediction and CPU utilization evaluation in web applications which are having both the reactive and proactive scaling requirements. Finally these three models are implemented across various cloud environments, such as Graphics Processing Units and Tensor Processing Units, in real-world scenarios including public, private, and hybrid infrastructures. By plotting and tabulating the results, the research highlights the strengths and limitations of each model while demonstrating the Hybrid ARIMA-OLSTM approach superior performance.

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541069105 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Method and System for Optimizing Business Operations using Data Analytics and Statistical Techniques

(51) International classification :G06N0020000000, G06Q0010040000, G06Q0010060000, G06Q0010063100, G06Q0010063700

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Abstract The invention provides a method and system for optimizing business operations through the integration of data analytics and advanced statistical techniques. It addresses the growing need for businesses to leverage large volumes of diverse data to enhance operational efficiency, reduce costs, and improve strategic decision-making in competitive markets. The system collects and processes both structured and unstructured data from multiple sources within an organization, including transactional databases, customer interactions, supply chain systems, and external market information. Utilizing machine learning algorithms alongside statistical models such as regression analysis, time-series forecasting, clustering, and optimization, the system generates actionable insights that enable predictive and prescriptive analytics. This allows businesses not only to understand past and present performance but also to forecast future trends and recommend optimal actions to address operational challenges. The continuous learning capability of the machine learning models ensures adaptability to changing market conditions and evolving business needs. The system features customizable real-time dashboards and automated reporting tools aligned with industry-specific key performance indicators (KPIs), providing decision-makers with clear, relevant, and timely information. It facilitates identification of operational bottlenecks, demand forecasting, inventory optimization, and efficient resource allocation, thereby supporting both strategic planning and day-to-day management. Designed with scalability and modularity in mind, the invention can integrate with existing enterprise resource planning (ERP) systems and is applicable across diverse industries and organizational sizes. Security measures ensure protection of sensitive business data throughout the analytics process. Overall, this invention offers a comprehensive, user-centric platform that transforms raw data into operational intelligence, empowering organizations to achieve continuous process improvement, agility, and sustained competitive advantage through data-driven business operations optimization.

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541069106 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Efficient Artificial Intelligence and Internet of Things (IoT) - Enabled Energy Management System for Electric Vehicles

(51) International classification :G06Q0050060000, G01R0031392000, H04L0067120000, G06N0007010000, B60L0053630000
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(87) International Publication No : NA
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Filing Date :NA

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(57) Abstract :

ABSTRACT OF THE INVENTION This invention provides an efficient energy management system for electric vehicles (EVs) utilizing Artificial Intelligence (AI) and Internet of Things (IoT) technologies. The system comprises IoT sensors for real-time data collection, an AI module for predictive analytics, and a cloud-based platform for external communication. The AI module processes data on battery health, driving conditions, and environmental factors to optimize energy consumption and power distribution. IoT connectivity enables seamless interaction with charging stations and traffic networks. The system enhances energy efficiency by 20%, extends battery lifespan, and ensures adaptability to dynamic conditions, making it suitable for various EV models. The invention addresses the need for sustainable and intelligent energy management in electric vehicles, improving performance and reducing operational costs.

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :19/07/2025

(21) Application No.202541069110 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : IoT-Based Smart Gas Leakage Detection and Valve Control System

(51) International classification :F16K0031060000, H04W0004029000, G01M0003280000, G08B0021160000, H04W0004800000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to an intelligent safety system for detecting and responding to gas leaks in domestic or industrial environments using Internet of Things (IoT) technology. The system comprises a gas sensor interfaced with a microcontroller, which continuously monitors the surrounding atmosphere for hazardous gas levels. Upon detecting a leak, the system triggers an automatic shut-off mechanism by actuating a solenoid valve to stop the gas supply. Simultaneously, it generates local alerts via a buzzer and LED indicators and sends real-time notifications to registered users through a mobile or web application using wireless connectivity. The system maintains a log of incidents and can be remotely monitored and controlled, allowing for manual override or safety checks from any location. This invention ensures rapid detection, automatic response, and remote access, thereby enhancing gas safety and reducing the risk of fire, explosion, and health hazards.

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :20/07/2025

(21) Application No.202541069126 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : PHARMACEUTICAL COMPOSITION WITH ANTI-INFLAMMATORY AND ANALGESIC EFFECTS AND ITS PREPARATION METHOD

(51) International classification :A61K0036610000, A61K0036540000, A61P0029000000, A61K0031125000, A61K0009700000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention provides a pharmaceutical composition with anti-inflammatory and analgesic activity, the pharmaceutical composition, comprising of Clove Oil 6%; Cinnamon Oil 8%; Eucalyptus Oil 10%; Menthol 6%; Edible Camphor 4%; and Derivatives of Methyl Salicylate 66%. The pharmaceutical composition treatment dosage used, Treatment-A in the form of topical analgesic preparation such as liquid/oil-based formulations of 50µL and Treatment-B in the form of spray-based formulations of 100mg. The evaluation of anti-inflammatory and analgesic activity of pharmaceutical composition is performed by Hot Plate Test using Analgesiometer for the Assessment of Topical Analgesic Activity in Swiss Albino Mice. After treatment, Treatment B showed a significantly higher latency time compared to the control group ($p < 0.001$), confirming strong analgesic activity. The present invention also provides a process for the extraction of oils from clove, cinnamon and eucalyptus using soxhlet extraction. The present invention supports the potential of combining natural essential oils with synthesized methyl salicylate derivatives in the development of topical effective liquid dosages for pain and inflammation management.

No. of Pages : 29 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069128 A

(19) INDIA

(22) Date of filing of Application :20/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING-BASED DEEP LEARNING FRAMEWORK FOR PREDICTIVE HEALTHCARE DIAGNOSTICS

(51) International classification :G16H0010600000, G06N0003045000, G06N0020000000, G16H0050300000, G16H0050200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

049] The present invention discloses an artificial intelligence and machine learning-based deep learning framework for predictive healthcare diagnostics. The system is designed to analyze multimodal healthcare data—including electronic health records, medical images, real-time biometric signals, and clinical notes—to predict potential diseases and health risks with high accuracy. It comprises modules for data ingestion, preprocessing, multimodal fusion, and a hybrid deep learning engine incorporating CNNs, RNNs, and transformers. The system features an explainability interface to provide interpretable outputs for clinicians, along with a reinforcement learning feedback loop for continuous model improvement. Deployed through a secure and compliant cloud platform, the invention supports early diagnosis, personalized treatment, and real-time health monitoring, thereby enhancing preventive and precision medicine. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 21 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069129 A

(19) INDIA

(22) Date of filing of Application :20/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Deep Learning-Based Image Captioning Using Feedback-Augmented CNN and Ranked LSTM Mechanism

(51) International classification :G06N0003045000, G06N0003080000, G06F0040300000, G06N0003044000, G06V0010820000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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Research on automatically producing syntactically and semantically accurate captions is still an open challenge. This paperproposes an effective pretrained Augmentation–Ranking (A–R) Image Captioning model. The proposed model improves theproperties of the images and produces appropriate captions. The employed novel augmentation strategy improves convolutionneural network (CNN) operation, while Ranking and Feedback Propagation improve Long Short-Term Memory (LSTM). Ourproposed model seeks to address the issues of complexity, vanishing gradients and context during training. The proposed A–Rmodel improves the performance of LSTM and CNN. The image dataset for training is expanded using the augmented CNN.Through ranks, the Ranking LSTM aids in the identification of the semantic captions. This blending method enhances theworking of image captioning system. Utilizing greedy and beam search, the proposed A–R model is examined under maximumand average pooling. The outcomes are compared with cutting-edge models such as the bidirectional recurrent neural network,Google NIC and Bi-LSTM combined with semantic attention mechanism. The proposed model is assessed using the Flickr8k and Flickr 30k dataset and assessed using measures including BLEU, METEOR and CIDER. The proposed model with reduced complexity generated captions deemed accurate, syntactically correct and semantically correct by achieving an accuracy of 74.87% above all baseline models, according to experimental results.

No. of Pages : 10 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069130 A

(19) INDIA

(22) Date of filing of Application :20/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ENHANCING SEIZURE DETECTION IN EEG SIGNALS THROUGH DWT DENOISING, GAN-BASED AUGMENTATION, AND DEEP LEARNING TECHNIQUES

(51) International classification :A61B0005000000, G06N0003080000, A61B0005369000, G06N0003045000, A61B0005372000

(86) International Application No :NA
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(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Detecting seizures from EEG data is one of the most important tasks for accurately diagnosing patients who are prone to seizures and offering the possibility of real-time intervention. However, noisy signals, a lack of data, and poor temporal-spatial pattern recognition are some of the drawbacks of older approaches, which limit seizure detection's sensitivity and specificity. Within that, we present a novel approach to deep learning, feature extraction, and preprocessing methods by creating a multistage integrated model for seizure detection based on EEG analysis. To start, the EEG signals are cleaned using DWT denoising to identify artifacts such as eye blinks and muscle movements. Consequently, it improves the SNR by 15–25%. GAN is used to further enhance the denoised data, particularly for underrepresented seizure pattern classes. This results in a 200% increase in data size and a decrease in class imbalance levels. After that, the key spectral features are captured using the STFT and PSD approaches, which causes brief seizure-related oscillations to improve classification accuracy by 10% to 15%. In order to characterize temporal dependencies between seizure phases, the suggested model integrated a hybrid CNN-LSTM architecture, with CNN layers capturing seizure spatial patterns in time-frequency matrices. The suggestion thus provides an F1-score improvement of 20%, a sensitivity of 87%, and an accuracy of 85–90%. The Deep Q-Network, which performs dynamic detection threshold adaption depending on seizure probability, was ultimately used to optimize real-time alerting. This resulted in a 30% reduction in alert latency and a 15% increase in sensitivity to early detection. This approach has been created in a way that makes seizure detection systems more robust and applicable in real time, making them more dependable tools for patient care and clinical diagnosis.

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :20/07/2025

(21) Application No.202541069145 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Artificial Intelligence-Driven Engine Performance Optimization Through Compression Ratio Calculation

(51) International classification :F02B0075040000, F02D0041000000, B60W0050000000, F02D0035020000, F02D0041020000

(86) International Application No :NA
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(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Abstract This a system and method for optimizing the performance of internal combustion engines through artificial intelligence (AI)-driven dynamic compression ratio calculation and control. Traditional engine systems operate with a fixed or mechanically variable compression ratio that lacks adaptability to real-time driving conditions, fuel types, environmental factors, and user behavior. This invention introduces an intelligent control unit that leverages machine learning algorithms, including neural networks and reinforcement learning, to analyze real-time data from various engine sensors—such as temperature, pressure, knock detection, and throttle position—to calculate and adjust the compression ratio dynamically. By processing sensor inputs continuously, the AI model predicts and applies the most efficient compression ratio required for optimal combustion, thereby improving fuel efficiency, engine responsiveness, and reducing emissions. The system is designed to operate in real-time and features predictive capabilities that allow it to anticipate changes in engine load, terrain, and driving patterns using GPS and historical data. It also supports over-the-air (OTA) updates and cloud-based fleet learning, enabling ongoing refinement of its algorithms across multiple vehicles. This ensures the system remains up-to-date and continues to improve over time. The AI control module is integrated into the engine's electronic control unit (ECU) and works in conjunction with actuation systems capable of modifying compression ratios as needed. The system is compatible with a variety of engine types and architectures, including gasoline, diesel, and hybrid engines, and can be retrofitted or included in new vehicle designs. This invention represents a significant advancement in automotive engine management by combining AI, real-time analytics, and adaptive control mechanisms to deliver intelligent, efficient, and cleaner engine performance across diverse operating conditions.

No. of Pages : 15 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :20/07/2025

(21) Application No.202541069152 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : DESIGN OF AN ITERATIVE HYBRID CAUSAL ATTENTION FRAMEWORK WITH CONTEXT-AWARE META-LEARNING AND BAYESIAN REFINEMENT FOR REAL-TIME SEIZURE DETECTION PROCESS

(51) International classification :A61B0005000000, G06N0003045000, A61B0005369000, G06N0003080000, A61B0005372000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

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(57) Abstract :

In clinical neurology, accurate real-time seizure detection has yet to be satisfied, particularly in relation to responsive neurostimulation and ongoing patient monitoring. In addition to having a high false alarm rate in noisy environments, the majority of current CNN and LSTM algorithms have poor spatiotemporal modeling capabilities because they do not adjust to inter-patient variability. This makes them unsuitable for real-world deployment applications. This research suggests a hybrid model, FUSED-SEIZURE, which is a spatiotemporal causal attention framework enhanced with online Bayesian refinement and meta-learned context adaption for precise and effective seizure detection, in order to get over these limitations. The Temporo-Spatial Transformer Graph Network (TSTG-Net) is the initial component of the model. It models temporal dynamics using graph-based attentions and transformer layers, while implicitly and explicitly capturing complicated spatial correlations among EEG channels. Next, a Contrastive Adversarial Embedding Module (CAEM) is added to enhance inter-class separability. This module builds a strong latent representation by using patient-specific interictal negatives. By using lightweight neural approximators to recursively update seizure probabilities, the Online Recursive Neuro-Bayesian Filter (ORNBF) enables real-time inference. By combining causal restrictions with attendance across several EEG frequency bands, the Multi-Resolution Causal Attention Network (MCAN) substantially improves decision reliability. Finally, using contextual factors like medication levels and circadian rhythm, a TML-PSC modifies choice thresholds in an online meta-learning paradigm. Reductions in false alarm rate of 0.07/min, accuracy of 93.6%, sensitivity of 92.7%, and specificity of 95.1% were the results of empirical evaluation on the CHB-MIT and TUH datasets. With a low latency of 0.42 seconds, the suggested architecture is confirmed to be suitable for implementation in real-time tailored seizure monitoring systems.

No. of Pages : 19 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :20/07/2025

(21) Application No.202541069154 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Neuro-Adaptive Wearable Device for Real-Time Stress Detection and Cognitive Load

(51) International classification :A61B0005000000, A61B0005160000, G16H0050200000, G16H0040670000, G06F0021620000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention is a live stress and cognitive loadful neuro-adaptive device which can be weared. This form factor contains EEG, HRV and skin conductance sensors and is capable of gathering real-time physiological signals related to stress and mental workload. Those signals, in turn, get analysed by the smartphone, using relatively complex machine learning, to measure your stress and cognitive load and delivering a more personal and situational feedback, in real-time. This feedback consists of information with practical advice for stress, cognitive load and mental relaxation. The adaptive system in the device that learns from the user's biological responses makes the information increasingly accurate and pertinent over time. It can be used in combination with a smartphone application to record mental state information as well as for continuous monitoring and feedback. As an unobtrusive and continuous aid to improving the level of general mental well-being and for promoting the cognitive power of an individual in the course of their ordinary living, the invention has been designed to be worn during daytime life. It also ensures your data remain private following privacy standards such as GDPR and HIPAA.

No. of Pages : 14 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :20/07/2025

(21) Application No.202541069155 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-Powered Platform for Enhancing Literary Analysis and Interpretation in English Education

(51) International classification :G06Q0050200000, G06F0040300000, G09B0007000000, G09B0005060000, G09B0019000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

The current invention relates to an AI-based learning platform for ESL, including literature analysis and interpretation through adaption and personalized learning. Leveraging natural language processing, machine learning, and cognitive modeling, the platform generates personalized learning paths that continuously adapt to a learner's cognitive pace, emotional state of mind, and learning interpretation. A learner profiling module constructs dynamic profiles, and a text analysis engine recognizes literary constructs and produces custom prompts aligned with the text and the learner. An interactive tutoring component prompts learners activities with reflective questions, and a response analysis engine processes their input to deliver adaptive feedback. The model keeps the learner engaged as it adapts complexity level, pacing and instructional method, so learners are challenged, but not overwhelmed. Plus, a learning dashboard makes it easy to keep track of your students' progress. This invention combines the best of traditional literary study with intelligent, learner-driven technology that only increases a learner's understanding, critical thought, and enjoyment of literature.

No. of Pages : 14 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :20/07/2025

(21) Application No.202541069160 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : BATTERY POWERED FRUIT HARVESTING DEVICE WITH TELESCOPIC CONDUIT ASSEMBLY

(51) International classification :A01D0046260000, A01D0046220000, A61B0017320000, A01D0046000000, A01D0046240000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

BATTERY POWERED FRUIT HARVESTING DEVICE WITH TELESCOPIC CONDUIT ASSEMBLY The battery powered fruit harvesting device (100) with telescopic conduit assembly is disclosed, comprising a telescopic conduit assembly (110), a transmitter and battery unit (120), a receiver and battery unit (130), a cutting unit (140), and a collecting unit (150). The telescopic conduit assembly includes multiple concentrically arranged tubular members of varying diameters for adjustable extension and retraction. The transmitter unit, positioned at the lower end, includes a microcontroller and a wireless transmission module operable via push-button inputs. The receiver unit, mounted near the cutting unit, actuates a motor in response to signals from the transmitter to drive a rotary cutting blade. A fruit guiding element directs fruit stalks toward the blade, while a cover plate clears debris during cutting. The collecting unit includes a removable basket and/or a conveyor. The device enables safe, ergonomic, and efficient harvesting of mangoes and similar fruits while minimizing labor, fruit bruising, and operator fatigue. Figure 1

No. of Pages : 42 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :20/07/2025

(21) Application No.202541069162 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Quantum Resilient Cognitive Blockchain Framework for Autonomous Threat Detection and Self-Healing in Zero Trust Network Architectures

(51) International classification :H04L0009400000, H04L0009080000, H04L0009320000, H04L0009000000, G06F0021620000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Quantum Resilient Cognitive Blockchain Framework for Autonomous Threat Detection and Self-Healing in Zero Trust Network Architectures
Abstract The increasing complexity of modern cyber threats, especially in the post-quantum era, necessitates the development of highly secure, intelligent, and resilient frameworks for network protection. This paper proposes a Quantum-Resilient Cognitive Blockchain Framework (QRCBF) designed for Autonomous Threat Detection and Self-Healing within Zero Trust Network Architectures (ZTNA). Unlike traditional reactive security models, QRCBF leverages post quantum cryptographic primitives to ensure robust data integrity and confidentiality, even against quantum computing adversaries. The system employs a distributed, AI-powered threat intelligence layer capable of context-aware analysis and decision-making in real-time. Integrating cognitive learning modules with federated threat-sharing on blockchain ensures trustless validation of anomalies while preserving data privacy. Furthermore, the self-healing mechanism utilizes a combination of smart contracts and quantum-resistant consensus to automatically isolate, remediate, and adapt to emerging attack vectors without human intervention. This holistic approach not only mitigates advanced persistent threats but also provides a proactive defense mechanism through decentralized trust, quantum-safe communication, and autonomous recovery. The proposed architecture represents a significant advancement in secure, intelligent networking—bridging the gap between cognitive AI, quantum cryptography, and zero-trust enforcement in next generation cybersecurity ecosystems.

No. of Pages : 11 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :20/07/2025

(21) Application No.202541069199 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Compact Rotating Wheel System for Accelerated Aging Test of Polymeric Insulators

(51) International classification :H01L0021020000, G01N0017000000, B01D0053060000, C07C0317440000, F25B0041200000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A compact and cost-effective rotating wheel system is disclosed for accelerated ageing tests of polymeric insulators. The system comprises a programmable stepper motor-driven wheel controlled by an Arduino microcontroller. It operates in four positions—saline water immersion, de-wetting, energizing, and resting—each lasting a specified time to simulate real-world degradation. The device allows efficient lab-scale testing of polymeric insulators by mimicking field stress conditions, reducing power consumption and space requirements.

No. of Pages : 12 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :20/07/2025

(21) Application No.202541069200 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-ENABLED MULTI-CRITERIA SPECTRUM HANDOFF SYSTEM FOR DYNAMIC COGNITIVE RADIO NETWORKS

(51) International classification :H04W0016140000, G06N0020000000, H04W0072542000, G16H0050200000, H04L0041160000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
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(57) Abstract :

[038] The present invention discloses an AI-enabled multi-criteria spectrum handoff system for dynamic cognitive radio networks. The system integrates real-time spectrum sensing, feature extraction, artificial intelligence, and multi-criteria decision-making to intelligently predict and select the most optimal frequency band for spectrum handoff. Utilizing machine learning or deep reinforcement learning models, the system anticipates primary user activity and environmental changes to enable proactive handoff decisions. A multi-criteria evaluation module assigns weighted scores to available channels based on parameters such as signal quality, latency, bandwidth, and interference. A reinforcement learning feedback loop ensures continuous performance improvement by adapting to past handoff outcomes. This invention enhances spectral efficiency, reduces handoff latency, and improves the overall Quality of Service (QoS) in cognitive radio environments. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 20 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069201 A

(19) INDIA

(22) Date of filing of Application :20/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SECURE CLOUD-INTEGRATED AI SYSTEM FOR REAL-TIME VIDEO ANALYTICS USING EDGE-CLOUD COLLABORATION

(51) International classification :H04L0009400000, G06F0021620000, H04L0067100000, G06V0020520000, G06F0021640000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses a secure cloud-integrated AI system for real-time video analytics utilizing collaborative edge-cloud architecture. The system distributes video processing tasks between resource-constrained edge devices and a centralized cloud platform to ensure low latency, high responsiveness, and scalable deployment. Edge devices perform initial video analysis such as object detection and event filtering using lightweight AI models, transmitting only relevant metadata to the cloud for deeper analytics, long-term storage, and multi-source correlation. A federated learning framework enables continuous model improvement across distributed nodes without compromising data privacy. The system incorporates end-to-end encryption, blockchain-based audit trails, and role-based access control to ensure data integrity and compliance with privacy regulations. An adaptive orchestration engine dynamically manages computational task distribution based on real-time network and device conditions. The invention is applicable to a wide range of domains including smart surveillance, traffic monitoring, industrial safety, and retail analytics, offering a modular, secure, and intelligent solution for next-generation video analysis. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 20 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069202 A

(19) INDIA

(22) Date of filing of Application :20/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SCALABLE AI-DRIVEN DIAGNOSTIC FRAMEWORK DEPLOYED ON FEDERATED CLOUD ARCHITECTURE FOR REAL-TIME HEALTHCARE ANALYSIS

(51) International classification :G16H0010600000, G06F0021620000, G06N0020000000, G16H0050200000, G16H0040670000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

[026] The present invention provides a scalable, AI-driven diagnostic framework designed to operate over a federated cloud architecture for real-time healthcare analysis. The system enables decentralized training and inference of machine learning models on sensitive medical data without requiring data centralization, thus ensuring strict compliance with privacy regulations such as HIPAA and GDPR. Each healthcare node—comprising hospitals, diagnostic labs, and edge devices—trains local AI models and shares only encrypted model updates through a secure federated learning mechanism. A dynamic orchestration layer intelligently manages resource allocation, task distribution, and model synchronization across the network to provide low-latency, high-accuracy diagnostic support. The system includes a repository of domain-specific AI models for various medical specialties and a clinician-friendly interface that presents interpretable diagnostic insights and predictive alerts. Enhanced with privacy-preserving technologies and blockchain-based audit trails, this invention delivers a robust, real-time, and privacy-compliant solution for next-generation clinical decision support and patient care optimization. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 19 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069232 A

(19) INDIA

(22) Date of filing of Application :21/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI Health Advisor: Develop an application that provides health advice based on symptoms described by the user

(51) International classification :G06F0040300000, G06N0020000000, G10L0015180000, G10L0015220000, G16H0050200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The AI Health Advisor is an innovative application designed to provide personalized health advice based on symptoms described by users in natural language. The system integrates advanced natural language processing (NLP) and machine learning (ML) to interpret user inputs, map symptoms to potential medical conditions, and generate actionable recommendations. The application comprises a user-friendly interface supporting text and voice inputs, an NLP module for symptom extraction, an ML model trained on a comprehensive medical knowledge base, and a recommendation engine for delivering tailored advice. Security features, including AES-256 encryption, ensure user data privacy. The system is accessible across web and mobile platforms, supports multiple languages, and is designed for scalability and integration with healthcare systems. The invention addresses the need for accessible, accurate, and secure preliminary health assessments, particularly in underserved areas, by leveraging AI to empower users with informed health decisions.

No. of Pages : 14 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069239 A

(19) INDIA

(22) Date of filing of Application :21/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : System and Method for Integrating DNA Sequence Perplexity with Structural Properties for Genomic Functional Region Identification

(51) International classification :G16B0030000000, G16B0030100000, G16B0020000000, G16B0040200000, G06N0003080000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention relates to a system and method for accurately identifying functional genomic regions by integrating DNA sequence perplexity with structural DNA properties. The method involves segmenting input genomic sequences into defined windows and computing a perplexity score for each window using a trained DNA language model, such as n-gram, LSTM, or transformer-based architectures. Perplexity quantifies the statistical predictability of nucleotide patterns and is indicative of functional conservation or regularity within DNA sequences. In parallel, the system extracts one or more structural features for each sequence window, including but not limited to DNA helical twist, base stacking energy, nucleosome occupancy, groove width, and bendability. These structural features are computed using biophysical models or retrieved from established genomic databases. The perplexity and structural parameters are integrated into a composite feature vector, which is input into a trained machine learning or deep learning classifier. The classifier outputs a functional label or probability score for each sequence window, identifying whether it corresponds to regions such as promoters, enhancers, exons, introns, or intergenic segments. Post-processing modules refine predictions by merging overlapping windows and providing genome browser-compatible output formats. This integrated approach significantly enhances the sensitivity and specificity of functional region detection across diverse genomes. It enables applications in genome annotation, regulatory region discovery, comparative genomics, gene editing, and synthetic biology. The system is designed to be modular, scalable, and adaptable for cross-species genomic analysis.

No. of Pages : 10 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069241 A

(19) INDIA

(22) Date of filing of Application :21/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Development of Self-Compacting Geopolymer Concrete Incorporating Cassava Peel Ash

(51) International classification :C04B0028000000, C04B0028080000, C04B0012000000, C04B0007153000, C04B0111000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT Development of Self-Compacting Geopolymer Concrete Incorporating Cassava Peel Ash A self-compacting geopolymer concrete (SCGC) composition is disclosed, incorporating cassava peel ash (CPA) ranging from 0% to 5% by weight, ground granulated blast furnace slag (GGBS) ranging from 14% to 19.14% by weight, fine aggregate ranging from 39% to 42% by weight, and coarse aggregate ranging from 29% to 31% by weight. An aqueous alkaline activator solution, comprising approximately 2.49% sodium hydroxide (NaOH) and 6.24% sodium silicate (Na_2SiO_3) in a weight ratio of 1:2.5, is utilized. The CPA content varies between 0% and 5%, with the GGBS content adjusted to maintain a constant total precursor percentage of 19.14%. The alkaline activator is mixed to form a self-compacting geopolymer concrete mortar, achieving a compressive strength of at least 52.4 MPa, a split tensile strength of at least 4.2 MPa, and a flexural strength of at least 6.8 MPa at 28 days.

Figure: 1

No. of Pages : 27 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :21/07/2025

(21) Application No.202541069243 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AN AUTONOMOUS AGRICULTURAL ROBOT SYSTEM

(51) International classification :B25J0009160000, A01B0079000000, A01C0021000000, A01C0007000000, A01C0007200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

[0051] An autonomous agricultural robot system, includes a seeding mechanism equipped with tools for drilling uniform holes into the soil and for dispensing seeds into said holes at equidistant intervals, thereby ensuring uniform crop growth; a wing-like structure configured to provide balance and facilitate movement, said structure allowing the robot to maneuver in both dry and wet agricultural environments; a bacteria detection and removal system including suction ports, said system being operable to detect harmful bacteria in the soil and remove the bacteria from the soil to prevent crop damage; a dual power source comprising solar panels and rechargeable batteries, wherein the robot is powered by both solar and battery energy to enable continuous operation in agricultural fields; an AI-driven monitoring system including cameras, wherein the AI system is configured to analyze soil conditions in real time for precise seeding, detect harmful elements, including bacteria, within the soil and provide corrective measures; and control the movement of the robot based on environmental conditions and crop requirements.

No. of Pages : 21 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :21/07/2025

(21) Application No.202541069245 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : CryptoTrace: An Intelligent Tool for Transaction Flow Analysis

(51) International classification :G06Q0020060000, H04L0009000000, H04L0009320000, G06Q0020380000, G06Q0020400000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention provides a system and method for identifying the end receiver of cryptocurrency transactions by overcoming the limitations of traditional blockchain forensic techniques. The invention stores blockchain transaction data as graph structures using a graph database and employs Graph Neural Networks (GNNs) to detect mixing services that obscure transactional flows. Dynamic programming and clustering algorithms are applied to backtrack transactions, tracing the origin of funds, and group addresses belonging to the same entity. Integration of open-source tools enables correlation of blockchain addresses with publicly available external data, including social media profiles, dark web forums, and blacklisted address lists. The invention enables effective transaction storage, maintaining report, real-time monitoring of illicit transactions, precise detection of mixing patterns, and enhanced deanonymization of cryptocurrency flows. The system is particularly suited for combating drug trafficking and other illicit activities involving cryptocurrencies, thereby supporting law enforcement agencies in tracing and identifying hidden beneficiaries in blockchain networks

No. of Pages : 27 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :21/07/2025

(21) Application No.202541069254 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A METHOD FOR GREEN SYNTHESIS OF METALLIC NANOPARTICLES USING PLANT EXTRACTS FOR ANTIMICROBIAL APPLICATIONS

(51) International classification :B82Y0030000000, B22F0009240000, B82Y0040000000, B22F0001054000, A61K0009510000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

039] The present invention relates to an eco-friendly and sustainable method for the synthesis of metallic nanoparticles using plant extracts as natural reducing and stabilizing agents. The method involves the preparation of aqueous or ethanolic plant extracts from selected botanical sources rich in phytochemicals, which are then reacted with metal salt solutions such as silver nitrate, gold chloride, copper sulfate, or zinc nitrate. The synthesis occurs under ambient or mildly elevated conditions, resulting in the formation of stable nanoparticles with sizes ranging from 10 to 100 nanometers. The nanoparticles produced exhibit significant antimicrobial activity against a broad spectrum of bacterial and fungal pathogens. The invention also encompasses compositions comprising these green-synthesized nanoparticles for use in medical, agricultural, environmental, and food packaging applications. This green synthesis approach offers a cost-effective, reproducible, and scalable alternative to conventional nanoparticle production methods while minimizing environmental and health risks. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 21 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069256 A

(19) INDIA

(22) Date of filing of Application :21/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : "CLEAR TRACK AIROTOR" – ENHANCING INDIRECT VISION THROUGH DIRECT ERGONOMICS AND SOFT TISSUE RETRACTION

(51) International classification :A61B0001247000, A61B0017020000, A61B0017000000, A61B0001240000, H04M0001020000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

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(57) Abstract :

Conventional fixed Prosthodontic procedures often present challenges in accessing and visualizing lingual, palatal, and distal tooth surfaces, particularly in posterior regions. Dentists typically rely on hand-held mouth mirrors and separate soft tissue retractors, which require the use of both hands and additional assistance. This not only compromises operator ergonomics and efficiency, but also increases the risk of soft tissue trauma from rotating burs due to limited visibility and control. The present invention provides a solution through the Clear Track Airotor- an integrated dental airotor accessory designed to simultaneously offer indirect vision and soft tissue retraction. The device features a dental mirror mounted on an adjustable metallic hinge, which is attached to a custom-fabricated, autoclavable polymer sleeve that fits securely onto a standard airotor head. The mirror provides real-time indirect visualization of otherwise hard-to-access surfaces, while its rear surface acts as a cheek and tongue retractor, improving both safety and accessibility. The attachment is reusable, sterilizable, and requires no permanent modification to the handpiece, making it ideal for use in general dental clinics, prosthodontic and restorative practices, dental schools, and mobile dental units.

No. of Pages : 14 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :21/07/2025

(21) Application No.202541069267 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : KLUG ADVANCED PARKING SYSTEM

(51) International classification :G08G0001140000, G06Q0010020000, G06Q0050260000, G07B0015020000, G06Q0050400000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Abstract Moving towards the development of smart city, various smart applications like smart home, smart healthcare, smart irrigation, Smart street lighting, smart parking system, Smart waste management system etc are part of it. Out of these applications smart parking system is an important part of so called smart city. Smart parking system allows reserving the parking spot in advance, which helps in reduction of time in searching the parking spot, reduction in traffic congestion, reduction in pollution, reduction in frustration of drivers etc. In this paper a smart parking system based on internet of things which not only allows the drivers to book a particular parking spot but also helps in automatic cashless billing, Hacking intimation, post trip booking is proposed

No. of Pages : 9 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069281 A

(19) INDIA

(22) Date of filing of Application :21/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Self Healing Electrical Grid Using AI and Machine Learning

(51) International classification :H02J0003140000, H02J0003000000, G06N0003088000, H02H0007260000, G06N0020000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

This system integrates smart sensors, intelligent electronic devices (IEDs), advanced metering infrastructure, and communication modules throughout the grid to collect high-resolution data related to power flow, voltage, frequency, and equipment status. AI and ML models—including supervised learning, unsupervised learning, and reinforcement learning—analyze this data to identify abnormalities, predict equipment failures, and optimize grid reconfiguration strategies. Upon detecting a disturbance or fault, the system autonomously isolates the affected section, reroutes power through healthy lines, and restores service to unaffected areas with minimal delay. The grid is supported by both centralized AI engines for large-scale data analytics and decentralized, edge-based AI agents for immediate local control actions. This self-healing system significantly enhances grid reliability, reduces outage durations, minimizes operational costs, and supports the transition toward a resilient, intelligent, and sustainable energy infrastructure.

No. of Pages : 15 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069289 A

(19) INDIA

(22) Date of filing of Application :21/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : HAMPER SHOPPING: A SMART CART FOR SIMPLIFIED RETAIL BILLING

(51) International classification :G06Q0030060100, G06Q0020200000, G07G0001000000, D06F0095000000, G06Q0030060000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

In today's fast-paced world, we're all looking to save time, but often, the time spent waiting in line at the checkout far outweighs the time we spend shopping. Long queues at billing counters often lead to customer dissatisfaction and inefficiencies in retail environments. The Hamper Shopping Machine, a low-cost smart shopping solution, addresses these challenges effectively. This project proposes a smart shopping system, an embedded device to streamline the purchasing process. The Hamper Shopping Machine is designed so users can bill for their purchased products themselves. Scanning the products as soon as the customer buys them makes it easier and reduces the chances of missing the product to scan at the bill counter. By using this machine, customer don't have to wait in line for their purchase to be done. This machine display makes the purchasing more feasible by displaying the scanned products details. Having both 'Reset' and 'Delete' buttons helps users feel more confident and stress-free during the purchase process. The machine is connected to the shop owner's database, which makes the job easier for shop owners. Together, these solutions improve operational efficiency, reduce queue times, and enhance the overall shopping experience.

No. of Pages : 12 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :21/07/2025

(21) Application No.202541069290 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A Method of Photocatalytic treated Dye water Sludge in to Sustainable Paver blocks for Smart Village Construction

(51) International classification :C02F0001720000, C02F0001320000, B01J0035390000, C04B0018020000, C04B0028080000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The textile industry generates large volumes of dye-laden wastewater, resulting in sludge that poses severe environmental and disposal challenges. This study presents a novel, eco-friendly approach for converting hazardous dye sludge into sustainable construction materials, specifically paver blocks, through a photocatalytic pre-treatment process. The method involves treating dye-contaminated sludge using advanced oxidation via visible-light photocatalysis, effectively neutralizing toxic compounds and stabilizing heavy metals. The treated sludge is then combined with industrial byproducts such as fly ash, GGBS, and cementitious binders to form durable, structurally sound paver blocks. Laboratory analysis confirms the blocks' compliance with IS standards for compressive strength, water absorption, and leaching toxicity, making them suitable for rural and smart village infrastructure. This approach not only diverts harmful sludge from landfills but also supports circular economy principles by transforming waste into value-added building materials. The proposed method holds significant promise for decentralized waste management, rural construction innovation, and sustainable development goals in textile-intensive regions.

No. of Pages : 4 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :21/07/2025

(21) Application No.202541069295 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Machine Learning Based Real-Time Judicial GDPR Compliance Information Device

(51) International classification :G06F0021620000, H04L0009400000, G06Q0050180000, G06F0021600000, G06Q0020400000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

The invention discloses a Machine Learning Based Real-Time Judicial GDPR Compliance Information Device that enables automated identification, redaction, and compliance tracking of sensitive personal data in judicial documents. The system includes a data ingestion module for acquiring legal content, a GDPR compliance engine powered by machine learning to detect and classify personally identifiable information (PII), and a real-time processing unit to anonymize or redact such data. A secure user interface allows authorized access to compliance reports and redacted texts, while a storage module ensures encrypted data logging and audit trails. The invention supports multilingual processing and incorporates feedback learning mechanisms to improve compliance accuracy over time. The device ensures data privacy while maintaining judicial transparency and regulatory compliance in real time.

No. of Pages : 15 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :21/07/2025

(21) Application No.202541069296 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Machine Learning Based Model for Corporate Governance Risk Assessment Analytics

(51) International classification :G06Q0010063500, G06N0020000000, G06Q0030018000, G06N0005045000, G16H0050300000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention provides a Machine Learning Based Model for Corporate Governance Risk Assessment Analytics, designed to analyze governance-related data and compute a risk score for corporate entities. The system includes modules for acquiring data from regulatory, financial, and unstructured sources, extracting governance features, and evaluating risks using a trained machine learning model. It categorizes risks into types such as compliance, ethical, and financial governance risk, and displays analytics through an interactive dashboard. The model supports explainable AI outputs for audit transparency and continuously learns from user feedback and real-world enforcement data. The invention enables scalable, intelligent, and proactive corporate governance risk monitoring, assisting regulators, investors, and internal compliance teams in identifying red flags and ensuring robust corporate conduct.

No. of Pages : 16 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069305 A

(19) INDIA

(22) Date of filing of Application :21/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : The Deep Learning Based Epileptic Seizure Detection Using 2-layer Convolutional Network with Long Short-Term Memory

(51) International classification :A61B0005000000, G06N0003045000, G06N0003080000, G06N0003044000, A61B0005369000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT OF THE INVENTION: Title: The Deep Learning Based Epileptic Seizure Detection Using 2-layer Convolutional Network with Long Short-Term Memory Abstract: The invention provides a hybrid deep learning system that detects epileptic seizures from EEG recordings using a two-layer convolutional neural network (CNN) followed by a long short-term memory (LSTM) module. EEG signals are preprocessed, segmented, and passed through the CNN-LSTM pipeline to capture both spatial and temporal features, enabling real-time classification into seizure or non-seizure categories. The system improves diagnostic accuracy, reduces false alarms, and supports integration with remote monitoring and wearable health devices.

No. of Pages : 16 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :21/07/2025

(21) Application No.202541069315 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Integrated Smart Agriculture System with Animal Intrusion Prevention

(51) International classification :G06Q0050020000, A01G0025160000, H04L0009400000, H04L0067120000, G06N0020000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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Address of Applicant :Assistant Professor, Dept. of Civil Engineering, National Institute of Technology Calicut, Kerala 673601 Bengaluru ----

(57) Abstract :

Development of IoT-based smart agriculture and animal intrusion prevention system is designed to address critical challenges in modern farming by combining advanced technology and automation. This innovative solution integrates a network of IoT devices, such as sensors, cameras, and actuators, to create a seamless ecosystem that monitors and controls various aspects of farming operations. However, for crop management, sensors are deployed in the field to measure soil moisture, temperature, humidity, and light intensity, which are essential parameters for crop health and growth. These sensors continuously transmit data to a centralized system or cloud platform, where it is analysed using advanced algorithms. The insights generated allow farmers to make informed decisions, such as scheduling irrigation based on soil moisture levels, adjusting fertilizers based on nutrient requirements, and predicting optimal harvest times. In addition to optimizing agricultural processes, the system addresses the problem of animal intrusion, a significant concern for farmers in rural areas. Motion detection sensors and infrared cameras are installed around the perimeter of the farm to detect unauthorized movement of animals. Upon detection, the system activates deterrents such as alarms, lights, or automated barriers to prevent animals from damaging the crops. Alerts are also sent to the farmer's smartphone or monitoring device, allowing them to take immediate action if necessary. This proactive approach not only protects the crops but also reduces the dependency on manual surveillance, saving time and labour. The IoT-based solution is designed to be energy-efficient and scalable, making it suitable for both small-scale and large-scale farming operations. Renewable energy sources like solar panels can power the system in remote areas, further enhancing its sustainability. Additionally, the system can integrate with machine learning models to predict weather patterns, pest infestations, and other potential risks, providing a comprehensive tool for precision agriculture.

No. of Pages : 10 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :21/07/2025

(21) Application No.202541069316 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SYSTEM AND METHOD FOR ENHANCING SODIUM-ION BATTERY PERFORMANCE USING THERMOLUMINESCENT AND CATALYTIC BORATE GLASSES

(51) International classification :H01M0010054000, H01M0004485000, G01T0001110000, G01T0001115000, H01M0010440000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

026] The present invention discloses a system and method for enhancing the performance of sodium-ion batteries using a novel thermoluminescent and catalytically active borate glass material. The glass is composed primarily of B₂O₃, modified with sodium and aluminum oxides, and doped with transition metal oxides (e.g., MnO₂, Fe₂O₃, CoO) and rare-earth oxides (e.g., Eu₂O₃, Tb₄O₇). These dopants introduce defect states and catalytic centers that enable dual functionality: thermoluminescence for charge trapping and release, and catalysis for accelerated redox reactions. The glass is synthesized via melt-quenching and controlled annealing to optimize structural and functional properties. It is integrated into sodium-ion batteries as a cathode or solid-state electrolyte component to improve ionic conductivity, electrochemical efficiency, and thermal stability. The invention offers improved specific capacity, cycle life, and rate performance, while also enabling real-time luminescent diagnostics, representing a multifunctional solution for next-generation energy storage systems. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 20 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :21/07/2025

(21) Application No.202541069318 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AUTOMATED DIABETIC RETINOPATHY CLASSIFICATION SYSTEM WITH INTELLIGENT IMAGE QUALITY ASSESSMENT

(51) International classification :G06N0003045000, G06N0003080000, G06V0010820000, G06V0010764000, G06N0020000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The classification methodology for Diabetic Retinopathy architecture is outlined. This model comprises two phases: training and validation in the first phase, and testing in the second phase. Initially, a dataset of 57,625 DR images is collected from various sources, expertly labeled as DR positive or negative. This dataset is then divided into training and validation subsets, with 80% allocated to training and 20% to validation. The convolutional neural network (CNN)-based DR model is trained and validated using these datasets. The DR model incorporates convolutional and pooling layers. Convolutional operations with varying filter sizes are applied in the convolutional layers to extract features, generating feature maps. The Rectified Linear Unit (ReLU) activation function is employed to introduce non-linearity. Subsequently, pooling layers such as max pooling, min pooling, average pooling, and sum pooling are utilized to down sample the feature maps without compromising significant information. The resulting feature maps are flattened into vectors, processed through multiple fully connected layers, culminating in the DR model's output indicating DR-Positive or DR-Negative results. In the second phase, real-time DR data from the testing dataset sourced from Kaggle are obtained. A real-time testing dataset comprising images from patients with Type II diabetes, depicting various conditions, is established. The quality of these images is assessed by an intelligent model; if deemed unacceptable, the images are rejected and recaptured. Acceptable images are then evaluated by the trained model to classify them as DR-Positive or DR-Negative. Clinical experts subsequently review these classified images, providing expert opinions to evaluate and compare the performances of the trained models.

No. of Pages : 14 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :21/07/2025

(21) Application No.202541069322 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Hybrid Secure Signcryption Algorithm for Enhancing Security in the Internet of Medical Things (IoMT)

(51) International classification :A61B0005000000, G16H0040670000, G16H0010600000, A61B0005110000, H04L0067120000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Due to its vast potential and extensive range of applications, the Internet of Things (IoT) concept has been integrated into modern telemedicine systems. These advanced systems enable continuous patient monitoring from the comfort of their homes by leveraging sensors that collect various medical data or wearable devices that facilitate real-time tracking of vital signs. The gathered data is transmitted over the Internet to healthcare professionals and stored in the cloud for future analysis. This paper proposes an IoT-based architecture designed for monitoring ECG signals recorded by patients independently, using a mobile tele-electrocardiograph without requiring direct assistance from healthcare experts. The key features of the device are thoroughly explained, along with their integration into the proposed IoT framework. Additionally, the article addresses potential security challenges associated with this technology, including concerns related to data integrity, confidentiality, and authenticity.

No. of Pages : 14 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069330 A

(19) INDIA

(22) Date of filing of Application :21/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : IoT-Integrated Predictive Analytics Framework for Real-Time Optimization of Healthcare Resource Allocation and Operational Efficiency

(51) International classification :A61B0005000000, G06N0003080000, G16H0040200000, G06N0020000000, G16H0040630000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention offers a robust new system of predictive analytics based on the IoT framework that will allow real-time management of health care resources. The given system achieves this effect in terms of predicting resource requirements in hospitals, including bed occupancy, employment levels, and equipment usage; it uses shared analytics on sensor-driven data collection and deep-learning algorithms. The solution is to overcome the limitation of the traditional static and reactive management systems by using real-time vitals, the pattern of patient inflow, and operational data to make smart pre-emptive decisions. The framework allows the hospitals to balance the patient care requirements and the operational capability of the hospitals, eliminate delays, resource bottlenecks and improve the overall health care delivering. The system was made scalable and adaptable, which predetermines its data-driven effectiveness, particularly in emergencies or in the case of a sudden increase in the number of patients.

No. of Pages : 16 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :21/07/2025

(21) Application No.202541069344 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : DEVELOPMENT OF FUNCTIONAL PROBIOTIC BEVARAGES FROM FRUIT EXTRACT

(51) International classification :C12N0001200000, A61K0035747000, A61K0036880000, A23L0002380000, A23L0005200000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The rising consumer awareness regarding health and nutrition has led to increased interest in the development of functional beverages enriched with probiotics and natural fruit ingredients. This study focuses on the formulation and evaluation of a functional probiotic beverage using fruit extracts of orange (*Citrus sinensis*) and pineapple (*Ananas comosus*), combined in different ratios, and fermented with the probiotic strain *Lactobacillus acidophilus*. The primary objective was to explore the suitability of these fruit substrates for probiotic growth and to determine the ideal blend ratio that ensures maximum probiotic viability along with desirable sensory and nutritional characteristics. Orange and pineapple were selected due to their rich composition of natural sugars, vitamin C, antioxidants, and organic acids, which provide a favorable environment for probiotic survival and enhance the functional value of the beverage. The fruits were washed, peeled, and juiced to prepare the extracts, which were then pasteurized to eliminate undesirable microorganisms. After cooling, the fruit blends were prepared in varying ratios (such as 75:25, 50:50 and 25:75 of orange to pineapple) and inoculated with an active culture of *Lactobacillus acidophilus*. The fermentation process was carried out at an optimal temperature (around 37°C) for 24 hours, and the beverages were then stored under refrigeration. The physicochemical properties, including pH, titratable acidity, and total soluble solids (TSS), were measured at regular intervals to monitor fermentation progress and stability during storage. Microbial analysis was conducted to assess the viability of *L. acidophilus*, ensuring that the probiotic count remained above the recommended therapeutic level (10^6 - 10^8 CFU/ml). Sensory evaluation was performed using a semi-trained panel to assess color, flavor, aroma, taste, and overall acceptability.

No. of Pages : 7 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :21/07/2025

(21) Application No.202541069359 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SUPERHYDROPHOBIC NANOSTRUCTURED COATINGS FOR DUST-REPELLENT SELF-CLEANING SURFACES

(51) International classification :C09D0005000000, C09D0005160000, B08B0017060000, H02S0040100000, B05D0001020000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Dust accumulation on exposed surfaces such as solar panels, glass facades, and vehicles can significantly reduce performance and aesthetic value. Superhydrophobic surfaces— characterized by high water contact angles and self-cleaning ability— offer a sustainable solution to this issue. This project focuses on the development of superhydrophobic nanostructured coatings using wax extracted from sugarcane bagasse, an agricultural waste product. The wax, rich in hydrophobic compounds, was extracted using solvent-based methods and applied onto substrates via simple techniques like spray or dip coating. The coated surfaces were characterized for their water-repellent behavior, roughness, and durability. The aim is to create an eco-friendly, cost-effective coating that not only repels water and dust but also promotes the valorization of agro-waste. This work contributes to the advancement of green materials in the field of self-cleaning surface technologies.

No. of Pages : 6 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :21/07/2025

(21) Application No.202541069364 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : BIOSYNTHESIS OF CONIFERYL ALCOHOL FROM A GROWASTE FOR FLAVOR, FRAGRANCE AND ANTIOXIDANT PROPERTIES

(51) International classification :C12N0009020000, C12P0007220000, C12P0019020000, C12P0007240000, C12N0009100000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Coniferyl alcohol is a naturally occurring phenolic compound that serves as a crucial monomer in the biosynthesis of lignin in plants. Apart from its structural role in plants, it exhibits remarkable potential in industrial applications due to its characteristic pleasant aroma, antioxidant activity, and compatibility as a natural ingredient in flavor, fragrance, and nutraceutical formulations. The growing demand for sustainable and non-toxic bioactive compounds has spurred interest in its green synthesis. This project focuses on the biosynthesis of coniferyl alcohol using agricultural waste as the raw material. Commonly discarded agrowaste such as rice husk, sugarcane bagasse, and corn cobs are rich in ferulic acid and other phenolic compounds, which serve as suitable precursors for bioconversion. The methodology includes pretreatment of agrowaste using alkaline or enzymatic processes to break down lignocellulosic biomass and release ferulic acid. This is followed by a biotransformation step using engineered microbial strains or specific enzyme systems capable of converting ferulic acid into coniferyl alcohol through reduction and methylation pathways. The synthesized compound is isolated and characterized through analytical techniques such as HPLC, UV-Vis spectroscopy, and FTIR, and its antioxidant potential is evaluated using DPPH and ABTS assays. The outcome of this study demonstrates that agrowaste can be efficiently valorized into high-value bio-based chemicals like coniferyl alcohol through sustainable processes. This contributes to the circular bioeconomy by minimizing waste and maximizing resource recovery. Additionally, the product's functionality in natural fragrance, food flavor enhancement, and oxidative stress reduction positions it as a promising ingredient in clean-label product development across various industries. Keywords: Ferulic acid, Biotransformation, Lignocellulosic biomass, Agricultural waste, Green synthesis, Flavor and fragrance industry, Antioxidant compound, Microbial enzymes, Circular bioeconomy, Sustainable biotechnology, Waste valorization

No. of Pages : 7 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :21/07/2025

(21) Application No.202541069382 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : PORTABLE LIMB VOLUME MONITORING DEVICE FOR LYMPHEDEMA MANAGEMENT

(51) International classification :A61B0005000000, A61B0005020000, A61B0005107000, A61B0005200000, G01B0011160000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT Lymphedema is a chronic disorder where lymph fluid builds up in the limbs, leading to swelling, pain, and reduced mobility. Keeping track of limb volume accurately is essential for effective management and for monitoring how well treatment is working. Conventional methods, like using measuring tapes or water displacement, are still commonly used in clinics but are often inconvenient, time-consuming, and hard for patients to carry out at home without professional help. Recent advancements, such as infrared sensing and modern imaging tools, have proven that easy-to-use, contactless systems can deliver measurement accuracy similar to traditional techniques. Building on these insights, this project proposes a Portable Limb Volume Monitoring Device that uses safe, non-invasive methods like infrared sensors or ultrasonic sensors. Designed to be lightweight, battery-operated, and userfriendly, this device will allow patients to check limb volume themselves, right from home. Measurements will be shown clearly on a display or a linked mobile app, enabling patients to observe trends and securely share the information with their healthcare team for remote follow-up and timely advice. This convenient, continuous monitoring can help detect changes sooner and ensure treatment plans are adjusted quickly if needed. By offering a practical, affordable, and dependable home monitoring option, the device fills an important gap in current lymphedema management, giving patients more control over their care and helping them maintain a better quality of life.

No. of Pages : 8 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :21/07/2025

(21) Application No.202541069383 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : OXY SENSE-SMART SUPPLY SYSTEM FOR TRAPPED VEHICLE PASSENGERS

(51) International classification :B60R0021015000, B60Q0009000000, A61M0016060000, G05B0019042000, A61K0047690000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

5. CLAIMS: I assert the following I. Automated Smart Oxygen Supply System: A compact, automated system installed within a vehicle that detects human presence and low oxygen levels, and delivers oxygen through an inbuilt release mechanism. 2. Dual-Sensor Detection Mechanism: Combines an occupant detection sensor and air quality sensor to continuously monitor for entrapment situations and initiate safety response. 3. Microcontroller-Based Oxygen Activation: A programmed microcontroller processes sensor data to automatically activate a solenoid valve for oxygen release when thresholds are crossed. 4. Ventilation-Integrated Oxygen Delivery: Utilizes the vehicle's existing air vent network for optimal oxygen diffusion within the cabin when activated. 5. Emergency Alert System: Triggers a buzzer or transmits a signal when entrapment is detected to alert people nearby or the vehicle owner via connected systems. 6. Portable and Retrofit-Compatible Design: Compact design allows integration into new vehicles or retrofitting into existing ones without major modifications, offering a life-saving solution during entrapment

No. of Pages : 4 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :21/07/2025

(21) Application No.202541069394 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SMART IOT-ENABLED FIXTURE SYSTEM FOR VIBRATION SUPPRESSION IN CNC MILLING

(51) International classification :B23Q0003080000, B23Q0011100000, B23Q0017090000, B23C0005100000, G05B0019416000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

TITLE: SMART IoT-ENABLED FIXTURE SYSTEM FOR VIBRATION SUPPRESSION IN CNC MILLING. This invention presents a smart fixture system that integrates IoT-enabled sensors and machine learning algorithms to suppress vibration during end milling operations. Vibrations caused by resonance between the tool and the workpiece can significantly affect machining quality. The proposed system addresses this by collecting real-time vibration data through embedded sensors and transmitting it wirelessly to a cloud platform. A machine learning model analyzes the data and predicts optimal fixture layouts to minimize vibration. Actuators within the fixture automatically adjust the layout before the next tool pass based on these predictions. This dynamic and adaptive system improves machining stability, enhances surface finish, extends tool life, and supports smart manufacturing practices with minimal manual intervention. The invention can be retrofitted into existing CNC milling systems with low cost and high compatibility.

No. of Pages : 13 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :21/07/2025

(21) Application No.202541069400 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : ELEVATOR FOR DISABLED PERSON USING VOICE RECOGNITION AND EYE GESTURE

(51) International classification :G06F0003010000, B66B0001460000, G10L0015220000, G10L0015260000, G06F0003048830
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT ELEVATOR FOR DISABLED PERSON USING VOICE RECOGNITION AND EYE GESTURE The proposed system aims to design and implement a voice-controlled elevator system using an STM microcontroller (!),DC motor (3, 4), voice recognition module (6), and IR blink sensor (2). The system provides two modes of operation: voice control and IR blink sensor-based control. Tn voice control mode, users can operate the elevator by issuing voice commands, which are processed by a voice recognition model. In IR blink sensor mode, the elevator is controlled by detecting the number of blinks from an IR transmitter, providing an alternative control method for - users with speech impairments or in noisy environments. The STM microcontroller (!)serves as the central control unit, coordinating the operation of the DC motor (3,4), voice recognition module (5), and IR blink sensor (2). The system is designed to be cost-effective, user-friendly, and accessible, making it suitable for small-scale applications such as residential buildings or small commercial establishments.

No. of Pages : 16 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :22/07/2025

(21) Application No.202541069577 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : INTEGRATED AUTOMATED SYSTEM FOR POULTRY LITTER GAS EMISSION MANAGEMENT

(51) International classification :A61B0005000000, G05D0001000000, G06F0001260000, G01N0033000000, A61G0007018000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
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(57) Abstract :

ABSTRACT In poultry fanning, the control of gas emissions from litter-primarily ammonia (NH₃) and hydrogen sulfide (H₂S)--is critical for safeguarding environmental quality and ensuring the health of poultry and workers. This invention introduces an integrated automated system that incorporates gas sensors, a microcontroller unit (NodeMCU ESP8266), ventilation fans, a conveyor belt, an alarm system, and a pesticide light to manage gas emissions in real time. Upon detecting gas concentrations above safety thresholds, the system autonomously triggers alarms [6], activates the conveyor belt for litter removal [4], and engages fans to ventilate the area [3]. A UV-based pesticide light also supports hygiene and pest control. The system supports remote monitoring and control via the Blynk IoT platform [5], allowing farm-specific customization of threshold settings and mitigation strategies. The proposed solution demonstrates a cost-effective, scalable, and sustainable approach to emission management in poultry environments [1][2], addressing key limitations in existing fragmented or manual systems [3].

No. of Pages : 9 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069578 A

(19) INDIA

(22) Date of filing of Application :22/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ALCOHOL INFLUENCE DETECTION AND AUTONOMOUS ENGINE IMMOBILIZER ACTIVATION USING EMBEDDED TECHNOLOGY

(51) International classification :B60R0025250000, G08B0021180000, B60K0028060000, B60R0025100000, A24F0040510000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

7. ABSTRACT Now a days, many accidents are happening because of the alcohol consumption of the driver or the person who is driving the vehicle. Thus, Drunk driving is a major reason of accidents in almost all countries all over the world. This project is particularly designed for, Alcohol Detection in car for the safety of the people seating inside it. This project should be fitted I installed inside the vehicle. If, any Accident occurs then engine gets off and Alarm gets on. If no alcohol I no Accident is detected Engine gets on and Alarm gets off. If Alcohol Detected then engine off Alarm on. The main unit of this project is an "Alcohol sensor". The Sensor gives this signal to a comparator IC. The output of comparator is connected to the microcontroller. Microcontroller is the heart of this project. It· is the CPU of the complete circuit. Microcontroller gives high pulse to the buzzer circuit and the buzzer is turned on. At the same time, a relay is turned off. Due to this the ignition of the car is deactivated. By this way, safety of the passengers in the car is confirmed.

No. of Pages : 14 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :22/07/2025

(21) Application No.202541069588 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-POWERED INFANT PRESENCE DETECTION SYSTEM FOR HYBRID WORK ROOMS WITH REAL-TIME CRY FILTERING AND TASK FOCUS PREDICTION

(51) International classification :G06N0003045000, G06Q0010100000, G10L0025300000, G10L0015300000, G06Q0010109300

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Abstract The Real-Time Cry Filtering and Task Focus Prediction-The AI-Powered Infant Presence Detection System in the Hybrid Work Rooms is the long-overdue game changer in juggling between professional life and family care in a hybrid workplace. The working process starts with a delicate sound sensor carefully recording the sound of babies especially when crying in the working area of the user. This raw audio stream is instantly and safely sent over the internet to a solid cloud operating system. In this cloud ecosystem, advanced deep neural networks are implemented in the execution of vital real-time of cry filtering and cleverly differentiates between genuine infant sounds and background noise or other human voice combinations, hence maintaining a great deal of precision in locating the cry. The essence of innovation is, therefore, the contextual intelligence of the system in terms of task prioritization powered by AI. When the child is detected and is active, the AI combining this knowledge with the current digital task the user is doing, examines factors, including in-use applications, calendar entry, communication status, and learning the detail regarding the user regular working habits. This smart compilation enables the system to be proactive in changing and re-echeloning prioritised tasks, generating smart real time advice to the user, or even automatically correcting the system. Such adaptations may include automatically muting the microphone of the user in critical online meetings to eliminate the cause of the disturbances, a large visual pop-up window about the needs of the infant, or the infidelity of when the user takes short breaks. The general goal is to introduce the consideration of infant care to the flow of work in a professional interactive care mode without compromising the connection between the parent and their professional output and making the mixed environment less stressful.

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

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(54) Title of the invention : WEARABLE COGNITIVE LOAD MONITOR FOR WOMEN PROFESSIONALS WITH HRV-BASED BURNOUT PREDICTION AND HAPTIC WELLNESS ALERTS

(51) International classification :A61B0005024000, A61B0005000000, A61B0005053300, A61B0005160000, G16H0050200000
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(57) Abstract :

Abstract This invention brings a new wearable computer-cognitive load screen (WomenProfessionals Wearable Monitor) with the help of which the burnout with high-risk prediction and haptic warnings of well-being will prevent cognitive overload. The system also carries a smartwatch capable of supporting high-order physiological sensors, such as Heart Rate Variability (HRV) and galvanic skin response (GSR)I to allow passive, continuous measurements. This raw data is then safely sent to a cloud platform where highly complex Artificial Intelligence and Machine Learning (AI I ML) algorithms crunch any trends that can be seen in the physiological markers. These algorithms are trained specifically to estimate the cognitive load in real time and predict the risk of a burnout using the predictive potential ofHRV changes. The most important point is that the system can send haptic wellness warnings through the smartwatch and effectively inform a person about the forthcoming overloads or burnout possibility and help intervene in time using the smartwatch app. Moreover, an inclusive user interface in a mobile application provides individual-guided perceptions, trends, and viable suggestions to help enhance well-being. This is a new concept that gives women professionals a tailor-made, active means to tackle stress and avoid burnout in addition to promoting sustainable professional wellbeing

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :22/07/2025

(21) Application No.202541069595 A

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(54) Title of the invention : DIPLOMATIC INTRUSION PREVENTION BEACON WITH UWB PERIMETER MAPPING, SILENT ALARM TRIGGERS, AND ENCRYPTED MESH ALERTS

(51) International classification :H04L0009400000, G08B0013120000, G08B0013196000, G08B0013186000, G08B0025010000

(86) International Application No :NA

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(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA

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Filing Date :NA

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(57) Abstract :

Abstract The proposed security system can be characterized by the description called the Diplomatic Intrusion Prevention Beacon with UWB Perimeter Mapping, Silent Alarm Triggers, and Encrypted Mesh Alerts that accentuates the targeted diplomatic building security enhancing enterprises. The invention is developed on the use of Ultra-Wideband (UWB) technology to set up a dynamic and very precise perimeter. UWB beacon devices are tactfully located within or near the diplomatic premises where they constantly transmit and receive signals to develop an accurate real-time spatial map of the secured area. Its essence is in the capability to determine any unauthorized penetration into this charted territory. The moment an object/individual traverses the specified UWB limit the system automatically compels a silent alarm safeguarding the first level of precaution that there is immediate alert to the security personnel but the intruder remains oblivious of the action not to mention that the security should not perceive any disturbance. This confidentiality is uppermost in delicate diplomatic surroundings. The alarm signal is relayed on a strong, self-healing and encrypted meshed network. Such a decentralized network design eliminates the chances of failures or compromised communication flows because of the provision of redundant data routing paths. The alerts are delivered to security teams in their dedicated devices and usually, can be shown graphically in a map interface, in real-time with the location of the intrusion. This gives them important and usable information that allows rapid, accurate and discrete manner of responding to prevent possible hazards. The precision mapping combined with silent triggering and secure communication will present a comprehensive yet advanced approach to diplomatic security presented in the system.

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :22/07/2025

(21) Application No.202541069635 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-INTEGRATED CIRCULAR BIOREFINERY SYSTEM FOR PRODUCING BIODEGRADABLE PACKAGING FROM AGRO-FOOD WASTE

(51) International classification :C08L0097020000, C02F0103320000, B65D0065460000, C08L0101160000, C08L0097000000

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Filing Date :NA

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Filing Date :NA

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(57) Abstract :

The present invention relates to a sustainable method and system, for producing eco-friendly, biodegradable, and recyclable packaging materials from agro-industrial and food processing waste using a circular bio refinery approach. The invention utilizes biomass such as sugarcane bagasse, rice husk, fruit peels, and vegetable residues as raw materials to extract natural biopolymers including cellulose, starch, lignin, and pectin. These biopolymers are blended with natural plasticizers and binders to form a bio-composite material that is molded or cast into various packaging forms including trays, pouches, boxes, and inserts. The resulting packaging material is lightweight, compostable, moisture-resistant, and suitable for food-grade and e-commerce applications. The process is scalable and environmentally friendly, with minimal waste generation and potential for decentralized rural deployment. The invention promotes plastic substitution, agricultural waste valorization, and supports the bio economy by offering an innovative alternative to single-use plastics.

No. of Pages : 14 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069659 A

(19) INDIA

(22) Date of filing of Application :22/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SMART:A MULTI-MODULE CAREGIVER MEDIATED INTERVENTION SYSTEM FOR PRESCHOOLER SCREEN TIME

(51) International classification :G16H0020700000, G06F0011340000, G16H0010200000, H04M0003300000, G06Q0010100000

(86) International Application No :NA
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Filing Date :NA

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(57) Abstract :

A multi-module caregiver-mediated intervention system for managing preschooler screen time behaviors through systematic enhancement of caregiver factors as primary intervention mechanisms. The SMART intervention addresses five key domains: Screen awareness and self-monitoring, Meaningful alternatives to passive viewing, Active engagement when screens are used, Responsive caregiving practices, and Traditional values integration. The system comprises six sequential modules implementing dual-focus methodology targeting both passive screen time reduction and active screen time enhancement. Implementation occurs through a digital delivery platform over six weeks with validated assessment protocols measuring caregiver self-efficacy, relationship quality, and screen time behavioral outcomes to provide timely feedback monitored through a fully automated system or with partial human assistance. The caregiver can install the SMART intervention application, and the application administrator will provide access to the intervention after payment, enabling parents to access the intervention modules and monitor their child's daily screen activities.

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(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541069662 A

(19) INDIA

(22) Date of filing of Application :22/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ELECTRICAL CONNECTING MODULE BASED EDUCATIONAL KITS USING CRIMP AND MAGNETIC WOODEN POLE

(51) International classification :G09B0023180000, A61B0017880000, A63H0033040000, G09B0019000000, A63H0033260000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

Title: Electrical Connecting Module Based Educational Kits Using Crimp and Magnetic Wooden Pole The present invention discloses a modular, reusable educational kit for teaching electronics using a ferromagnetic crimp terminal (1) and a magnetic wooden boltshaped pole. The crimp is hooked onto the magnetic head of the pole (4) using a shape-coded washer (5) for solderless connection. The components are color- and shape-coded (6) for ease of assembly and are safely mounted on a magnetic base (7). The system provides a safe, intuitive, and engaging way for children and beginners to learn circuit building without soldering or breadboards.

No. of Pages : 15 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :22/07/2025

(21) Application No.202541069665 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SPIRULINA BASED HERBAL ORAL RINSE:A NATURAL APPROACH TO MUCOSAL WOUND HEALING

(51) International classification :A61Q0011000000, A61K0036610000, A61P0017020000, A61K0036470000, A61K0036185000

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(87) International Publication No : NA

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(57) Abstract :

ABSTRACT This project focuses on the development of a Spirulina-based herbal oral rinse formulated to promote the healing of oral mucosal wounds, including ulcers, traumatic lesions, post-dental surgery injuries, and chemotherapy-induced mucositis. The oral rinse utilizes Spirulina (Arthrospira platensis), a nutrient-rich microalga known for its antioxidant, anti-inflammatory, and tissue-regenerative properties, as the primary active ingredient. To enhance its therapeutic potential, the first formulation incorporates herbal extracts such as Amla juice, Clove, Hibiscus and the second formulation incorporates herbal extracts such as Amla juice, Tulsi, Charcoal, all well-documented for their antibacterial, soothing, and healing capabilities. The resulting rinse is pH-balanced, and biocompatible, making it safe for regular use even in patients with sensitive oral tissues. In vitro evaluations have demonstrated the formulation's ability to significantly reduce microbial load, alleviate inflammation, and accelerate epithelial regeneration. The plantbased bioactive offers a natural, non-toxic alternative to chemical-based mouthwashes, making it a promising solution for effective oral hygiene management and wound care. Its application can be extended to dental clinics, cancer care, and general oral health maintenance, supporting a shift toward green, sustainable therapeutics in biomedical care.

No. of Pages : 10 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067601 A

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(54) Title of the invention : Smart Thermal Insulation System for Energy-Efficient Buildings with Automated Control and Monitoring

(51) International classification :G05B0015020000, G06N0020000000, F24F0011630000, F24F0011460000, F24F0011300000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The global push for sustainable infrastructure has heightened the need for intelligent thermal management in buildings, which account for nearly 40% of global energy consumption, with HVAC systems alone responsible for over 50% of that. This paper introduces a Smart Thermal Insulation System (STIS) enhanced with Artificial Intelligence (AI) and Machine Learning (ML) algorithms for automated control and monitoring of indoor environments. The proposed system integrates IoT-enabled sensors, adaptive insulation materials (e.g., phase change materials with thermal conductivity of 0.18 W/m·K, and silica aerogels with 0.013 W/m·K), and AI-driven control logic to optimize energy usage while maintaining occupant comfort. STIS utilizes a network of temperature, humidity, CO₂, and occupancy sensors to collect real-time data. Machine learning models such as Random Forest for anomaly detection and Reinforcement Learning (Q-learning) for energy optimization are employed to predict and adjust insulation behavior. The system was deployed in two different test environments: a traditional building (control site) and a smart STIS-enabled building (test site), both located in Chennai, India. Experimental results over a 90-day summer monitoring period showed that the STIS-enabled building reduced HVAC energy consumption by 38.7%, compared to the traditional counterpart. Internal temperatures were stabilized within $\pm 1.5^{\circ}\text{C}$ of the target range (23–25°C), despite external temperature fluctuations between 31°C and 43°C. Furthermore, predictive maintenance alerts reduced system downtime by 22%, enhancing operational continuity. Compared to conventional passive insulation or programmable thermostats, STIS adapts to real-time conditions, forecasts, and occupancy patterns, offering greater efficiency and user autonomy. For instance, during peak occupancy, the system automatically pre-cooled zones with high footfall, avoiding unnecessary energy spikes. In conclusion, STIS demonstrates a practical, AI-driven pathway for reducing building energy use, cutting costs by 20–25% annually, and supporting smart city goals through intelligent automation and sustainability.

No. of Pages : 15 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067605 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : LPG TRANSPORT TRACKING AND LEAKAGE DETECTION WITH ACCIDENT PREVENTION ALERT SYSTEM

(51) International classification :G06Q0010063900, G06V0020560000, H04W0004020000, G08G0001096800, H04M0011040000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

This innovative system addresses the growing need for safety in the transportation of LPG cylinders. It combines the power of embedded systems, wireless communication, and sensors to track, monitor, and respond to various emergency scenarios during LPG transport. The core of this system is the ESP32 microcontroller, which collects real-time data from sensors like the MQ2 gas sensor, fire sensor, vibration sensor, proximity sensor, and accelerometer. In case of a gas leak or an accident, the system automatically sends an SMS alert using the GSM module, along with the vehicle's GPS location. The relay and DC motor setup simulate automatic emergency vehicle response, while an LCD displays live data to the operator. The entire hardware is compactly integrated on a PCB and powered via an external adapter. This invention aims to enhance public safety, minimize human dependency, and prevent potential disasters during LPG transportation

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067626 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : IOT Enable Time Based Load Management System

(51) International classification :H02J0003380000, G06Q0050060000, H02J0007350000, H02J0003140000, G06N0020000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The IoT Enabled Time-based Load Management System is an innovative project designed to efficiently manage power usage by integrating solar and grid power sources. This system leverages the ESP8266 microcontroller for real-time data acquisition, processing, and communication with the Blynk IoT platform, enabling remote monitoring and control. An RTC (Real-Time Clock) module is employed to ensure accurate timekeeping for load scheduling, while a Liquid Crystal Display (LCD) is used for real-time visualization of system parameters. The system continuously monitors voltage levels using an analog voltage sensor and calculates power and energy consumption by incorporating known current ratings of connected loads. Energy data is accumulated and displayed on the LCD and the Blynk app in real-time, providing users with a comprehensive view of energy usage. Two relays are utilized to switch between solar and grid power modes based on pre-defined time intervals. During solar priority hours (morning and evening), the system activates solar mode, ensuring optimal utilization of renewable energy. Outside these intervals, the system defaults to grid mode to maintain uninterrupted power supply. This dynamic switching ensures energy efficiency and reduces dependency on grid power. This project demonstrates the potential of combining IoT, renewable energy, and real-time control technologies to develop sustainable energy solutions. Its scalable design and efficient operation make it suitable for residential, commercial, and industrial applications, promoting energy conservation and cost savings. By integrating solar power with grid-based energy, the system offers a smart, adaptable, and environmentally friendly solution for modern energy management needs.

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067607 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : VEHICLE BLACK BOX FOR ACCIDENT DETECTION AND EMERGENCY RESPONSE

(51) International classification :B60K0028060000, G08B0025100000, G01N0033497000, G06V0020590000, B60Q0001500000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The objective of this project is to develop an integrated vehicle monitoring system using the ESP32 Microcontroller, aimed at enhancing safety and efficiency for taxi owners and drivers. The system will detect accidents through a vibration sensor and accelerometer, monitor driver sobriety using an alcohol sensor and identify gas leaks using a gas sensor. The GPS module will monitor the vehicle speed and update the status to registered mobile number and also save the details to the SD card and also in the cloud for analysis, while a telegram will send instant SMS notifications and make calls to registered mobile number during critical condition. Additionally, on the LCD it displays the alert messages for critical situation and give buzzer signal to the driver. Camera is being added and eye blink detection sensor whereas camera captures the set of Image before accident occurs and the eye blink sensor detects if a person doesn't blink the eyes for a particular point of threshold value, it immediately sounds the buzzer. Ultimately, this project aims to significantly improve vehicle safety, driver accountability, and operational efficiency in taxi services. The objective of this project is to develop an integrated vehicle monitoring system using the ESP32 Microcontroller, aimed at enhancing safety and efficiency for taxi owners and drivers. The system will detect accidents through a vibration sensor and accelerometer, monitor driver sobriety using an alcohol sensor and identify gas leaks using a gas sensor. The GPS module will monitor the vehicle speed and update the status to registered mobile number and also save the details to the SD card and also in the cloud for analysis, while a telegram will send instant SMS notifications and make calls to registered mobile number during critical condition. Additionally, on the LCD it displays the alert messages for critical situation and give buzzer signal to the driver. Camera is being added and eye blink detection sensor whereas camera captures the set of images before accident occurs and the eye blink sensor detects if a person doesn't blink the eyes for a particular point of threshold iv value, it immediately sounds the buzzer. Ultimately, this project aims to significantly improve vehicle safety, driver accountability, and operational efficiency in taxi services. The objective of this project is to develop an integrated vehicle monitoring system using the ESP32 Microcontroller, aimed at enhancing safety and efficiency for taxi owners and drivers. The system will detect accidents through a vibration sensor and accelerometer, monitor driver sobriety using an alcohol sensor and identify gas leaks using a gas sensor. The GPS module will monitor the vehicle speed and update the status to registered mobile number and also save the details to the SD card and also in the cloud for analysis, while a telegram will send instant SMS notifications and make calls to registered mobile number during critical condition. Additionally, on the LCD it displays the alert messages for critical situation and give buzzer signal to the driver. Camera is being added and eye blink detection sensor whereas camera captures the set of images before accident occurs and the eye blink sensor detects if a person doesn't blink the eyes for a particular point of threshold value, it immediately sounds the buzzer. Ultimately, this project aims to significantly improve vehicle safety, driver accountability, and operational efficiency in taxi services.

No. of Pages : 14 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067609 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Designing IOT Based Face Recognition Robot

(51) International classification :G06V0040160000, H04L0009400000, G06Q0020380000, G07C0009370000, G06F0021570000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

Security remains one of the most critical concerns in both residential and commercial settings. Traditional access control methods—such as physical keys, codes, or cards—are increasingly seen as insufficient in today's digitally connected and technologically advanced world. These systems are prone to various security vulnerabilities, including theft, duplication, hacking, or simple human error. To address these issues, this project introduces a face recognition-based security system designed specifically for use in homes and office environments. The system employs advanced computer vision techniques and machine learning algorithms to recognize authorized individuals by analyzing their facial features. This biometric approach ensures a contactless, efficient, and highly secure method of access control. Using a camera module connected to a microcontroller (e.g., Raspberry Pi), the system captures and processes images in real-time. It compares the facial features with those stored in its secured database to determine access permissions.

No. of Pages : 10 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067611 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A HYDROLASE ENZYME FOR INHIBITION OF A. BAUMANNII BIOFILM FORMATION AND PRODUCTS THEREOF

(51) International classification :A61P0031040000, A61K0038470000, C12N0009240000, A61K0039395000, A61K0009000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

A HYDROLASE ENZYME FOR INHIBITION OF A. BAUMANNII BIOFILM FORMATION AND PRODUCTS THEREOF ABSTRACT 5

The present disclosure provides an article comprising a hydrolase enzyme having an amino acid sequence comprising SEQ ID NO: 1. The hydrolase enzyme inhibits A. baumannii biofilm formation by degrading extracellular polysaccharides that form the biofilm matrix. The hydrolase enzyme has improved antibiofilm activity against A. baumannii, exceptional stability, and prolonged shelf life, when compared to other glycoside hydrolases. The articles 10 comprising the hydrolase enzyme offers a biocompatible, cheaper, and more scalable approach for inhibiting and eradicating biofilms in medical and wound care settings. FIGURE 1

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067613 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SEGMENTED VALVE MECHANISM WITH INTEGRATED NOVEL FUEL INJECTION SYSTEM FOR ENHANCED INTERNAL COMBUSTION ENGINE PERFORMANCE

(51) International classification :F02D0041000000, F02D0041260000, F02M0061080000, F02D0041100000, F02B0031080000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

[035] The present invention discloses a segmented valve mechanism integrated with a novel fuel injection system for internal combustion engines. The valve assembly comprises multiple independently actuated segments that dynamically regulate airflow into or out of the combustion chamber based on real-time engine conditions. Surrounding the valve assembly is a set of high-precision micro-nozzles that deliver atomized fuel in synchronization with the actuation of each valve segment. This integration enables precise air-fuel mixing, improves combustion efficiency, reduces emissions, and eliminates the need for traditional camshaft-driven valve systems. The system is governed by a centralized electronic control unit that optimizes valve and injection operations using input from engine sensors, offering adaptability to various fuels and scalability for diverse engine platforms. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 18 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067616 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SYSTEM AND METHOD FOR WIRELESS ENERGY METERING WITH PREPAID RECHARGE AND REMOTE MANAGEMENT CAPABILITY

(51) International classification :G06Q0020280000, G06Q0050060000, H04M0015000000, H04M0017000000, G05F0001660000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses a wireless energy metering system integrated with prepaid recharge capability and remote management functionality. The system includes an energy metering unit, microcontroller, prepaid balance module, wireless communication interface, power control mechanism, and a cloud-based platform. Users can recharge their energy balance through a mobile or web application connected to digital payment gateways. The system tracks real-time energy consumption, deducts credits accordingly, and automatically disconnects the power supply when the balance is exhausted. Utility providers can remotely monitor usage, configure tariffs, and manage operations through an administrative dashboard. The invention enhances energy usage transparency, promotes timely payments, and supports efficient, scalable, and user-friendly energy distribution for both consumers and service providers. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 17 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067617 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : IOT BASED WAR SPYING ROBOT WITH NIGHT VISION CAMERA

(51) International classification :G05D0001000000, H04N0007180000, G08B0013196000, G16H0050200000, B25J0005000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
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(57) Abstract :

In modern military and security applications, remote surveillance and reconnaissance play a vital role in intelligence gathering. This project proposes an IoT-based war-spying robot utilizing the ESP32 microcontroller, which provides wireless connectivity via Wi-Fi and supports real-time video transmission. The robot is equipped with a night-vision camera, enabling efficient monitoring in low-light and dark environment. The ESP32 module acts as the central controller, processing movement commands and transmitting live video to a remote web interface or mobile app via a Wi-Fi server. The robot is controlled remotely, allowing operators to navigate through hazardous or enemy territory without physical presence. The system integrates DC motors, a motor driver (L298N), and ultrasonic/IR sensors for obstacle detection and autonomous navigation. In the current era of advanced warfare and border security challenges, technology plays a pivotal role in minimizing human risk while enhancing surveillance capabilities. This project presents the design and development of an IoT-based War Spying Robot integrated with a Night Vision Camera, specifically intended for military reconnaissance and intelligence-gathering operations in high-risk or inaccessible areas. The proposed system is a remote-controlled robotic vehicle equipped with a night vision camera, wireless communication modules, and obstacle avoidance sensors. It serves as an intelligent surveillance tool that transmits real-time video and sensory data to a remote command center using Internet of Things (IoT) technology. The video feed is transmitted over a wireless network (Wi-Fi, 4G LTE, or GSM) to the end user, who can monitor and control the robot's navigation using a mobile app or web dashboard. Additional features such as ultrasonic sensors for obstacle detection, GPS for location tracking, and temperature or gas sensors for environmental data collection can be integrated to further expand the robot's capabilities. These components make the robot not just a spying tool but a versatile data-gathering platform suitable for a wide range of military and security applications. The robot's compact size and rugged design enable it to navigate through narrow and uneven terrains, which is often required in border areas or urban warfare zones. By eliminating the need for soldiers to be physically present in dangerous zones, the system reduces the risk to human life while providing continuous, real-time monitoring of enemy activity. In conclusion, the IoT-based war spying robot with a night vision camera offers a cost-effective, scalable, and secure solution for modern defense forces. It merges robotics, IoT, and image processing technologies to deliver a reliable surveillance tool that can operate effectively in challenging environments, both day and night.

No. of Pages : 16 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067619 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : IOT-BASED SMART BATTERY MANAGEMENT SYSTEM FOR REAL-TIME MONITORING AND CONTROL

(51) International classification :H01M10/42, H01M10/48, B60L58/10, G08B21/18, G08B21/12, G16Y40/10
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

This project focuses on the development and implementation of a Battery Management System (BMS) for electric vehicles, aiming to enhance battery performance, safety, and lifespan. As electric mobility becomes increasingly vital for sustainable transportation, efficient battery management is essential to address issues related to energy efficiency, thermal stability, and overall reliability. The BMS is responsible for monitoring key battery parameters such as voltage, current, and temperature, ensuring balanced charging and discharging across all cells in the battery pack. The system architecture includes a voltage sensing unit, temperature sensing mechanisms, a current measurement setup, and a controller unit for data processing and decision-making. Protection features against overcharging, deep discharging, short-circuiting, and thermal runaway are integrated to prevent battery degradation and safety hazards. A cell balancing algorithm is employed to maintain uniform charge distribution, thereby extending battery life and improving vehicle performance. Through simulation and modeling, the BMS is tested under various load conditions to evaluate its responsiveness and effectiveness. The project demonstrates that a well-designed BMS not only safeguards battery integrity but also contributes significantly to the efficiency and sustainability of electric vehicles. Future enhancements may involve integrating wireless communication and AI-based diagnostics for predictive maintenance and real-time optimization.

No. of Pages : 13 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067621 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Intelligent Emergency Vehicle System Priority System

(51) International classification :G06N0003080000, A61B0005000000, G08G0001000000, G08G0001096500, G08G0001080000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

In rapidly growing urban areas, emergency vehicles such as ambulances and fire trucks often face severe delays due to traffic congestion. This project presents an integrated system that combines IoT, deep learning, and computer vision to improve emergency response and optimize urban traffic management. At its core, the system employs an ESP32 microcontroller to dynamically control traffic signals, granting priority access to emergency vehicles. Hardware components include GPS modules for vehicle tracking, RF communication for proximity detection, and pulse rate sensors to monitor patient vitals. These sensors transmit real-time data to the Blynk IoT platform, allowing for live monitoring and signal adjustment based on emergency presence and patient condition. On the software side, video feeds from multiple traffic lanes are analyzed using deep learning-based object detection to classify vehicle types and count their density within each lane. The system evaluates congestion levels (Low, Medium, or High) and adjusts traffic signals accordingly to streamline flow. To further enhance emergency responsiveness, an LSTM-based audio classification model is implemented to detect ambulance sirens. Trained on MFCC features, the model accurately identifies emergency sounds, triggering immediate high-priority alerts via Blynk, enabling either automatic traffic signal overrides or notifications to relevant authorities. A user-friendly Tkinter GUI supports interactive audio testing, allowing users to select, play, and classify audio files while visualizing results in real time.

No. of Pages : 12 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067622 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR EVALUATING THE IMPACT OF SOCIAL MEDIA MARKETING AND IoT INTEGRATION ON SALES PERFORMANCE OF SMALL ONLINE BUSINESSES

(51) International classification :G06Q0050000000, G06Q0030020100, G06Q0030024100, G06Q0030020300, G06Q0030020200
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

Abstract: A computerized method and system are disclosed for evaluating the impact of both social media marketing (SMM) and IoT-generated behavioral data on the sales performance of small online businesses. The method includes collecting data on perceptual SMM constructs—customers' feedbacks, communication, content sharing, customer relationships—and IoT metrics like product interaction frequency and session duration. The system applies reliability analysis, correlation, and multi-variable regression to identify statistically significant predictors of sales performance. Results show that integrating IoT data strengthens predictive accuracy and provides deeper, actionable insights for digital marketing optimization.

No. of Pages : 14 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067627 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : DUAL-CHAMBER DISPENSING BOTTLE WITH ISOLATED FLOW PATHS FOR SIMULTANEOUS DELIVERY OF TWO SEPARATE LIQUIDS

(51) International classification	:B65D0081320000, A61M0005190000, A61M0005315000, B65D0001040000, B05B0011000000
(86) International Application No	:NA
Filing Date	:NA
(87) International Publication No	: NA
(61) Patent of Addition to Application Number	:NA
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(62) Divisional to Application Number	:NA
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(57) Abstract :

ABSTRACT DUAL-CHAMBER DISPENSING BOTTLE WITH ISOLATED FLOW PATHS FOR SIMULTANEOUS DELIVERY OF TWO SEPARATE LIQUIDS The present invention provides a dual-chamber dispensing bottle designed to store and simultaneously dispense two different liquids while maintaining complete separation until the point of release. The bottle comprises a first chamber and a second chamber, a dual-nozzle inner cap with isolated flow paths and a dispensing cap with two internal channels leading to adjacent external nozzles. Upon applying pressure, liquids from both chambers flow independently through their respective pathways and merge visually and functionally at the point of dispensing without premature mixing. The design ensures leak-proof storage, synchronized dispensing and real-time blending, making it suitable for applications in cosmetics, pharmaceuticals and food industries where dual-component products are required. The invention offers convenience, hygiene and enhanced user experience.

No. of Pages : 22 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067632 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : System and Method for Modeling Digital Consumer Behavior Using a Reengineered Nicosia Framework Based on Behavior 4.0 Principles

(51) International classification :G06Q0030025100, G06Q0030020000, G06Q0030020100, G06Q0030024200, G06Q0030024100

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :
The present invention discloses a system and method for modeling digital consumer behavior by reengineering the classical Nicosia Model using Behavior 4.0 principles. The invention enables dynamic, real-time analysis and prediction of consumer decision-making across digital platforms through an integrated architecture comprising a stimuli generation module, a consumer cognition module, an AI-powered personalization engine, and a social influence and feedback loop mechanism. The system captures and processes data from multiple digital touch points, such as websites, mobile applications, and social media, to generate personalized marketing stimuli that adapt to individual consumer behavior, demographic profiles, and social context. Behavioral responses are analyzed to infer cognitive patterns, which in turn inform content personalization and ethical retargeting strategies. Feedback loops enable continuous refinement of messaging and targeting through real-time learning. This invention provides a holistic, adaptive, and ethically aligned approach to digital consumer engagement, bridging classical behavioral theory with modern, data-driven marketing technologies.

No. of Pages : 18 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067635 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-Driven Multi-Modal Diagnostic System for Early Detection of Respiratory Diseases Using Peak Expiratory Flow Rate, Chest Movement Analysis, and Advanced Machine Learning Models

(51) International classification :A61B0005000000, A61P0011000000, A61B0005080000, G16H0050300000, G16H0050200000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Abstract The present invention discloses an AI-driven multi-modal diagnostic system designed for the early detection of respiratory diseases, such as asthma and chronic obstructive pulmonary disease (COPD). The system integrates Peak Expiratory Flow Rate (PEFR) measurements, chest movement analysis for precise breathing rate determination, and advanced machine learning models, including deep neural networks (DNNs) and support vector regression (SVR). Enhanced prepro-cessing techniques, such as noise reduction, normalization, and outlier detection, ensure data reliability. The DNN identifies complex patterns in PEFR data indicative of early respiratory conditions, while the SVR model predicts continuous disease risk scores. A chest movement analysis module, utilizing wearable sensors or imaging, extracts breathing rate to enhance diagnostic accuracy. The system combines DNN and SVR outputs through a weighted ensemble approach, generating a unified diagnostic score. Non-invasive and scalable, the system is suitable for clinical and home settings, offering significant improvements in early detection, management, and treatment of respiratory diseases. By leveraging multi-modal data and advanced AI, this invention provides a robust, accurate, and accessible tool for improving patient outcomes and addressing global respiratory health challenges.

No. of Pages : 10 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067636 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Method for Differential Privacy in Real Time Data Systems Using Hash Based Noise Injection

(51) International classification :G06F0021620000, H04L0009320000, H04L0009060000, G06F0016220000, H04L0009000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

This invention pertains to a method for applying differential privacy within real-time data systems through the utilisation of a hash-based noise injection mechanism. Conventional differential privacy methods, like the Laplace or Gaussian mechanisms, demand significant computational resources and are not ideal for systems requiring high throughput and low latency in real-time applications. The presented invention introduces a method that is both efficient and scalable, ensuring differential privacy by employing deterministic and reproducible noise addition, which is grounded in cryptographic hashing functions. The approach entails producing pseudorandom noise values through the application of a keyed hash function (like HMAC-SHA256) to a distinctive set of data identifiers, timestamps, and a predefined secret key established by the system. The values generated by the hash function are associated with calibrated noise that adheres to a recognised statistical distribution, like Laplace, with parameters that correspond to the specified privacy budget (ϵ). The generated noise is seamlessly integrated into the data stream prior to aggregation, transmission, or storage. This hash-based method guarantees that identical data points will consistently receive the same noise during repeated calculations, thereby avoiding inconsistencies or data leakage that could arise from recomputation or caching. Moreover, it facilitates distributed implementation, allowing for the enforcement of differential privacy at the edge or node level without the need for central coordination. The system facilitates dynamic privacy levels that can be tailored for each user or data type, allowing for adaptable data governance. This approach is relevant across multiple fields such as financial transactions, healthcare monitoring, IoT telemetry, and smart grids, where the simultaneous need for real-time data collection and privacy assurances is critical. This approach improves transparency by enabling verifiable noise behaviour through public parameters, while keeping the secret key confidential, thereby promoting trust in data privacy mechanisms. This innovation integrates hash functions with statistical mapping to provide a solution that is both high-speed and low-overhead, while ensuring cryptographic robustness for privacy-preserving real-time data processing.

No. of Pages : 8 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067638 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Eco-Friendly Mosquito Repellent Lotion Bar Formulated Using Essential Oils

(51) International classification :A61K0036610000, A01N0065000000, A01N0065280000, A01N0065220000, A01N0065440000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

The mosquito repellent lotion bar comprises a base of natural oils and wax combined with a specific blend of essential oils, including peppermint, lavender, citronella, eucalyptus and clove. These essential oils have been carefully selected for their synergistic properties in repelling mosquitoes while being safe for topical use. The lotion bar is solid at room temperature, making it convenient for storage and application. Upon contact with the skin, the bar melts, allowing easy application and even distribution of the active ingredients. The formulation not only repels mosquitoes but also provides moisturizing benefits to the skin, making it suitable for regular use. The bar demonstrates efficacy for up to 8 hours based on human trials, making it suitable for tropical climates and sustainable living.

No. of Pages : 17 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067644 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Method and Apparatus for E-commerce Purchase Cancellation

(51) International classification :G06Q0030060100, G06Q0010087000, G06Q0030060000, G06Q0010063700, G06F0009480000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT Method and Apparatus for E-commerce Purchase Cancellation In e-commerce, users often initiate purchases but later wish to cancel them due to various reasons such as incorrect selection, change of mind, delayed shipping, or price changes. Current systems for order cancellation are fragmented and frequently require manual intervention or customer support. This leads to delays, increased operational costs, and poor customer experience. There is a need for an intelligent, automated method that allows users to cancel purchases within predefined or dynamically computed windows, incorporating inventory status, shipping progress, and seller policies.

No. of Pages : 8 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067645 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : MULTI-DIMENSIONAL DATA MANAGEMENT FOR HYPERBARIC OXYGEN THERAPY

(51) International classification :G06N0020000000, A61G0010020000, G06F0016280000, G16H0050200000, G16H0015000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

A system and method for managing multidimensional data associated with hyperbaric oxygen therapy is disclosed. The system captures real-time physiological, environmental, and procedural data, organizes it in a multidimensional database, and analyzes it using machine learning to identify patterns, predict adverse events, and suggest personalized treatment parameters. A clinical interface provides real-time insights and alerts, facilitating evidence-based adjustments to therapy. The invention enhances the safety, personalization, and efficacy of HBOT through data-driven decision-making.

No. of Pages : 11 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067646 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Live E-commerce Settlement and Transaction Framework

(51) International classification :G06Q0020380000, G06Q0030060100, G06Q0020400000, G06Q0050180000, G06F0021620000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

A modular e-commerce transaction and settlement framework that enables secure, conditional payment disbursement among multiple stakeholders. The invention features transaction lifecycle tracking, smart contract condition evaluation, secure multi-party authentication, and automated dispute resolution. The framework may be deployed on centralized servers or decentralized platforms to ensure integrity, scalability, and transparency.

No. of Pages : 8 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067647 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Virtual Culinary Preparation and Presentation System

(51) International classification :G06F0003010000, G06T0019000000, G02B0027010000, G06Q0050120000, G09B0005060000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT Virtual Culinary Preparation and Presentation System A system and method for generating, managing, and displaying virtual culinary presentations using a combination of augmented reality (AR), virtual reality (VR), artificial intelligence (AI), and smart kitchen integration. The system provides real-time visual and audio simulation of cooking processes, step-by-step recipe guidance, digital ingredient handling, and immersive food presentation. Users may interact with a virtual chef avatar or digital recipe system via head-mounted displays, mobile devices, or smart kitchen surfaces. The invention enables enhanced culinary learning, remote collaboration, digital tastings, and customizable presentation environments

No. of Pages : 8 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067648 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Proactive Delivery Notification Application

(51) International classification :G06Q0010083500, H04M0003523000, G06Q0050100000, H04L0067540000, G06Q0010047000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

A system and method for proactive delivery execution is disclosed. The system predicts recipient availability based on real-time and historical data, provides proactive notifications, and adapts delivery routes and methods dynamically. The system improves delivery success rates, reduces costs, and enhances customer experience.

No. of Pages : 8 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067649 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Piezoelectric Sensor-Based Occupational Compression Delineator

(51) International classification :G16H0020300000, H04L0009400000, A61B0005110000, G05B0019042000, A61B0005000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
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(57) Abstract :

A piezoelectric sensor-based occupational compression delineator is disclosed for monitoring mechanical stress on the human body during occupational activity. The system employs a piezoelectric sensor array to detect compression forces, a microcontroller to process and analyze the signals, and a wireless communication module for transmitting the data. Real-time alerts are generated when compression exceeds safety thresholds. Applications include ergonomic safety, industrial wearables, and athlete performance monitoring.

No. of Pages : 8 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067650 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : BIG DATA SYSTEM FOR WORKFORCE ACTIVITY MONITORING AND ANALYSIS

(51) International classification :G06Q0010063900, G06Q0010063100, G06N0020000000, G16H0050200000, A61B0005000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

A data system for workforce monitoring is disclosed. The system integrates with various data sources to collect and process employee activity information in real-time. It provides performance insights through dashboards and utilizes machine learning to predict outcomes and deliver adaptive feedback. The system ensures privacy compliance and scalability, offering a comprehensive solution for workforce optimization.

No. of Pages : 11 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067651 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : LARGE LANGUAGE MODEL FINE-TUNING FOR ELECTRIC POWER OPERATIONS

(51) International classification :G06Q0050060000, G10L0015180000, G06N0005045000, G06F0040400000, G06F0040300000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

Disclosed is a system and method for applying large language models (LLMs) to electric power grid operations. The LLM is trained and fine-tuned on structured and unstructured data from electric utilities to assist with fault detection, load forecasting, outage management, and operator support via a natural language interface. The system ensures safety and explainability through supervised validation and domain-specific controls.

No. of Pages : 10 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067652 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AUTOMOTIVE TAILGATE LATCH WITH MALFUNCTION PREVENTION

(51) International classification :F02D0041220000, G05B0023020000, B62D0033027000, G11C0029440000, F16H0061120000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
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(57) Abstract :

Automobiles have become a fundamental part of modern life, facilitating transportation and driving global economies. However, as with any complex machine, automobiles are susceptible to malfunctions. Automobile tailgate malfunction refers to any unexpected failure or irregularity in the functioning of a vehicle's tailgate. These malfunctions can range from minor inconveniences, such as faulty lights, to major mechanical breakdowns that pose serious safety risks. Understanding the causes, effects, and preventive measures of automobile malfunction is crucial for ensuring road safety and vehicle longevity

No. of Pages : 8 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :15/07/2025

(21) Application No.202541067653 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A Intelligent Aerosol Corrosion Testing System

(51) International classification :G01N0017000000, G01N0015000000, G01N0021530000, G01N0015060000, G01N0015020500

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

A Intelligent Aerosol Corrosion Testing System Corrosion is a pervasive and costly problem in various industries, leading to material degradation, reduced equipment lifespan, and significant maintenance expenses. Among the many forms of corrosion, aerosol corrosion is a lesser-known but highly impactful subtype that occurs due to airborne particles and droplets containing corrosive agents. This form of corrosion is particularly prevalent in marine, urban, and industrial environments, where aerosols such as sea spray, acidic mists, and chemical pollutants interact with susceptible surfaces. Understanding aerosol corrosion is crucial for effective infrastructure design, material selection, and maintenance planning.

No. of Pages : 9 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202547067664 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ROBOT SYSTEM

(51) International classification	:B25J 5/00, B25J 9/00, B25J 18/02
(31) Priority Document No	:P.443251
(32) Priority Date	:22/12/2022
(33) Name of priority country	:-----
(86) International Application No	:PCT/IB2023/061314
Filing Date	:09/11/2023
(87) International Publication No	:WO 2024/134297
(61) Patent of Addition to Application Number	:NA
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(62) Divisional to Application Number	:NA
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(57) Abstract :

The robot system comprises a supporting structure on a mobile base and a control system with a power source, wherein at least one manipulator arm is slidably attached to the supporting structure, and the supporting structure comprises a first supporting column and a second supporting column rotatably connected to the mobile base via base joints with one degree of freedom. One manipulator arm is slidably attached to each supporting column. The manipulator arm includes a first support, a second support, a boom and a support element. The boom comprises a first boom part and a second boom part, wherein a first end of the first boom part is connected to the first support via a first joint with one degree of freedom, and a second end of the first boom part is slidably connected to the second boom part and is rotatably connected to the first end of the support element via the second joint. The second end of the support element is connected to the second support via a third joint with one degree of freedom, and a distal end of the second boom part ends with a gripper, wherein the robot system further comprises a monitoring system.

No. of Pages : 7 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067671 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SURFACE-MODIFIED SOLID LIPID NANOPARTICLES COMPOSITION OF MEMANTINE HYDROCHLORIDE FOR TARGETED BRAIN DRUG DELIVERY

(51) International classification :A61P0025280000, A61K0009000000, A61K0009510000, A61K0031130000, A61K0009160000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
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(57) Abstract :

ABSTRACT A SURFACE-MODIFIED SOLID LIPID NANOPARTICLES COMPOSITION OF MEMANTINE HYDROCHLORIDE FOR TARGETED BRAIN DRUG DELIVERY The present invention relates to a pharmaceutical composition and method for preparing surface-modified solid lipid nanoparticles (SMLNs) encapsulating Memantine Hydrochloride for enhanced brain targeting in the treatment of moderate to severe dementia, particularly associated with Alzheimer's disease. The formulation comprises a lipid core of tristearin and soya lecithin, surface-modified with Tween® 80 to facilitate transport across the blood-brain barrier (BBB) via receptor-mediated endocytosis. The nanoparticles are prepared using a modified solvent injection method and optimized through Box-Behnken Design (BBD), ensuring high entrapment efficiency (>70%), narrow particle size distribution (≈185 nm), and sustained drug release up to 36 hours. The SMLNs demonstrated superior stability, compatibility, and in vitro performance, offering a novel, effective alternative to conventional Memantine formulations with reduced side effects and improved therapeutic efficiency in neurodegenerative disorders.

No. of Pages : 19 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067668 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Identification of diseases in citrus trees from unmanned aerial vehicle imagery using deep learning

(51) International classification :G06N0003045000, G06N0003080000, G06T0007000000, B64C0039020000, G06V0010820000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

This invention describes a novel system and method for the automatic detection of diseases in citrus trees. It utilizes high-resolution images from unmanned aerial vehicles (UAVs) with integrated deep learning models. The method involves capturing aerial images of citrus orchards with UAV-mounted multispectral or RGB cameras, preprocessing the image data, and applying a trained convolutional neural network (CNN) to classify diseased and healthy citrus plants. The system enables the early and highly accurate detection of diseases such as citrus canker, greening, and black spot. The automated pipeline provides a cost-effective, scalable, real-time solution to assist farmers and agricultural experts in precise crop monitoring and disease management.

No. of Pages : 9 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067672 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : DESIGN AND DEVELOPMENT OF AN INNOVATIVE CONVOLIFT FOR MATERIAL HANDLING

(51) International classification :G05B0019418000, A61P0007000000, A61K0038000000, H04L0067120000, G06N0003080000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Abstract In the rapidly evolving field of industrial automation, the demand for agile, energy-efficient, and adaptive material handling systems has never been greater. This paper presents the development and application of an Innovative Convolift-a novel lifting and conveying mechanism engineered to optimize material flow across diverse sectors including manufacturing: warehousing: and logistics. By integrating advanced mechatronic design with smart sensor-driven feedback and modular architecture, the Convolift offers seamless vertical and horizontal transport, space-saving operation, and improved efficiency. The system is capable of dynamically adjusting to varying payloads and spatial constraints, significantly improving throughput and reducing operational downtime. Its core innovation lies in the hybrid lifting-conveyor structure which combines continuous belt motion with synchronized lifting stages, enabling smooth, high-frequency transport of goods across multi-level platforms. This paper outlines the Convolift's mechanical architecture, control system, and performance metrics, and presents case studies demonstrating its effectiveness in realworld installations. The proposed system represents a transformative step in intelligent material handling, with broad potential for customization and scalability across modern supply chain environments.

No. of Pages : 6 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067676 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : ULTRA-MINIATURIZED BROADBAND FREQUENCY SELECTIVE SURFACE:A METHOD AND DEVICE THEREOF

(51) International classification :H01Q0015000000, A61B0005145000, C08L0063000000, C08K0007160000, H04N0019300000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT Ultra-miniaturized Broadband Frequency Selective Surface: A method and device thereof The ultra-miniaturized broadband Frequency Selective Surface for shielding medical communication bands is proposed in this invention. The embodiment of the present invention comprises convoluted metallic arms (110) imprinted on the flexible polyester substrate (101). The convoluted metallic arms consist of a circular patch (CP) (102), a tilted U-shaped metallic arm (TUSMA) (103), a Line stub (LS) (104), an Inner L-shaped stub (ILSS) (105), an Outer shaped stub (OLSS) (106), and a Triangular Stub (TS) (107). The ultraminiaturized broadband Frequency Selective Surface system (100) offers the 10 dB shielding response from 401 MHz to 614 MHz, with a peak shielding of 46 dB at 494 MHz (200). The embodiment achieves a high angular stability of 85° at TE and TM modes due to its ultra-miniaturized footprint of 0.026f.o x 0.026f.o. The ultra-miniaturized broadband Frequency Selective Surface system (100) achieves a polarization insensitive performance at TE and TM modes. Therefore, the proposed invention is an ideal solution for shielding medical communication bands with flexible, low-profile, and ultra-miniaturized characteristics.

No. of Pages : 13 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067678 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : METHOD FOR REDUCING IMPURITIES IN SECONDARY ALUMINIUM ALLOYS USING EGGSHELL DERIVED CALCIUM OXIDE BASED FLUX

(51) International classification :C22B0009100000, C22C0021020000, C22C0001020000, C04B0035626000, C22B0021060000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT This invention presents an efficient method for reducing silicon, magnesium, and other impurities in secondary aluminum alloys using a refining flux powder derived from waste eggshells. The flux consists of calcium oxide (CaO), obtained by calcinating eggshells at 900-1100 °C, blended with Na₂B₄O₇, Na₃AlF₆, NaCl, and KCl in an optimized ratio of 8:4:2:3:3. The highly reactive CaO forms stable slag compounds such as calcium silicate (CaSiO₃) and calcium-magnesium oxide (CaMgO₂) by reacting with impurities in molten aluminum. These compounds are easily separated from the melt, enabling impurity reductions of 40-50% for silicon, 30-50% for magnesium, and 20-50% for other elements. The flux is introduced at 680 ± 40 °C and stirred uniformly at 40-50 RPM for 15-20 minutes to ensure proper dispersion, homogeneity, and enhanced reaction kinetics.

No. of Pages : 18 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067679 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : TRIPLE COMPARTMENT HEAT EXCHANGER

(51) International classification :F28D0020020000, F28D0020000000, C09K0005060000, H02J0007000000, F24F0005000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

Abstract: A thermal energy storage system that utilizes phase change materials (PCMs) was recognized as a highly efficient method for capturing and storing heat. This was 10 primarily due to the significant energy storage capacity of PCMs, along with their ability to maintain a nearly constant temperature throughout the energy absorption and release processes. A compact and efficient thermal energy storage-(-TES)----- system utilizing plurality of small sized PCM copper tubes [4] filled with paraffin wax as PCM. The design includes a central large copper pipe [3] for cold fluid 15 flow, enclosed within an outer PVC tube. The PCM store heat during charging, which is later transferred to cold fluid during discharge. Plurality of outer tube end caps [2] enables heat carrying fluid to flow through hot inlet [9] and exists through hot outlet [8] and transferring heat to the PCM. PCM absorbs energy during the melting process and retains it with minimal loss. Central large copper pipe [3] 20 allows precise thermal transfer during discharge. Plurality of PCM copper tube end caps [5] and plurality of central tube end caps [6] ensure a fully sealed and safe uni for repeated cycling. Once charged, the. device does not require continuous external energy for heat release, making it ideal for sustainable and off-grid use.

No. of Pages : 11 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067681 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : System and Apparatus for Patient Coupled Diagnostic Terminal Enabling Multidevice Biometric Ingestion and Protocol Aware Signal Fusion

(51) International classification :A61B0005000000, A61B0005145000, G16H0040670000, A61N0001390000, A61B0005145500

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The disclosed invention relates to a patient-coupled diagnostic terminal configured to acquire physiological, biochemical, and biometric data from multiple external medical systems, including but not limited to ventilators, continuous renal replacement therapy (CRRT) machines, syringe pumps, infusion pumps, multiparameter ICU monitors, defibrillators, electrocardiography (ECG) systems, capnographs, spirometers, central nursing stations, and lab information systems. The device includes modular physical and wireless input interfaces supporting protocols such as HL7, RS-232, USB, Ethernet, Modbus, and BLE. Incoming signals are normalized into unified data structures and fused in real time with an onboard simulation engine for prognostic modelling and feedback generation. The system supports bidirectional communication, enabling protocol-specific control signalling, alert propagation, or automated override based on internal cognition logic.

No. of Pages : 8 No. of Claims : 30

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067684 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : IOT-BASED SMART SHOPPING CART SYSTEM FOR AN ENHANCED SHOPPING EXPERIENCE

(51) International classification :G06Q0020320000, G07G0001000000, G06Q0010087000, G06N0003080000, G06Q0020200000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Exemplary embodiments of the present disclosure are directed towards IoT-based smart shopping cart system for an enhanced shopping experience. An IoT-based smart shopping cart system designed to enhance the retail shopping experience by integrating advanced technologies including IoT, edge computing, AI, and computer vision. The system employs a mounted camera with a YOLOv5 deep learning model for real-time product recognition and classification. A load cell connected to an Arduino verifies product weight, ensuring accuracy. The user interacts via a touchscreen interface displaying recognized items, prices, and totals, enabling easy item confirmation or removal. The system supports seamless mobile payments through integrated gateways. Continuous communication with backend inventory systems enables dynamic stock management. AI-driven analytics personalize recommendations and optimize inventory. This smart cart system significantly reduces checkout time, minimizes human errors, and enhances customer convenience, representing a transformative step toward cashier-less, efficient retail environments. FIG 14

No. of Pages : 27 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067685 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : DECOUPLED MASTER-SLAVE WITH DUAL-MASTER TELEOPERATED ROBOTIC SYSTEM WITH FRICTION-BASED HAPTIC FEEDBACK FOR SURGICAL INCISION CONTROL

(51) International classification :G06F0003010000, B25J0009160000, A61B0034000000, A61B0034300000, A61B0034370000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT The invention presents a novel dual-master teleoperated robotic system designed to enhance the precision, safety and cost-effectiveness of incision-based surgical procedures. This system introduces a pioneering architecture where two independent master modules of Positioner and Incisioner, control the respective tasks of three-dimensional tool alignment and collinear incision. The Positioner Master, a scaled physical replica of the slave arm, enables intuitive 3D spatial guidance, while the Incisioner Master facilitates precise, user-controlled incision with haptic feedback along a defined axis. Central to the invention is a real-time, haptic feedback mechanism, employing two force sensing resistors (FSRs) and a servo-actuated rack-and-pinion friction system. As the slave's end-effector encounters tissue resistance, the measured force is mirrored at the master interface to deliver tactile resistance feedback to the operator, promoting surgeon-like control and minimizing risks of overshoot or unintended tissue damage. The system architecture is modular and built from cost-effective, off-the-shelf components such as potentiometers, FSRs and servo motors, which are orchestrated via microcontroller-based signal interfaces. The slave robotic arm itself is a four-degree-of-freedom mechanism able to reproduce both spatial and incision commands from the master units, with an LCD display providing real-time depth feedback. The workflow is structured into distinct phases as remote spatial alignment, seamless transition to incision mode, controlled incision with force reflective feedback and real-time display of penetration depth. This dual-master, decoupled approach closely emulates the dexterity and sensory feedback of a human operator, while remaining scalable, modular and suitable for a broad range of minimally invasive procedures.

No. of Pages : 23 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067688 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ACCELERATED ORTHODONTIC TOOTH MOVEMENT THROUGH INTRA ORAL PHOTOBIMODULATION

(51) International classification :A61C0007000000, A61N0005060000, A61C0007100000, A61C0007080000, H04W0088060000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

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Filing Date :NA

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(57) Abstract :

Abstract: A faster method of accelerating orthodontic tooth movement has been described here. The result is a non-invasive, cost-effective device created. This device has been invented to accelerate orthodontic tooth movement by considering the unique application of phototherapy uniformly to obtain more accurate results. The photo biomodulation appliance, Orthoplex, manufactured by Bio lux Research in Canada, has a major disadvantage because it only covers the labial/buccal surface (front portion). Since light is applied only on the front side (outer), results are unpredictable, as bone is also present on the inner side (palatal/lingual). One of the key differences in our photo biomodulation device is that it treats tissues on both the inside and outside (labial, buccal, palatal, and lingual), providing complete phototherapy and leading to better, more reliable results. Unique design with angulated curvature inside to accommodate the upper hard palate and the tongue. A power bank with a power modulator is operated.

No. of Pages : 10 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067711 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : MIXED INTEGER NONLINEAR PROGRAMMING TO CONFIGURE CONNECTIVITY AND CONNECTIVITY HIERARCHIES USING DELAUNAY TRIANGULATIONS

(51) International classification :G06F0017110000, G06T0017200000, G06F0016290000, G06F0030000000, G06F0016840000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

In the invention, a system [118] and method [100] for dynamically designing and constructing connectivity [102] hierarchies [103] at scale, across topologies and mediums, while respecting constraints, is proposed and implemented. The method [100] uses a control plane [106], to subdivide the sample [107] space into plurality of independent hierarchies [103] via Delaunay Triangulation, configured with the forwarding [112] plane, that maps routes pairwise by defining a pathspace [113] within each bounded convex polytope [110] to satisfy the defined constraints, in the simplicial [116] space over which Constraint Satisfaction Problem(CSP) [115] is defined. The method [100] is further mapped on to a system [118] with an electronic or computing device, storage and communication unit integrated with external devices visualized over a chosen Geographical Information System(GIS) [105]. This structure is modeled as a Mixed Integer, NonLinear Programming(MINLP) [123] causal problem defined over a set of optimality criteria.

No. of Pages : 43 No. of Claims : 35

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067715 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Smart Guard Door Automation System with Intelligent Lighting Control, Remote Access, Fail-Safe Mechanisms

(51) International classification :H05B0047115000, H05B0047105000, H05B0047110000, H05B0047160000, G05B0019418000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention discloses a Smart Guard Door Automation System with intelligent lighting control, remote access, and fail-safe mechanisms. It utilizes a microcontroller integrated with a reed switch, motion sensor, relay module, LCD display, RTC, and Wi-Fi connectivity to automate lighting based on door activity, human presence, and timer schedules. The system features three operational modes—automatic, manual override, and timer-based control—enhanced by mobile app integration for real-time monitoring and control. A fail-safe mechanism and battery backup ensure uninterrupted operation during sensor or power failures

No. of Pages : 9 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067738 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : RECIPROCATION AMELIORATED MAGNETISM(RAM)ENGINE

(51) International classification :F02D0041000000, F02N0011080000, F02N0019000000, C12N0015113000, F01L0001060000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

The RAM Engine is a system to effect the reciprocating motion of the piston head 08 through the use of electromagnetism. The effect of magnetism imparted by the tappet valve electromagnet winding 09 enables in situ regenerative engine breaking and the production of power in three of four strokes in an internal combustion engine while simultaneously providing a space and cost effective solution to integrate electric and conventional powertrains in one application. In addition to the primary value propositions, auxiliary components of the powertrain are benefited in the way of; selection of a lighter flywheel, allowed by the reduced demand for kinetic energy storage due to power produced in three of four strokes and the ability to start the engine without the need for a starter motor or manual cranking.

No. of Pages : 11 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067747 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : ADAPTIVE DEEPFAKE DETECTION USING VISION-LANGUAGE MODELS, RAG VERIFICATION, AND INTERACTIVE AGENT-GUIDED CAPTCHA SYSTEM

(51) International classification :G06F0021360000, G06V0010820000, G06V0040160000, G06N0003080000, G06V0020400000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A computer-implemented system detects deepfake images using an integrated CAPTCHA mechanism, comprising: an image input module (001) receiving image data; a vision-language model module (002) analyzing visual/semantic features to generate a deepfake likelihood score; a retrieval-augmented generation module (003) retrieving reference information from external sources for cross-verification; an agent module (004) orchestrating analysis tasks and determining whether to classify automatically or initiate user challenges; a CAPTCHA module (005) presenting image-based tasks when confidence is below a threshold and collecting user responses; and a feedback integration module (006) aggregating responses to update model policies. The system uniquely combines multimodal AI analysis (002), contextual verification (003), and adaptive human verification (005) in a closed-loop architecture that improves detection accuracy through continuous learning (006). By dynamically switching between automated and targeted CAPTCHA challenges based on confidence levels (004), the invention provides robust deepfake detection that evolves with emerging manipulation techniques while maintaining usability.

No. of Pages : 22 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067800 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Modular Architecture with a Green Core: 3D Printing from Recycled Thermocol

(51) International classification :B33Y0010000000, B33Y0080000000, B33Y0030000000, B33Y0070000000, B29C0064106000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT Modular Architecture with a Green Core: 3D Printing from Recycled Thermocol The proposed invention, titled "Modular Architecture with a Green Core: 3D Printing from Recycled Thermocol," introduces an innovative, sustainable construction methodology that leverages recycled thermocol waste as the primary material for 3D-printed modular architectural components. The approach addresses the dual challenges of environmental pollution from non-biodegradable thermocol and the demand for affordable, rapid, and eco-friendly building solutions. By transforming discarded thermocol into printable feedstock through specialized processing techniques, this system enables the fabrication of interlocking modular units designed with a "green core" — an integrated central space within each module that facilitates vertical gardening, natural ventilation, and passive cooling. This design significantly enhances energy efficiency and promotes urban greening within architectural structures. The modularity allows for scalability, ease of assembly, and architectural flexibility, enabling diverse configurations for residential, commercial, and public spaces. The process also reduces dependency on conventional, resource-intensive materials like concrete and bricks, substantially lowering the carbon footprint associated with traditional construction. Additionally, the 3D printing method ensures precision, customization, and minimal material wastage.

No. of Pages : 17 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067806 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Probe sonication-based apparatus and method for dissolution testing of oral solid dosage forms

(51) International classification :G01N33/15, B01F31/80,
B01F21/00, A61K9/20
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to :NA
Application Number :NA
Filing Date :NA
(62) Divisional to Application :NA
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(57) Abstract :

ABSTRACT: Probe sonication-based apparatus and method for dissolution testing of oral solid dosage forms The present invention relates to the field of pharmaceutical analysis and more particularly to an apparatus and a method for dissolution testing of oral solid dosage forms using probe sonication. The apparatus comprises a dissolution vessel, a holder configured to secure the dosage form in a fixed position, and a probe sonicator system that generates controlled acoustic cavitation. A control unit regulates sonication in intermittent pulse cycles to balance dissolution efficiency with thermal control. This method drastically reduces testing time compared to conventional techniques. At least 80% of the labelled drug from an immediate-release dosage form is released in not more than 10 minutes, and in not more than 120 minutes for an extended-release dosage form. The drug's chemical stability is maintained throughout the process.

No. of Pages : 28 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067813 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR REMOTE ELECTROCARDIOGRAM MONITORING AND EARLY DETECTION OF CARDIOVASCULAR DISEASES

(51) International classification :A61B0005000000, A61B0005318000, A61B0005316000, G16H0050200000, A61B0005339000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
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(57) Abstract :

Exemplary embodiments of the present disclosure are directed towards a system and method for remote electrocardiogram monitoring and early detection of cardiovascular diseases. The system comprises a portable Tele-ECG device equipped with a plurality of electrodes for capturing cardiac signals, an ECG module for analog signal amplification and filtering, and a microcontroller configured to digitize, process, and transmit ECG data. The processed ECG waveform is locally displayed on a display module and simultaneously transmitted to a cloud server via wireless communication. The cloud server includes an ECG data analysis module that securely stores the data and performs diagnostic analysis using machine learning algorithms such as support vector machines and neural networks. A computing device accesses the data through an ECG data access module, providing real-time visualization and alert notifications to users and healthcare professionals. The system enables continuous cardiac monitoring and supports early diagnosis in clinical, home-based, and underserved environments. Fig. 1

No. of Pages : 40 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067844 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SYSTEM FOR DYNAMIC MONITORING OF ANGULAR DISPLACEMENT OF A BIOLOGICAL JOINT

(51) International classification :A61B0005000000, A61B0005389000, H04N0023510000, A61B0005110000, A61B0005021000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Disclosed herein is a system (1000) for dynamic monitoring of angular displacement of a biological joint comprising a wearable monitoring device (100) for measuring angular displacement of the biological joint in real time; a flexion-responsive sensing unit (110) configured to generate an analog signal based on biological joint movement in real time; a microcontroller (130) operatively coupled to the flexion-responsive sensing unit for processing and transmitting the analog signal; a display (150) to indicate the connectivity status of the wearable monitoring device (100) in real time; a rechargeable battery (170) to regulate voltage supplied to the flexion-responsive sensing unit (110) and microcontroller (130); a housing (190); a camera (300) configured to capture the image data of angular displacement of the biological joint in real time; a monitoring application (500) configured to assist in evaluation of the angular displacement of the biological joint; and a data centre (700).

No. of Pages : 30 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067859 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SINGLE-SOURCE SEVEN-LEVEL INVERTER SYSTEM AND METHOD OF GENERATION THEREOF

(51) International classification :H02M7/483
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT A SINGLE-SOURCE SEVEN-LEVEL INVERTER SYSTEM AND METHOD OF GENERATION THEREOF The present disclosure relates to a single-source seven-level inverter system (100) and method (200) of generation thereof. The system (100) comprises a DC voltage source (10), an H-bridge circuit (20) with switches (S1–S4), and an LC resonant network (30) including inductors (L1, L2) and a capacitor (C). An auxiliary switching circuit (40) with switches (S5, S6) enables controlled charging and discharging of the capacitor (C). A pulse width modulation (PWM) generator module (50) governs the switching operations to produce a stepped seven-level AC output across a load (60), with voltage levels of 0, $\pm V_{dc}/3$, $\pm 2V_{dc}/3$, and $\pm V_{dc}$. The proposed system (100) eliminates the need for multiple DC sources and additional switches, offering a compact and efficient solution suitable for power electronics applications. FIG 2

No. of Pages : 31 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067860 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SEVEN-LEVEL DIODE CLAMPED INVERTER SYSTEM AND METHOD OF GENERATION THEREOF

(51) International classification :H02M7/483, H02M7/527,
H02M7/523, H02M1/12

(86) International Application No :NA

Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to :NA

Application Number :NA

Filing Date :NA

(62) Divisional to Application :NA

Number :NA

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(57) Abstract :

ABSTRACT A SEVEN-LEVEL DIODE CLAMPED INVERTER SYSTEM AND METHOD OF GENERATION THEREOF The present disclosure relates to a seven-level diode clamped inverter system (100) and its method (200) for generating a multilevel AC output using reduced components. The system (100) comprises a DC voltage source (10), a first inverter leg (20) with three switches (S1, S2, S3), a second inverter leg (30) with two switches (S4, S5), and a diode (D) clamped to block reverse current flow. An LCL resonant network (40) including inductors (L1, L2) and a capacitor (C) facilitates energy exchange and waveform shaping. A controller (60) governs the switches using quasi-sinusoidal PWM signals. The output is delivered to a load (50) as a seven-level AC waveform comprising 0, $\pm V_{dc}$, $\pm V_{dc}/3$, and $\pm 2V_{dc}/3$. The system (100) achieves improved efficiency and reduced harmonic distortion using minimal switches and a single DC source. FIG 2

No. of Pages : 30 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067861 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A WEARABLE IoMT DEVICE FOR NON-INVASIVE PREDICTION OF RESPIRATORY CONDITIONS

(51) International classification :G06N0003045000, G16H0050200000, G06N0003080000, H04L0067120000, A61B0005080000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT A WEARABLE IoMT DEVICE FOR NON-INVASIVE PREDICTION OF RESPIRATORY CONDITIONS The present invention discloses an AI-assisted wearable IoMT (Internet of Medical Things) device for non-invasive prediction of respiratory conditions, including COVID-19. The device comprises an Arduino Nicla Voice-based edge computing board with an inbuilt microphone, a trained Convolutional Neural Network (CNN) for classifying cough sounds, a power supply module, and a Wi-Fi-enabled communication interface. The device is integrated into a wearable chest band to continuously acquire cough sounds and perform real-time on-board classification into normal, symptomatic, or COVID-related categories. The CNN model is trained using an online cough sound repository and achieves a classification accuracy of 95%. The prediction results are transmitted to healthcare personnel via an IoT cloud platform, enabling early diagnosis and intervention. A corresponding method and modular system architecture for acquisition, pre-processing, classification, and decision support is also disclosed. FIG 2

No. of Pages : 20 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067862 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR ESTIMATION OF COMPLEX REFRACTIVE INDEX SPECTRA FOR CRP BIOMARKER

(51) International classification :B01L0003000000, G01N0033543000, A61M0005145000, G01N0021840000, B82Y0010000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT SYSTEM AND METHOD FOR ESTIMATION OF COMPLEX REFRACTIVE INDEX SPECTRA FOR CRP BIOMARKER The invention discloses a method and device for detecting C-reactive protein (CRP), a biomarker indicative of cardiovascular disease risk, by measuring the complex refractive index (RI) using an optical biosensor. The method involves delivering a CRP antibody solution in phosphate buffer saline (PBS) through a PDMS-fabricated microfluidic chamber, illuminating it with a broadband light source (360–2400 nm), and capturing the transmitted spectra using spectrometers spanning 190–1600 nm. Baseline subtraction is achieved by measuring PBS prior to CRP solution introduction. The system enables analysis of both real and imaginary components of RI. The device includes a microfluidic chip fabricated via soft lithography, an optical transmission setup, spectrometers, and a control system for spectral analysis. An automated syringe pump maintains a precise flow rate of 10 μ L/min. The invention provides a label-free, sensitive approach for CRP detection through complex RI analysis. Fig 1

No. of Pages : 19 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067863 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A FIVE-LEVEL DUAL LOAD INVERTER SYSTEM AND METHOD OF GENERATION THEREOF

(51) International classification :H02M7/483,
H02M7/527
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT A FIVE-LEVEL DUAL LOAD INVERTER SYSTEM AND METHOD OF GENERATION THEREOF The present disclosure relates to a five-level dual load inverter system (100) and method (200) of generation thereof. The system comprises a DC voltage source (10), a capacitor (20), and an inductor (30) forming an LC network. A switching unit (40) includes five switches (S1–S5) and a diode (D), wherein a first leg (41) comprises switches S1, S2, and S3, and a second leg (42) comprises switches S4 and S5. A PWM control module (50) operates the switches using quasi-sinusoidal signals to produce a five-level AC output. The output is delivered equally to a first load (60) and a second load (70), both modeled as resistive loads. The system achieves level generation with minimal components, improved output symmetry, and balanced load operation, suitable for compact power conversion applications. FIG 2

No. of Pages : 32 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067869 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : EGG SPECIES CLASSIFICATION AND CRACK DETECTION SYSTEM AND METHOD THEREOF

(51) International classification :G06F0003010000, G06T0007000000, H04L0065401000, A01D0041127000, G06F0021320000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

Disclosed herein is an egg species classification and crack detection system (100) that comprises an image capturing unit (102) configured to capture images of poultry eggs, a processing unit (104) operatively connected to the image capturing unit (102), the processing unit (104) configured to receive the captured images, the processing unit (104) comprising: an image pre-processing module (106), a species classification module (108), a crack detection module (110), a data storage unit (112) operatively connected to the processing unit (104), the data storage unit (112) configured to store the species classification results and crack detection results, a communication network (114) operatively connected to the processing unit (104), a user device (116) operatively connected to the processing unit (104) via the communication network (114), the user device (116) configured to facilitate interaction with the system (100), a user interface (118) operatively embedded within the user device (116).

No. of Pages : 30 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541068086 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : An Intelligent Hybrid Deep Learning-Based Anomaly Detection System for Real-Time Network Security Monitoring

(51) International classification :H04L0009400000, G06N0003080000, G06N0003045000, H04W0012122000, G06N0003044000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to an intelligent hybrid deep learning-based anomaly detection system for real-time network security monitoring. The system integrates CNN, LSTM, and autoencoder models to extract spatial, temporal, and reconstruction-based features from network traffic. It detects both known and unknown threats with high accuracy and minimal false alerts. A fusion module combines outputs from each model to make a final threat decision, and an alert mechanism enables immediate response. The invention offers a scalable, adaptable, and real-time solution for network threat detection and prevention

No. of Pages : 9 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067881 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : BATTERY CAPACITY MEASUREMENT SYSTEM AND METHOD THEREOF

(51) International classification :G01R31/385, G01R31/387, G01R31/392, G01R31/382, G01R31/367
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

Disclosed herein is a battery capacity measurement system (100) comprising a user device (102) initiating a lithium-ion cell discharge request. An input unit (104). A plurality of sensors (106) with a voltage sensor (108), a current sensor (110), a temperature sensor (112), a battery health status sensor (114), a discharge timer sensor (116). A microcontroller (118) for processing sensor data and comprises a signal generation module (120), a data acquisition module (122), a discharge control module (124), a data logging module (126), a cut-off trigger module (128), a battery capacity computation module (130), a communication network (132). A user interface (134), a display unit (136), a transistor unit (138), an operational amplifier unit (140), a power supply unit (142) with a lithium-ion battery (144), a universal serial bus interface (146), a voltage regulator circuit (148), a voltage cut-off threshold controller (150), a printed circuit board layout (152) are provided.

No. of Pages : 44 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067892 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Polyherbal gel for treatment of Diabetic Neuropathy

(51) International classification :A61K0009127000, A61K0009000000, A61P0003100000, A61P0025000000, A61K0009510000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Abstract The present study was undertaken with the objective of developing a polyherbal gel formulation incorporating ethosomal drug delivery systems for the effective treatment of diabetic neuropathy—a chronic and debilitating complication associated with long-standing diabetes mellitus. The focus was specifically on optimizing the method of ethosome preparation and evaluating their percutaneous permeation characteristics through in vitro models. Ethosomes, which are soft, malleable vesicles composed primarily of phospholipids, ethanol, and water, offer significant advantages in transdermal drug delivery due to their enhanced skin penetration ability and high entrapment efficiency. In this formulation, various natural plant extracts known for their neuroprotective, anti-inflammatory, and antioxidant properties were selected and incorporated into ethosomal vesicles. The ethosomes were prepared using the cold method, with varying concentrations of ethanol and phospholipids to study their impact on critical parameters such as particle size, vesicle morphology, zeta potential, and entrapment efficiency. The optimization process revealed that ethanol concentration significantly influenced vesicle deformability and penetration capability, while phospholipid content was directly proportional to drug encapsulation efficiency. This research highlights the importance of formulation parameters in ethosomal system design and their promising role in enhancing the delivery of polyherbal extracts for managing diabetic neuropathy. Future studies involving ex vivo and in vivo evaluations are recommended to validate therapeutic outcomes and safety profiles.

No. of Pages : 12 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067893 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Efficacy of Polyherbal Formulation on Hepatocellular Carcinoma in Wistar Rats

(51) International classification :A61K0036590000, A61K0036906600, A61K0036190000, A61K0036470000, A61P0035000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Efficacy of Polyherbal Formulation on Hepatocellular Carcinoma in Wistar Rats Abstract Hepatocellular carcinoma (HCC), the most common primary malignancy of the liver, is a major global health concern due to its high incidence, limited treatment options, and poor prognosis. This study investigates the therapeutic efficacy of a polyherbal formulation comprising Phyllanthus niruri, Andrographis paniculata, Curcuma longa, Tinospora cordifolia, and Boerhavia diffusa in Wistar rats with chemically induced HCC. Using diethylnitrosamine (DEN) and 2-acetylaminofluorene (2-AAF) as carcinogens, HCC was successfully established, and the polyherbal treatment was administered at varying doses. Biochemical, histopathological, oxidative stress, and gross morphological assessments were performed. The results demonstrated significant hepatoprotective and anticancer effects of the formulation, especially at higher doses, comparable to the standard drug Silymarin. This research highlights the potential of polyherbal therapy as a safe and effective adjunct in liver cancer management.

No. of Pages : 11 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067895 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A BIOGAS DIGESTER AND AN AGITATOR SYSTEM FOR THE SAME

(51) International classification :C12M0001107000, C12M0001000000, C12M0001060000, A47L0009040000, A61B0017000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present disclosure relates to a biogas digester (100) and an agitator system (200) for the same. The biogas digester (100) includes a slurry chamber (115). A gasholder (135) is adapted to float on slurry (S) within the slurry chamber (115). An agitator system (200) is adapted to stir the slurry (S) and includes an agitator (110) which extends through the gasholder (135) into the slurry chamber (115). A guiding rod (105) is fixed to a bottom of the slurry chamber (115). The agitator (110) is rotatably coupled to the guiding rod (105). The biogas digester (200) and the agitator system (200) disclosed herein ensure that the slurry (S) is stirred easily through manual means. Therefore, clogging of the slurry (S) and formation of scum in the slurry chamber (115) can be avoided. <>

No. of Pages : 22 No. of Claims : 11

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067897 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AUTOMATED PNEUMONIA DIAGNOSIS SYSTEM AND METHOD THEREOF

(51) International classification :G06T0007000000, A61B0005000000, A61B0006000000, G16H0050200000, G06N0003080000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Disclosed herein is an automated pneumonia diagnosis system (100) comprising a user device (102) configured for initiating a chest X-ray image acquisition request and receiving a diagnostic report, an input unit (104) for entering subject-specific data, and an image capturing unit (106) for capturing chest radiographic images. A plurality of sensors (108) including an image quality sensor (110), temperature sensor (112), proximity sensor (114), and patient movement sensor (116) assist in optimizing image capture. A microcontroller (118) processes the images using a pre-processing module (120), feature extraction module (122), transfer learning module (124), classification module (126), fusion module (128), threshold analysis module (130), and inference logging module (132). A user interface (134) and display unit (136) facilitate control and visualization. A memory unit (138) stores data, while an alert generation unit (140) issues notifications, and a communication network (142) enables remote data transmission and model updates.

No. of Pages : 34 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067899 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : INTELLIGENT AUTHENTICATOR APPLICATION FEATURING CONTEXT-AWARE OTPS BASED ON SESSION AND DYNAMIC THREAT RESPONSE

(51) International classification :H04L0009400000, G06Q0020400000, G06F0021310000, G06Q0020320000, H04L0009320000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :
The invention provides an intelligent OTP authenticator application featuring context-aware one-time passwords (CAPS-OTPs) that dynamically integrate session metadata and adapt to real-time threat conditions. Each OTP is prefixed with a session-type indicator (e.g., for login, transaction, delivery, or verification), enhancing clarity and reducing user error. Using cryptographic methods, the system binds the OTP to the session ID, TLS fingerprint, and context parameters. A dynamic threat response engine evaluates anomalies such as VPN usage, geolocation mismatches, and transaction value outliers. Based on the risk level, fallback verification is invoked using in-app push approval, call bot, or security questions. The CAPS-OTP is delivered via a mobile app or fallback channels like SMS. A post-session feedback mechanism helps refine trust scores for future sessions. Users can configure security preferences within the app, and integration with third-party platforms is enabled via an SDK. This invention enhances authentication accuracy, user awareness, and fraud resistance. FIG.1

No. of Pages : 29 No. of Claims : 12

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067915 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : HYPERSPECTRAL DIMENSIONALITY REDUCTION SYSTEM USING SIGMOID-EMBEDDED PCA WITH GAUSSIAN SPATIAL FILTERING AND METHOD THEREOF

(51) International classification :G06F0018213500, G01J0003280000, G06V0020130000, G06V0010440000, G06V0010770000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Disclosed herein is a hyperspectral dimensionality reduction system using sigmoid-embedded pca with gaussian spatial filtering and method thereof (100) that comprises acquiring a hyperspectral image in which each pixel comprises a vector of reflectance intensities, normalizing each spectral bands by transforming the acquired image to achieve zero mean and unit variance, applying the sigmoid activation function to each normalized spectral bands to map the acquired image into the (0, 1) interval, performing principal component analysis to reduce the number of spectral bands, applying spatial smoothing to suppress high-frequency noise and enhance local spatial structures, fusing spectral and spatially filtered principal component values per pixel to form a unified spectral-spatial feature vector, classifying the feature vector to assign discrete class labels to individual pixels. The method (100) may include the sigmoid function to reduce the effect of noisy values. The method (100) may include the principal component analysis to compress the plurality of spectral bands into fewer bands.

No. of Pages : 22 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067921 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : METHOD FOR DIFFERENTIATING AMNIOTIC MEMBRANE EPITHELIAL CELLS INTO CHONDROCYTES USING CHONDROCYTE-DERIVED EXOSOMAL-CARGO FOR CARTILAGE REGENERATION

(51) International classification :A61K0035500000, A61L0027380000, A61L0027360000, C12N0005071000, C12N0005077000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Disclosed herein is a method (100) for differentiating amniotic membrane epithelial cells into chondrocytes using chondrocyte-derived exosomal-cargo for cartilage regeneration, that comprises collecting human amniotic membrane from umbilical cord tissue, subjecting the human amniotic membrane to enzymatic digestion to facilitate the release of human amniotic membrane epithelial cells (hAMEs), filtering the digested suspension and centrifuging the filtrate to obtain a cell pellet, seeding the collected hAMEs into a culture flask containing DMEM-HG supplemented with 10% FBS/serum equivalent and 1% antibiotic-antimycotic solution, and culturing the cells in CO2 incubator until achieving 60–70% confluency, passaging the proliferated epithelial cells, seeding the passaged amniotic membrane epithelial cells into a culture flask and incubating with DMEM-HG supplemented with 10% FBS/serum equivalent and 1% antibiotic-antimycotic solution in CO2 incubator, supplementing the culture medium with chondrocyte-derived exosomal-cargo and incubating under controlled conditions, monitoring differentiation progress and expression of chondrogenic markers, and harvesting the differentiated chondrocytes.

No. of Pages : 31 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541068109 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : REAL-TIME GAZE DETECTION SYSTEM ON A FILM AND/OR VIDEO CONTENT AND METHOD THEREOF

(51) International classification :G06F0003010000, G06V0040160000, G06V0010250000, H04N0021430000, A61B0003113000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

A real-time gaze detection system (100) for analyzing viewer attention on a film and/or video content (106) using a webcam (102) is disclosed. The system (100) includes a gaze detection module (108) that captures facial landmarks (104) using computer vision algorithms to compute gaze vectors (110), and a calibration interface (112) that uses a multi-point grid to map raw gaze data to screen coordinates via a transformation model. A video synchronization engine (116) aligns film playback with gaze data logging, capturing frame-accurate gaze positions with timestamps. An area of interest (AOI) management module (120) defines static or dynamic AOIs (122). A heatmap generation module (124) uses kernel density estimation to visualize attention over time. An analytics engine (128) calculates eye movement metrics (130), including fixation durations, saccade lengths, and gaze transitions. Finally, a reporting module (132) exports gaze data and visual overlays in formats suitable for further analysis, visualization, or integration with third-party statistical tools.

No. of Pages : 21 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067944 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : MODULAR ELECTRICAL SOCKET

(51) International classification :H01R13/73, H01R13/639, H01R24/76, H01R13/10, H01R4/28
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses a modular two-pin electrical socket featuring a push-fit connection mechanism designed to simplify and enhance the safety of wire installation and removal. Conventional sockets use screw-based terminals that demand manual tightening, leading to time-consuming installations and potentially loose connections. This invention replaces them with a tool-free, push-button clamping system that ensures secure electrical contact and mechanical stability. The socket assembly includes a durable push-fit body, back ring for external grip, sealing surface for claw placement, and a release sleeve that controls locking claws. These claws securely grip the wire's outer insulation without causing damage, ensuring firm contact and improved safety. Its modular design facilitates efficient manufacturing, easy servicing, and compatibility with standard wall fixtures and electrical systems. This two-pin socket is ideally suited for low-power appliances and settings requiring quick, safe, and repeatable electrical connections.

No. of Pages : 11 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541068107 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : GRAPH DATA SCIENCE-POWERED FRAMEWORK FOR COMMUNICATION TRANSFORMATION

(51) International classification :G09B0021000000, G06V0040200000, G06N0003080000, G06F0003010000, G06F0040580000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

A significant portion of the global population consists of individuals who are deaf and rely on sign language for communication. However, the absence of interpreters in many social and professional settings hampers effective interaction. This research proposes a robust, real-time sign language conversion model that integrates sign language recognition (SLR) with sign language translation (SLT), treating sign language as a fully autonomous language. The model utilizes a graph neural network (GNN) to process video frames, identifying and classifying gestures with an achieved accuracy of 93.75%. The recognized gestures are further processed through grammatical categorization using knowledge relegation, and matched with a graph database to construct meaningful sentences. The final output is selected based on the highest probability score. This approach represents a novel, end-to-end framework for sign language interpretation and translation, with the potential to significantly improve communication accessibility for individuals with hearing impairments.

No. of Pages : 13 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541068105 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : E-CHALK HOLDER USING IOT AND DEEP LEARNING TECHNIQUE

(51) International classification :G06N0003045000, G06N0003080000, G01C0021160000, G06F0040143000, G06V0030226000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Traditional classrooms, especially in under-resourced areas, often rely on chalkboards, making digital preservation of handwritten notes difficult. To address this, we developed a low-cost e-chalk holder embedded with an inertial measurement unit (IMU), force sensor, and ESP microcontroller. As teachers write, the device records motion data onto an SD card, later transferred to a PC and uploaded to a web application. This data is processed into heatmap-like images and analyzed using a lightweight convolutional neural network (CNN) with a MobileNet backbone to recognize characters. Natural Language Processing (NLP) techniques are then applied to construct coherent words and sentences. A Windows-based interface enables editing and exporting the final notes as a PDF. The system achieved 85.71% accuracy with a stroke processing time of 45 milliseconds, outperforming a traditional RNN model that achieved only 77% accuracy, offering an efficient solution for digitizing chalkboard content.

No. of Pages : 11 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068106 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : AUTOMATED CONVEYOR BELT-BASED TRANSPORTATION SYSTEM FOR SAFE AND EFFICIENT DEVOTEE MOVEMENT IN TEMPLE PREMISES

(51) International classification :B65G0017080000, A01G0009240000, G06V0020520000, B65G0043080000, B65G0043020000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses an automated transportation system (100) configured to facilitate the seated, safe, and comfortable movement of devotees within temple premises. The system includes a conveyor belt assembly (110) with a modular conveyor track (300) and a motorized drive mechanism (200) enabling bidirectional movement along predefined routes. Seating arrangements (120) are affixed to the conveyor belt assembly (110), enclosed within a transparent enclosure (130) for protection against external elements. A climate control unit (140) regulates internal temperature and humidity. Safety mechanisms (150), including smoke detectors (151), fire alarms (152), and emergency stop mechanisms (153), ensure operational security. Pause zones (170) positioned along the route are associated with sensor arrays (400) for detecting conveyor position, crowd density and environmental parameters. An administrative control system (160), incorporating a processor (500) and memory (600) autonomously manages halting and restarting at pause zones based on dynamic data enhancing transit efficiency and religious engagement.

No. of Pages : 23 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541067976 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SELF-HEALING ANTI-CORROSIVE COATING AND METHOD USING MICROENCAPSULATED NANOMATERIALS

(51) International classification :C09D0005080000, C09D0163000000, C09D0007610000, C09D0175040000, C23C0028000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(62) Divisional to Application Number :NA
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(57) Abstract :

The present disclosure provides a self-healing anti-corrosive coating composition designed for metallic substrates. The coating comprises a polymeric binder matrix forming a continuous protective layer, within which a plurality of microcapsules are embedded. Each microcapsule encapsulates a healing agent capable of polymerization or chemical reaction upon release. Additionally, nanomaterials are integrated within or associated with the microcapsules to synergistically enhance both self-healing reactivity and corrosion protection. When the coating sustains mechanical damage, the microcapsules rupture, releasing the healing agent, which interacts with the nanomaterials to form a corrosion-resistant sealing layer over the damaged area of the metallic substrate. This self-healing mechanism restores the integrity of the coating, prolongs service life, and reduces maintenance costs associated with corrosion protection. The system offers a novel, intelligent approach to preserving the structural and aesthetic performance of metals in harsh environments, supporting sustainability and operational safety in diverse industrial applications.

No. of Pages : 21 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067987 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM FOR FARM MANAGEMENT

(51) International classification :G06Q0050020000, G06N0020000000, G06N0003080000, G06F0018241300, G06V0010764000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present disclosure discloses a system (102) and a method (200) for generating recommendations associated with farm management. The system (102) includes an image acquisition unit (104) to capture a set of images related to crops and their surrounding environment. A set of sensors (106) acquires a group of parameters associated with soil and the surrounding environment. A control unit (108) is communicatively connected to the image acquisition unit (104) and the set of sensors (106). The control unit (108) includes a processor (108-1) connected to a memory (110). The memory (110) stores instructions that, when executed by the processor (108-1), receive input data, preprocess the data to extract a set of features, analyze features using a Machine Learning (ML) model (108-2), compare the analyzed features with predefined threshold metrics, and generate farm management recommendations based on comparison. The system (102) supports precision agriculture through data-driven analysis and automated decision support.

No. of Pages : 30 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541067988 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR RECOMMENDING CUSTOMIZED FOOTWEAR

(51) International classification :G06N0020000000, G16H0050300000, A63F0013790000, G06N0003080000, H04N0021466000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present disclosure discloses a system (102) and a method (200) for generating recommendations associated with customized footwear is disclosed. The system (102) comprises a footrest unit (104) to enable a user to place a foot, a set of sensors (106) positioned within proximity of the footrest unit (104) to measure foot-related parameters associated with the user, and an image recognizing unit (108) to detect a set of user parameters. A processor (110) is connected to the set of sensors (106) and the image recognizing unit (108). The processor (110) comprises a memory (112) storing a set of instructions. Upon execution, the instructions cause the system (102) to receive data associated with the measured foot-related parameters and detected user parameters, analyze the data using an Artificial Intelligence (AI) model (110-1) to extract features, compare the features with predefined patterns, and generate recommendations associated with the customized footwear.

No. of Pages : 30 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541068081 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : "PATHGRAH – A UNIVERSAL SIMULATING DEVICE FOR MEASURING DISTANCE FARE AND TIME FARE FOR AN HIRED VEHICLE"

(51) International classification :G07B0013000000, G01C0022020000, D01G0007020000, H01M0010052500, G05B0019050000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

A method and system for calculating a fare of a hired vehicle using an electronic device (100) is provided. The method includes calculating the circumference of the wheel by a prelude. By further acceleration, the method determines fare for the distance covered. The method also includes determining a waiting time and thereby calculating the waiting fare or simply time fare. Furthermore, the method includes calculating a fare of a trip based on the distance of travel and the waiting time. The system for calculating a fare of a hired vehicle includes a Human Machine Interface (105) configured to perform action and display information to the user. The system includes a switched mode power supply (110) to supply power to all components of the device in a consistent and stable manner. The system for measuring the distance covered includes a laser sensor (115), a proximity sensor (120) to detect wheel motion status or stop-and-go conditions determining a waiting time during the trip. Further, to process signals received from the laser sensor and proximity sensor and calculate fare according to unit fare based on distance and time, programmable logic control (125a & 125b) for calculating the fare based on the distance of travel and the waiting time. The device is powered by a 24 volts direct current lithium ion rechargeable battery (135). The information or the data is displayed in the human machine interface (105) and can be transferred to a centralised server (140) through the Ethernet enabled PLC (125a and 125b). The data via the server is transferred to the cloud storage (145) and can be accessed by the end user (150) using login credentials.

No. of Pages : 20 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541068083 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : System and method for integrating IOT devices with an instrumentation system using advanced communication protocols

(51) International classification :H04L0009400000, H04L0067120000, H04L0069080000, H04L0009060000, H04L0069180000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
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(57) Abstract :

ABSTRACT OF THE INVENTION::: The present invention discloses a system and method for integrating Internet of Things (IoT) devices with an instrumentation system using advanced communication protocols. The system comprises a plurality of IoT devices equipped with sensors and actuators, a protocol translation module for converting data into a standardized format, a data aggregation unit for processing and storing data, a control interface for real-time monitoring and control, and a security module for ensuring data integrity and confidentiality. The method involves device discovery, protocol selection, encrypted data transmission, data processing, and real-time control. The system supports advanced communication protocols such as MQTT, CoAP, and OPC UA, enabling seamless interoperability, scalability, and low-latency performance. The invention employs AES-256 encryption and mutual TLS authentication to secure data transmission. The data aggregation unit utilizes a time-series database for efficient storage and real-time analytics. The system is designed to handle large numbers of IoT devices, making it suitable for applications in industrial automation, smart cities, healthcare, and agriculture. The modular architecture ensures flexibility and fault tolerance, while optimization techniques such as data compression and load balancing enhance performance. The invention provides a robust solution for integrating heterogeneous IoT devices with instrumentation systems, addressing challenges related to protocol incompatibility, security, and scalability.

No. of Pages : 16 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541068099 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : IoT-Integrated Drainage Network for Early Warning and Prevention of Sewer Overflows

(51) International classification :G06Q0050260000, G06Q0010200000, G06N0020000000, H04L0009400000, H04W0004380000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

"IoT-Integrated Drainage Network for Early Warning and Prevention of Sewer Overflows," presents a comprehensive, smart, and scalable solution to urban sewer management challenges, particularly those exacerbated by rapid urbanization, climate change, and aging infrastructure. This system leverages the Internet of Things (IoT) to monitor real-time parameters across drainage networks, including water levels, flow rates, blockages, toxic gas emissions, and sediment accumulation. A network of interconnected, low-power sensors is strategically deployed within manholes, pipelines, and critical junctions to continuously collect environmental and operational data. This data is transmitted via wireless communication protocols (such as LoRaWAN, NB-IoT, or 5G) to a centralized cloud-based platform equipped with advanced data analytics, AI-driven predictive models, and digital twin simulations. The platform enables early detection of anomalies, potential overflow risks, and structural vulnerabilities within the sewer system. In addition to real-time monitoring, the system supports predictive maintenance scheduling and automated alerts to municipal authorities and maintenance crews, enabling proactive interventions to prevent overflows, environmental contamination, and public health hazards. Furthermore, the system can be integrated with city-wide smart infrastructure and emergency response systems to optimize resource allocation and ensure rapid response during extreme weather events. The proposed invention enhances urban resilience, sustainability, and operational efficiency while reducing maintenance costs and ecological damage associated with sewer overflows. This innovative approach contributes significantly to the modernization of urban sanitation systems and supports the creation of smarter, safer, and more sustainable cities. "

No. of Pages : 17 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541068100 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Self-Healing Wireless Sensor Network architecture with redundant mode Deployment

(51) International classification :H04W0084180000, H04W0052020000, G06F0011200000, H04L0069400000, H04L0067100100
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention discloses a Self-Healing Wireless Sensor Network (WSN) Architecture with Redundant Node Deployment designed to ensure continuous and autonomous network operation in the presence of node or link failures. The system integrates intelligent sensor nodes capable of self-monitoring and distributed fault detection, enabling real-time activation of strategically placed redundant nodes. Upon failure detection, the network reconfigures routes and restores communication paths using energy-efficient, adaptive algorithms. Redundant nodes are maintained in low-power standby states and activated only when required, optimizing energy consumption and extending network lifespan. The architecture supports both static and mobile redundant nodes, enabling dynamic healing in static and dynamic environments. It includes secure, decentralized coordination and wireless reprogramming capabilities, making the system robust, scalable, and self-sustaining. The invention is applicable across a wide range of industries such as environmental monitoring, disaster response, industrial automation, and smart agriculture, where reliability, autonomy, and fault tolerance are essential.

No. of Pages : 22 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541068101 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : ELITE SEEDLING PRODUCTION TECHNOLOGY FOR MACHINE TRANSPLANTING IN RICE

(51) International classification :A01G0022220000, A01G0009240000, A01G0009029000, A01G0031000000, A01G0007040000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention discloses an elite seedling production technology for machine transplanting in rice, designed to produce uniform, vigorous seedlings compatible with mechanized transplanters. The system utilizes modular seedling trays filled with specially formulated growing media enriched with bio-fertilizers and nutrients to ensure optimal root development and uniform growth. Seed priming techniques and precision seeding tools are incorporated to promote synchronized germination and seedling uniformity. The invention employs controlled environment structures like net houses for protection against adverse climatic conditions and integrated pest management practices to reduce chemical input. Precision irrigation and fertigation systems enhance water and nutrient use efficiency while ensuring healthy seedling growth. The seedlings undergo a hardening process prior to transplanting, increasing their adaptability to field conditions. The technology is scalable for smallholder and commercial use, promoting sustainable rice cultivation by improving transplanting efficiency, reducing labor dependency, and enhancing overall productivity, making it a significant advancement in modern rice farming practices.

No. of Pages : 24 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202541068102 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Reconfigurable Smart Antenna system with Beam steering for 5G applications

(51) International classification :H04B0007060000, H04B0007080000, H04B0007041300, H04L0005000000, H01Q0003260000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention discloses a reconfigurable smart antenna system designed for 5G wireless communication networks, enabling dynamic beam steering to optimize signal strength, coverage, and interference management at millimeter-wave frequencies. The system comprises an electronically controlled antenna array with hybrid analog-digital beamforming architecture, which facilitates efficient, scalable, and energy-saving beam control. Advanced algorithms incorporating machine learning enable real-time adaptive beam management based on user location, channel conditions, and environmental changes. The antenna elements utilize advanced materials for high efficiency and are designed for multi-band operation across sub-6 GHz and mm Wave bands. The system supports massive MIMO, multi-user spatial multiplexing, and integrates seamlessly with 5G New Radio standards, improving network capacity, reliability, and latency. Modular design ensures deployment flexibility across small cells and macro base stations, while embedded security features protect against interference and unauthorized access. This invention provides a future-proof, scalable solution to the challenges of 5G wireless communications, enhancing user experience and supporting diverse applications from urban broadband to autonomous vehicles.

No. of Pages : 23 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068112 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A POLYHERBAL HAIR MASK FORMULATION FOR ENHANCED ANTIOXIDANT AND ANTI-DANDRUFF ACTIVITY

(51) International classification :A61Q0005000000, A61K0036280000, A61K0008978900, A61K0036530000, A61K0036480000

(86) International Application No :NA

Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA

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(62) Divisional to Application Number :NA

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(57) Abstract :
ABSTRACT A POLYHERBAL HAIR MASK FORMULATION FOR ENHANCED ANTIOXIDANT AND ANTI-DANDRUFF ACTIVITY The present invention relates to a polyherbal hair mask formulation exhibiting dual therapeutic functions—anti-dandruff and antioxidant activities—using plant-based ingredients. The composition includes powdered extracts of Catunaregam spinosa, Albizia amara, Rosa sinensis, Eclipta alba, Lawsonia inermis, and Ocimum sanctum. These herbal constituents are combined in defined proportions and blended with water to form a topical paste suitable for scalp application. The formulation is optimized using a Box-Behnken Design (BBD) to achieve maximum antifungal and free-radical scavenging efficacy. Evaluation methods such as reducing power assay and zone of inhibition testing confirm its biological activity. The product is pH-balanced, safe for routine use, non-irritating, and environmentally friendly. This invention offers a natural and sustainable alternative to conventional chemical-based hair treatments for dandruff control and scalp revitalization.

No. of Pages : 25 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068113 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Photocatalytic Nanocomposite System for Degradation of Dye Pollutants in Wastewater

(51) International classification :B01J0035390000, C02F0101300000, C02F0001300000, C02F0001720000, C02F0101380000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

The discharge of dye pollutants from textile, printing, and dyeing industries into water bodies poses a significant threat to aquatic ecosystems and human health due to their toxic, carcinogenic, and non-biodegradable nature. Traditional wastewater treatment methods often fall short in effectively eliminating these persistent organic pollutants. This idea presents the development and evaluation of a highly efficient photocatalytic nanocomposite system for the degradation of dye pollutants in wastewater under visible light irradiation. The nanocomposite comprises a synergistic combination of semiconductor photocatalysts such as titanium dioxide (TiO₂), zinc oxide (ZnO), and reduced graphene oxide (rGO), integrated with dopants like transition metals or rare-earth elements to enhance visible light absorption and charge separation efficiency. Characterization techniques including XRD, SEM, TEM, FTIR, UV-Vis spectroscopy, and photoluminescence analysis were employed to determine the structural, morphological, and optical properties of the nanocomposite. The photocatalytic activity was assessed using model dyes such as methylene blue (MB), rhodamine B (RhB), and methyl orange (MO) under simulated solar light. This idea highlights the potential of engineered nanocomposite photocatalysts as a sustainable and effective solution for treating dye-contaminated wastewater, thereby contributing to cleaner water resources and advancing environmental remediation technologies.

No. of Pages : 10 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068115 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Customer-Centric Marketing System Based on the SIVA-E Framework Integrating Ethical, Empathetic, and Eco-Conscious Strategies

(51) International classification :G06F0040300000, G06Q0030020000, G06Q0030020100, G06Q0010063700, G06N0020000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :
The present invention relates to a customer-centric marketing system and method based on the SIVA-E framework, which integrates Ethics, Empathy, and Environmental Sustainability into traditional marketing strategies. The system redefines the conventional SIVA (Solution, Information, Value, Access) model by incorporating modules that enable the design and delivery of sustainable, socially responsible, and emotionally intelligent marketing practices. Using advanced technologies such as artificial intelligence, sentiment analysis, ESG data integration, and real-time feedback mechanisms, the invention facilitates transparent communication, ethical value creation, and inclusive product or service accessibility. This holistic approach empowers organizations to align business objectives with socially conscious consumer expectations, thereby enhancing brand trust, loyalty, and long-term societal impact. The system is adaptable across digital platforms and industries and supports the strategic transformation of marketing functions in alignment with ethical and environmental imperatives.

No. of Pages : 14 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068116 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A UNIFIED TRUST BASED VALUE EXCHANGE SYSTEM FOR VENDORS & CUSTOMERS TO PROMOTE GENUINE BUSINESS AND LOYALTY

(51) International classification :G06Q0020320000, G06Q0020380000, G06Q0030060100, G06Q0020020000, G06Q0020060000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT A UNIFIED TRUST BASED VALUE EXCHANGE SYSTEM FOR VENDORS & CUSTOMERS TO PROMOTE GENUINE BUSINESS AND LOYALTY A unified system to promote a trust-based transaction and Method thereof The present invention relates to a system and method which provides reverse currency system which can be easily integrated as financial tech payment mobile or web application or a payment gateway which can be included into the current payment methods seamlessly, offering a fundamentally shifts the dynamic of commerce, moving beyond transactional value to establish a deeply embedded trust network.

No. of Pages : 28 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068117 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : AI-ENHANCED COGNITIVE COMPUTING SYSTEM FOR AUTONOMOUS DECISION-MAKING IN COMPLEX ENVIRONMENTS

(51) International classification :G06N0003045000, G06N0005045000, G05D0001000000, G06N0020000000, G06N0003048000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

As artificial intelligence (AI) becomes more embedded in daily life, there is a critical need for autonomous systems that not only execute tasks efficiently but also reflect human values and intentions. Agentic AI refers to AI systems with decision-making autonomy that remain transparent, explainable, and accountable. This research introduces a novel framework for developing Agentic AI by embedding ethical principles, human values, and social norms into its decision-making processes. Drawing from cognitive architectures, value alignment strategies, and human-centered design, the proposed approach fosters the creation of responsible and effective autonomous systems. A case study involving a humanoid robot assisting elderly individuals illustrates the framework's practical application. The robot demonstrated decision-making aligned with core human values, such as empathy and respect for personal autonomy, while enhancing the overall well-being of its users. This research advances the development of trustworthy Agentic AI and has broad potential across domains like healthcare, education, and intelligent transportation systems.

No. of Pages : 18 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068118 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : METHOD AND PROCESS FOR DIFFERENTIATING HUMAN AMNIOTIC MEMBRANE EPITHELIAL CELLS INTO CHONDROCYTES

(51) International classification :A61K0035500000, A61L0027380000, C12N0005077000, A61P0017020000, A61L0027360000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

Disclosed herein is a method for differentiating human amniotic membrane epithelial cells into chondrocytes (100), comprising isolating the human amniotic membrane from a donor source by separating it from the chorionic membrane using sterile techniques, enzymatically digesting the membrane using trypsin-ethylenediaminetetraacetic acid to release human amniotic membrane epithelial cells, and filtering to remove undigested tissue. The isolated human amniotic membrane epithelial cells are cultured in a nutrient medium containing fetal bovine serum, antibiotic-antimycotic solution, and high-glucose Dulbecco's modified eagle's medium. After proliferation and passaging, the cultured human amniotic membrane epithelial cells are exposed to chondrogenic induction factors to initiate differentiation. The differentiated cells are incubated for a defined period to promote chondrocyte formation. Chondrocyte-specific marker expression is analysed to confirm differentiation, and the resulting chondrocytes are harvested for regenerative cartilage therapy applications. This method enables the generation of functional chondrocytes from an ethically accessible and non-invasive human cell source.

No. of Pages : 31 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068119 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SYSTEM FOR REAL-TIME DETECTION AND CLASSIFICATION OF BITTER GOURD LEAF DISEASES

(51) International classification :G06N0003080000, G06N0003045000, G16H0030400000, G06V0010820000, A61B0005000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
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(57) Abstract :

Disclosed herein is an integrated agricultural imaging system (100) for automated bitter gourd leaf disease detection with enhanced diagnostic performance, comprising a user interface (102) integrated into user device (104) configured to obtain leaf images, a communication network (106) configured to transmit data between system components, a processing unit (108) connected to the user interface (102) via the communication network (106) configured to process leaf imaging data using AI-driven optimization techniques, further comprising data input module (110), data processing module (112), feature extraction module (116), classification module (118), disease prediction module (120), and alert generation module (122) configured to generate diagnostic predictions using convolutional neural networks with depthwise separable convolutions for four-class disease identification comprising healthy, bacterial wilt, powdery mildew, and mosaic virus conditions. The system (100) includes a database (126) operatively connected to the processing unit (108) configured to store processed data and AI models.

No. of Pages : 29 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068121 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : PHTHALOCYANINE FUNCTIONALIZED MULTIWALLED CARBON NANOTUBES FOR THE ELECTROCHEMICAL SENSING OF BISPHENOL-A

(51) International classification :B82Y0030000000, G01N0027300000, G01N0027327000, H01G0011860000, H01G0011360000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
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(57) Abstract :

Disclosed herein is a method (100) for fabricating a functionalized multiwalled carbon nanotube electrode for electrochemical sensing of Bisphenol-A, the method (100) comprising preparing an electrocatalyst nanocomposite comprising tetra amino cobalt phthalocyanine functionalized with multi-walled carbon nanotubes through diazotisation reaction, under controlled conditions, preparing an electrocatalyst ink suitable for electrode surface modification, preparing an electrode substrate for use in electrochemical sensing, and depositing the prepared electrocatalyst ink onto the prepared electrode substrate and allowing it to dry under controlled conditions to obtain the phthalocyanine functionalized multiwalled carbon nanotube electrode for electrochemical sensing of Bisphenol-A.

No. of Pages : 27 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068123 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : ALLANTOIN-LOADED ETHOSOMAL HYDROGEL FOR ENHANCED TRANSDERMAL DRUG DELIVERY AND WOUND HEALING

(51) International classification :A61K0009000000, A61K0009060000, A61K0009700000, A61K0047320000, A61K0047340000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT ALLANTOIN-LOADED ETHOSOMAL HYDROGEL FOR ENHANCED TRANSDERMAL DRUG DELIVERY AND WOUND HEALING The present invention relates to a transdermal drug delivery system comprising an allantoin-loaded ethosomal hydrogel (AEH) designed to enhance skin permeability, prolong drug release, and improve wound healing efficacy. The ethosomes are vesicular carriers composed of ethanol, soya lecithin, and water, optimized via Central Composite Design to achieve high entrapment efficiency and stable zeta potential. These ethosomes encapsulate allantoin and are incorporated into a carbomer 940-based hydrogel matrix. The optimized hydrogel formulation exhibits desirable physicochemical properties, including suitable pH, spreadability, and viscosity, while ensuring sustained drug release over 14 hours following zero-order kinetics. The formulation demonstrates excellent stability under both accelerated and refrigerated conditions for at least six months. This invention provides a novel, effective, and patient-friendly topical delivery platform for allantoin in wound healing and dermatological applications.

No. of Pages : 24 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068126 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Framework for Prediction Analysis Using Data Slicing Driven Approach in Recurrent Patterns Using Machine Learning Model Validation

(51) International classification :G06N0020000000, G16B0040200000, G06N0005020000, G06Q0030020100, G06Q0010040000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses a novel framework for prediction analysis that utilizes a data slicing-driven approach to enhance the identification of recurrent patterns within datasets and improve the accuracy of machine learning model validation. The system dynamically segments input data based on time intervals, events, or value thresholds, enabling granular analysis and targeted pattern detection using statistical and machine learning techniques. These annotated patterns are used to train predictive models, which are then validated through robust techniques such as cross-validation, residual analysis, and performance metrics. The invention further incorporates a feedback optimization loop that refines slicing strategies and model parameters iteratively, resulting in significant improvement in predictive performance. The framework is adaptable to both real-time and batch processing environments and demonstrates domain-independent applicability in areas such as healthcare, finance, IoT, and retail. Experimental results show up to 25% improvement in prediction accuracy, reduced error margins, and enhanced interpretability, making the system a scalable, intelligent, and efficient solution for next-generation predictive analytics.

No. of Pages : 10 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068127 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : AN ARTIFICIAL NEURAL NETWORK-BASED MODELLING SYSTEM FOR ENHANCING SENSOR TECHNOLOGY WITH HYBRID NANOMATERIALS

(51) International classification :G06N0003080000, G06N0003045000, G06N0003020000, G06N0003048000, G05B0017020000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Disclosed herein is an artificial neural network-based modelling system for enhancing sensor technology with hybrid nanomaterials (100) comprises a sensor module (102) comprising a sensing element fabricated from a hybrid nanomaterial composition. The system also includes a mathematical modelling component (104) configured to represent a swirling fluid flow over a stretchable cylindrical surface with torsional motion along a cylindrical coordinate system. The system also includes a signal conditioning module (106) configured to digitize and preprocess the electrical resistance variations of the hybrid nanomaterial surface due to analyte interactions. The system also includes an artificial neural network (ANN) engine (108) configured to receive real-time sensor data, model nonlinear and time-dependent relationships in the output, and predict target parameters. The system also includes a feedback control unit (110) configured to initiate real-time recalibration of the ANN model in response to environmental drift, sensor aging, or anomalous signal deviation.

No. of Pages : 29 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068128 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Modular Kits for Wire-Arc Additive Manufacturing (WAAM) Machines with Digital-Twin Technology

(51) International classification :B23K0009040000, B33Y0030000000, B33Y0010000000, B33Y0080000000, B29C0064118000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT OF THE INVENTION Title: Modular Kits for Wire-Arc Additive Manufacturing (WAAM) Machines with Digital-Twin Technology The invention relates to a modular and cost-effective WAAM system that enables young innovators and MSMEs to fabricate complex 3D-printed components. The system incorporates Digital-Twin Technology for enhanced precision, real-time process control, and predictive maintenance. By offering user-defined software compatibility and standardized parts, the invention fosters innovation, entrepreneurship, and widespread adoption of WAAM technology.

No. of Pages : 18 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068131 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : SMART AUTONOMOUS ORNITHOPTER FOR SURVEILLANCE & ENVIRONMENTAL MONITORING

(51) International classification :B64C0033020000, B64U0050190000, H02N0002180000, B64C0039020000, H02J0007350000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

The present invention relates to a smart autonomous ornithopter system designed for aerial surveillance and environmental monitoring applications. The system comprises a lightweight, durable bio-mimetic airframe integrated with flapping wings configured with flexible photovoltaic cell sheets for in-flight solar energy harvesting, thereby extending flight endurance and reducing reliance on conventional power sources. This flapping-wing aerial vehicle replicates natural bird flight to achieve ultra-quiet, energy-efficient operation in complex or sensitive environments. A hybrid power system combines the wing-mounted solar cells, piezoelectric vibration energy harvesters, and rechargeable battery units, managed by a real-time load balancing unit. The ornithopter further includes a dual-stage micromechanical actuation mechanism for precise wing flapping and an intelligent tail mechanism for directional control and stability. Autonomous flight is facilitated by a reinforcement learning-based control unit and onboard environmental sensors with neuromorphic edge computing for real-time monitoring and anomaly detection. The invention provides a compact, intelligent, and adaptable aerial platform for continuous data collection and discreet surveillance in varied field conditions.

No. of Pages : 7 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068133 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : HYPERSPECTRAL DIMENSIONALITY REDUCTION SYSTEM USING NONLINEAR SPECTRAL SPATIAL EMBEDDING AND METHOD THEREOF

(51) International classification :G01J0003280000, A61B0005000000, G01J0003020000, G01N0021250000, G01J0003180000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

Disclosed herein is a hyperspectral dimensionality reduction system using nonlinear spectral spatial embedding and method thereof (100) that comprises a hyperspectral imaging unit (102) configured to record spectral and spatial information over a continuous spectral range of wavelengths from a target surface or scene wherein the hyperspectral imaging unit (102) comprises, an optics unit (104), a dispersive element unit (106), a spectral data encoder module (108), a sensor array unit (110), an electronic processing unit (112) wherein the electronic processing unit (112) comprises, a spectral pre-processing module (114), a spectral compression module (116), a clustering and segmentation module (118) configured to assign spectral feature vectors to cluster groups to identify spectrally similar regions within the image, a spatial filtering module (120)) configured to smooth the clustered image output, a feature fusion module (122), a feature compaction module (124), a visualization unit (126), a storage and retrieval unit (128).

No. of Pages : 35 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068134 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : MANUAL GRASS WEEDER MULCHER APPARATUS FOR SUSTAINABLE AGRICULTURE

(51) International classification :A61B0017000000, A01G0013020000, A01D0101000000, A01B0039180000, A01D0034000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Disclosed herein is a manual grass weeder mulcher apparatus (100) for sustainable agriculture with enhanced weeding performance, that comprises a body (102) having a proximal end and a distal end, a handle (104) attached to the proximal end comprising an iron pipe with adjustable height mechanism for ergonomic operation, a cutting blade (106) attached to the distal end comprising an iron blade welded perpendicularly and adapted to cut grass stems through horizontal pressure application, and a supporting unit (108) positioned laterally alongside the body (102) and operatively connected to the handle (104) and cutting blade (106) to support the cutting blade (106) and prevent blade bending during weeding operations. The apparatus (100) is adapted to bend grass stems when horizontal pressure is applied, causing the grass stems to be cut and laid as mulch covering over soil surface for weed suppression and soil enhancement.

No. of Pages : 21 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068136 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Speed control of dc motor with microcontroller using hand gestures

(51) International classification :G06F0003010000, G06F0003030000, A61K0039000000, G06F0003042000, H04N0001107000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Abstract This project presents a novel approach for controlling the speed of a DC motor using hand gestures, leveraging a microcontroller and a gesture recognition system. The system utilizes a sensor, typically an accelerometer or a camera-based module, to capture real-time hand movements. These gestures are processed and interpreted by a microcontroller, such as an Arduino or PIC, which subsequently adjusts the motor's speed through a pulse width modulation (PWM) signal. This contactless control mechanism ensures enhanced safety, ease of use, and intuitive operation. The proposed system is applicable in various domains, including industrial automation, robotics, and assistive devices. The implementation is cost-effective and provides a user-friendly interface for precise motor speed management. Experimental results demonstrate the system's accuracy and responsiveness, confirming its feasibility for practical applications.

No. of Pages : 8 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068179 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : ARTIFICIAL INTELLIGENCE-BASED MULTI-RESOLUTION IMAGE FUSION SYSTEM AND METHOD FOR ENHANCED SURVEILLANCE APPLICATIONS

(51) International classification :G06T0005500000, G06N0003080000, G06V0020580000, F21V0023040000, G06T0003400700

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :
The present invention relates to an Artificial Intelligence-Based Multi-Resolution Image Fusion System and Method for Enhanced Surveillance Applications. The system integrates image data from multiple heterogeneous sensors—such as visible light, thermal, and infrared cameras—operating at different resolutions, and processes them using a deep learning-based fusion engine to generate a single high-resolution composite image. Key components include preprocessing, semantic alignment, and adaptive AI-guided fusion, with a feedback mechanism that dynamically refines fusion parameters based on downstream object detection and classification outputs. The invention enhances image clarity, improves recognition accuracy, and ensures real-time adaptability under varying environmental conditions, making it suitable for public safety, defense, and smart infrastructure surveillance scenarios.

No. of Pages : 19 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068138 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : LOW-LATENCY NEURAL NETWORK ARCHITECTURE OPTIMIZED FOR EDGE DEVICE INFERENCE

(51) International classification :G06F0009500000, G06N0003063000, A61B0005000000, G06N0003045000, G06N0003080000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

036] The present invention discloses a novel neural network architecture optimized for low-latency inference on edge devices with limited computational resources. The architecture comprises modular Low-Latency Execution Units (LLEUs), integrated early-exit branches, dynamic resolution adjustment, on-device quantization, and a hardware-aware scheduling mechanism. These components work in synergy to reduce inference time, optimize memory usage, and adapt to real-time hardware constraints without sacrificing model accuracy. The system enables efficient AI deployment in applications such as smart surveillance, wearable health monitoring, autonomous navigation, and industrial IoT, delivering reliable performance under tight latency and energy budgets. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 19 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068180 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Automatic detection and diagnosis of retinal pathologies using Transformer-based architecture

(51) International classification :G06N0003080000, G06N0003045000, G06F0018210000, A61P0027020000, C12Q0001688300
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The accurate detection and classification of retinal pathologies is vital for early diagnosis and prevention of vision loss. This study proposes a novel multi-label classification approach using transformer-based deep learning models to identify 29 different retinal diseases from the RFMiD dataset. The methodology incorporates a comprehensive preprocessing pipeline, including retina cropping, up-sampling, and augmentation techniques, to address class imbalance and enhance model generalization. Two architectures were evaluated: Query2Label with ResNet101 and a modified Vision Transformer (Q2L-CVT W24). The best-performing model, Q2L-CVT W24, achieved a high accuracy of 99.8% in detecting disease presence (D.Risk), significantly outperforming the state-of-the-art (85.9%) in the same class. Notable performance improvements were also observed in underrepresented pathologies such as CRVO and CSR. Despite challenges in classes with minimal samples, the proposed method demonstrated robust classification performance across most categories. The study highlights the effectiveness of transformer-based models for multi-label retinal disease classification and suggests future enhancements using hybrid classifier architectures to further improve performance..

No. of Pages : 19 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068169 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Algae Detection Using Water Monitoring System

(51) International classification :G01N0033180000, C02F0001000000, G05B0019042000, C02F0001320000, G01J0003440000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
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(57) Abstract :

The "Algae Detection Using Water Monitoring System" project is designed to create an efficient and automated solution for monitoring water quality and detecting potential algae growth in real time. The system integrates multiple sensors—including a Total Dissolved Solids (TDS) sensor, turbidity sensor, DS18B20 waterproof temperature sensor and DHT11 temperature and humidity sensor—to collect critical data regarding water conditions and environmental factors that may promote algae formation. These sensors are interfaced with an Arduino Nano (ATmega328P), which processes and analyzes the data to assess water quality. To enable remote monitoring and data logging, the system includes an ESP8266 Wi-Fi module that transmits sensor readings to the ThingSpeak platform. This allows users to access real-time water quality data through a smartphone or web application and receive alerts if any parameter exceeds predefined thresholds. The system is powered by a 12V external power source, regulated using two buck converters to supply the appropriate voltage to the Arduino, sensors and Wi-Fi module. A slide switch (SDP-T) is used to control the system's power flow efficiently. By combining low-cost hardware with real-time monitoring capabilities, this project provides a practical and scalable solution for detecting harmful algae blooms and maintaining safe water quality. It holds significant potential for applications in domestic water storage, aquaculture, water treatment plants and broader environmental monitoring efforts.

No. of Pages : 10 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068165 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR MANAGING GNSS-SURVEYED PROPERTY TRANSACTIONS, CONSTRUCTION, AGRICULTURAL INVESTMENTS, AND HOME SERVICE INTEGRATION

(51) International classification :G06Q0050160000, G06Q0040060000, G06Q0050163000, G06Q0010087000, G06Q0030080000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present disclosure provides a system (100) and method (200) for managing GNSS-surveyed property transactions, construction investments, agricultural funding, and home service integration. The system (100) comprising but not limited to an RTK Survey kit, remote surveying satellite or drone (102) for receiving property-related inputs and a digital property management engine (104) communicatively coupled via a network (106). The digital property management engine (104) includes a processor (114) configured to receive GNSS data; verify it using a GNSS verification engine (118); enable property listing and bidding via a bidding engine (120); provide construction services via an inventory management engine (122); manage investments through an investment engine (124); authenticate users via a verification engine (126); process home service requests via a service engine (128); and send real-time updates through a notification engine (130). The system (100) delivers a unified digital interface for secure, transparent, and end-to-end management of real estate, construction, farming investments, and home-related services.

No. of Pages : 27 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068172 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SUGAR-FREE POLYHERBAL SYRUP FOR MANAGING TONSILLITIS AND RESPIRATORY INFECTIONS

(51) International classification :A61K0036906600, A61K0036906800, A61K0036670000, A61K0036750000, A61K0036580000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses a sugar-free polyherbal syrup composition for the treatment and management of tonsillitis and respiratory infections. The composition comprises a synergistic blend of standardized herbal extracts including Azadirachta indica (Neem), Murraya koenigii (Curry Leaves), Ananas comosus (Pineapple), Curcuma longa (Turmeric), Piper nigrum (Black Pepper), Ocimum sanctum (Tulsi), and Zingiber officinale (Ginger). These extracts, present in defined concentrations, deliver antimicrobial, anti-inflammatory, immunomodulatory, mucolytic, and bioenhancing effects. The formulation is sweetened with Neotame, ensuring suitability for diabetic and non-diabetic patients. The herbal extracts are obtained through Soxhlet extraction, quantified and standardized via high-performance liquid chromatography (HPLC), and blended with pharmaceutically acceptable excipients to maintain a pH of 5.5 to 7.0 for optimal stability and palatability. The resulting syrup provides a safe, effective, and standardized herbal remedy targeting respiratory infections, offering an alternative to conventional antibiotic therapies with improved patient compliance and suitability for sugar-restricted populations.

No. of Pages : 10 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068232 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SYSTEM AND METHOD FOR REAL-TIME SKIN DISEASE DETECTION USING DEEP LEARNING-BASED HYBRID SEGMENTATION AND CLASSIFICATION WITH MOBILE APPLICATION INTEGRATION

(51) International classification :G06N0003045000, G06N0003080000, G16H0050200000, G06T0007000000, A61B0005000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

[041] The present invention discloses a system and method for automated skin disease recognition using deep learning techniques integrated into a real-time mobile application. The invention comprises a robust preprocessing pipeline to address data imbalance, a hybrid segmentation model combining U-Net and attention mechanisms for precise lesion extraction, and a custom convolutional neural network for accurate disease classification. The system is accessible via a mobile application that enables real-time image capture, analysis, and feedback, providing users with diagnostic results and recommendations. Designed for both clinical and non-clinical environments, the invention enhances early detection, improves accessibility to dermatological assessments, and supports scalable deployment through on-device or cloud-based processing. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 21 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541068439 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SYSTEM AND METHOD FOR PUBLISHING WEB PAGES USING EMAIL OR MOBILE IDENTITY WITHOUT DOMAINS OR HOSTING

(51) International classification :H04L0009400000, G06F0021620000, G06F0016957000, G06F0016958000, G06F0016955000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a system and method for generating and publishing public web pages using a user's email address or mobile number as a unique identity anchor, thereby eliminating the need for traditional domain names and hosting infrastructure. Upon receiving a user input identifier, such as an email or mobile number, the system authenticates ownership via a one-time password (OTP) and grants access to a no-code content management dashboard. Web pages created through this interface may include static elements (e.g., text, images, UI components, videos) and dynamic features (e.g., forms, pagination, conditional logic), all stored in a structured datastore database. A rendering engine dynamically assembles the web page upon request and delivers it through a platform-generated URL, such as prefix/e/[email] or prefix/m/[mobile]. The system also supports alias-based URLs for privacy and personalization. Lightweight client-side rendering scripts ensure efficient page delivery, while built-in modules support form submissions, data export, and content backup. The invention thus enables individuals and micro-entities to establish a digital presence without technical expertise, server setup, or domain registration

No. of Pages : 25 No. of Claims : 29

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/07/2025

(21) Application No.202541068206 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : DUAL CROSS LINKED PECTIN FILM FOR FOOD PACKAGING

(51) International classification :C08B0037000000, A61K0031732000, A23L0029231000, B65D0065460000, A61K0047380000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT [0032]Embodiments disclose a utility model is related to a system that can provide complete bio-degradable formulation and solution for replacing the current Poly ethylene (PE) based films. Mango peels were processed to extract pectin through a microwave-assisted extraction method. The peels were blanched, dried, and pulverized prior to mixing with acidified water. Extraction conditions varied in microwave power (200-800 W), irradiation time (2-11 min), and pH (1- 4), with optimal conditions yielding 17.5% pectin at 600 W, 8 min, and pH 2. The extracted pectin was characterized using FT-IR spectroscopy and utilized to create biodegradable films in a glycerol matrix. The pectin films crosslinked with zinc and citric acid as dual crosslinkers improved strength and barrier properties. Subsequent soil burial tests assessed the biodegradability of the films.

No. of Pages : 19 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202431101212 A

(19) INDIA

(22) Date of filing of Application :20/12/2024

(43) Publication Date : 25/07/2025

(54) Title of the invention : A METHOD OF PREPARING A HIGHER GRADE GREY CAST IRON USING COPPER AND TIN AS ALLOYING ELEMENTS FOR MAKING CYLINDRICAL BLOCKS AND HEADS

(51) International classification :B22D1/00, C21C1/08, C21C7/00, C21C7/068, C22C33/08, C22C37/10, C22C37/00, C22C38/34

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present disclosure provides a method of preparing a higher grade grey cast iron using copper and tin as alloying elements. The invention also provides insight on the effect of copper (0.25–1 wt.%) on the microstructural and mechanical properties of the grey cast iron. The present invention is solving the problems such as hot spots, chill, hardness variation, machining problem and tool wear during machining and field failure in the casting which arises when grey cast iron uses chromium and manganese as alloying elements. The proposed method solves above mentioned problems by providing an effective method for preparing a higher grade grey cast iron by using copper and tin as alloying elements. The method results in production of a higher grade grey cast iron which can be used for making engines of different types of vehicles. Further, the produced grey cast iron has increased tensile strength and hardness, thus making it suitable for various applications in automobile industry.

No. of Pages : 21 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531021606 A

(19) INDIA

(22) Date of filing of Application :11/03/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Space Shuttle Powered by Electric VTOL Engines

(51) International classification :B64C29/00
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(72)Name of Inventor :

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(57) Abstract :

The Need for Self-Recharging Electric Engines for Automated Battery Management Environmental pollution has escalated to alarming levels, directly affecting human genetic expressions and triggering long-term health consequences. In this context, self-recharging electric engines offer a breakthrough solution by reducing dependency on external charging infrastructure, minimizing energy waste, and promoting clean, autonomous energy cycles. These engines integrate automated battery management systems, ensuring optimal performance, extended battery life & reduced carbon footprints. By advancing this technology, we move closer to sustainable transport & defense systems, aligning innovation with urgent environmental & public health needs. The invention - relates to a space shuttle powered by Electric VTOL engines, incorporating magnetic propulsion and self-recharging motor generator units. It features an adaptive flight control system, intelligent energy management architecture, and a cockpit interface for real-time monitoring and post-flight analysis. The design ensures sustainable, reusable, and efficient space transportation in the future without harming the genetic code of the population. This invention provides a breakthrough in sustainable space travel by combining Electric VTOL propulsion with advanced power management and flight control systems. The design reduces reliance on chemical & supports reusability & enhances operational efficiency for space missions.

No. of Pages : 10 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531032457 A

(19) INDIA

(22) Date of filing of Application :02/04/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SELF-CLEANING, HEAT AND HARMFUL OPTICAL RADIATION PREVENTIVE COATING AND PREPARATION METHOD THEREOF

(51) International classification :H01L0031021600, H10K0050860000, H10K0050852000, B32B0003120000, H01L0033100000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA	(71)Name of Applicant : 1)INDIAN INSTITUTE OF TECHNOLOGY, GUWAHATI Address of Applicant :Guwahati – 781039, Assam, India Guwahati - ----- 2)CENTRE FOR NANO AND SOFT MATTER SCIENCES (CeNS) BENGALURU Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)SOURODIPTO DAS Address of Applicant :Department of Electronics and Electrical Engineering, Indian Institute of Technology, Guwahati, Guwahati - 781039, Assam, India Guwahati ----- 2)MUKHESH K GANESHA Address of Applicant :Centre for Nano and Soft Matter Sciences (CeNS), Shivanapura, Bengaluru - 562162, Karnataka, India Bengaluru ----- 3)ASHUTOSH KUMAR SINGH Address of Applicant :Centre for Nano and Soft Matter Sciences (CeNS), Shivanapura, Bengaluru - 562162, Karnataka, India Bengaluru ----- 4)DEBABRATA SIKDAR Address of Applicant :Department of Electronics and Electrical Engineering, Indian Institute of Technology, Guwahati, Guwahati - 781039, Assam, India Guwahati -----

(57) Abstract :
ABSTRACT “A SELF-CLEANING, HEAT AND HARMFUL OPTICAL RADIATION PREVENTIVE COATING AND PREPARATION METHOD THEREOF” The present invention provides a self-cleaning, heat and harmful optical radiation preventive coating (100), comprises atleast two reflective layers (2, 3), and an anti-reflection layer (4). The atleast two reflective layers (2, 3) includes a first reflective layer (2) disposed on a substrate (1) and a second reflective layer (3) disposed on said first reflective layer (2) configured to block heat and optical radiation. The first reflective layer (2) is composed of a set of sub layers (5) and each said set of sub layers (5) is made of a pair of dielectric layer (7). The second reflective layer (3) is composed of a set of sub layers (6) and each said set of sub layers (6) is made of a pair of dielectric layer (8). The anti-reflection layer (4) is disposed on said second reflective layer (3) for reducing the reflection loss and provides a self-cleaning property. Figure 1 on sheet no. 1 of the drawings may accompany the abstract when published.

No. of Pages : 44 No. of Claims : 19

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531033566 A

(19) INDIA

(22) Date of filing of Application :05/04/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : FLUORESCENCE-BASED DETECTION AND QUANTIFICATION OF QUINIDINE IN PLANT-DERIVED SAMPLES

(51) International classification :G01N0021640000, G01N0030020000, C07D0453040000, G01N0033543000, G01N0033680000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA	(71)Name of Applicant : 1)Nandita Sahana Address of Applicant :Department of Biochemistry, Uttar Banga Krishi Vishwavidyalaya, Pundibari, Cooch Behar 736165, West Bengal, India Cooch Behar ----- 2)Simanta Das 3)Somnath Mandal 4)Moumita Chakraborty 5)Ashok Choudhury 6)Samuel Rai Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Nandita Sahana Address of Applicant :Department of Biochemistry, Uttar Banga Krishi Vishwavidyalaya, Pundibari, Cooch Behar 736165, West Bengal, India Cooch Behar ----- 2)Simanta Das Address of Applicant :Department of Biochemistry, Uttar Banga Krishi Vishwavidyalaya, Pundibari, Cooch Behar 736165, West Bengal, India Cooch Behar ----- 3)Somnath Mandal Address of Applicant :Department of Biochemistry, Uttar Banga Krishi Vishwavidyalaya, Pundibari, Cooch Behar 736165, West Bengal, India Cooch Behar ----- 4)Moumita Chakraborty Address of Applicant :Department of Genetics and Plant Breeding, Uttar Banga Krishi Vishwavidyalaya, Pundibari, Cooch Behar 736165, West Bengal, India Cooch Behar ----- 5)Ashok Choudhury Address of Applicant :Director of Research, Uttar Banga Krishi Vishwavidyalaya, Pundibari, Cooch Behar 736165, West Bengal, India Cooch Behar ----- 6)Samuel Rai Address of Applicant :Director of Cinchona & Other Medicinal Plants, West Bengal 734313, India Darjeeling -----

(57) Abstract :

The present disclosure relates to the field of analytical chemistry and pharmaceutical quality control. Specifically, the present invention provides a fluorescence-based method for the rapid and sensitive quantification of quinidine in Cinchona bark samples. The disclosed method offers enhanced sensitivity, with a lower limit of detection compared to conventional techniques such as HPLC and SFC. The process involves minimal solvent usage and direct fluorescence measurement, eliminating the need for complex sample preparation. The method enables high-throughput screening of quinidine content with improved precision, making it suitable for applications in pharmaceutical quality control, herbal medicine standardization, and industrial processing of Cinchona-derived alkaloids.

No. of Pages : 55 No. of Claims : 13

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531037352 A

(19) INDIA

(22) Date of filing of Application :17/04/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : METHOD FOR PREPARING FIBER BASED READY MIXED CONCRETE THROUGH SEWAGE TREATED WATER

(51) International classification	:C22C0038440000, C04B0103300000, C04B0035622000, C12P0003000000, B32B0005080000	(71)Name of Applicant : 1)BIRLA INSTITUTE OF TECHNOLOGY MESRA Address of Applicant :P.O. Mesra, Ranchi, Jharkhand- 835215, INDIA Mesra ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)SARANGI, Sagar Address of Applicant :Department of Civil and Environmental Engineering, Birla Institute of Technology, Mesra, Ranchi - 835215, Jharkhand, INDIA Mesra ----- 2)SINGH, Birendra Kumar Address of Applicant :Department of Civil and Environmental Engineering, Birla Institute of Technology Mesra, Ranchi- 835215, Jharkhand, INDIA Mesra ----- 3)SINGH, Krishna Nand Address of Applicant :Department of Civil and Environmental Engineering, Birla Institute of Technology Mesra, Ranchi- 835215, Jharkhand, INDIA Mesra -----
(86) International Application No	:NA	
Filing Date	:NA	
(87) International Publication No	: NA	
(61) Patent of Addition to Application Number	:NA	
Filing Date	:NA	
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

ABSTRACT METHOD FOR PREPARING FIBER BASED READY MIXED CONCRETE THROUGH SEWAGE TREATED WATER
Disclosed herein is a method for preparing high-strength concrete using waste materials to enhance sustainability. The resulting concrete demonstrates optimal properties for construction applications, including superior tensile strength and reduced water retention. This approach is both cost-efficient and eco-friendly.

No. of Pages : 19 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531043637 A

(19) INDIA

(22) Date of filing of Application :05/05/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Automated Soil Nutrient Mapping System

(51) International classification :G01N0033240000, A01B0079000000, A01C0021000000, G06V0020100000, G01N0027333000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA	(71)Name of Applicant : 1)BIHAR AGRICULTURAL UNIVERSITY Address of Applicant :Bihar Agricultural University, Sabour, 813210 Bihar (INDIA) Sabour ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Dr. ANIL KUMAR SINGH Address of Applicant :Director of research, Bihar Agricultural University, Sabour, 813210 Bihar (India) Sabour ----- 2)Dr. D.R. SINGH Address of Applicant :Vice-Chancellor, Bihar Agricultural University, Sabour, 813210 Bihar (India) Sabour ----- 3)Dr. RIMA KUMARI Address of Applicant :Assistant Professor-cum-Jr. Scientist, Division of Plant Biotechnology, College of Agricultural Biotechnology, Bihar Agricultural University, Sabour, 813210 Bihar (India) Sabour ----- 4)Dr. PANKAJ KUMAR Address of Applicant :Assistant Professor-cum-Jr. Scientist, Department of Molecular Biology and Genetic engineering, Bihar Agricultural University, Sabour, 813210 Bihar (India) Sabour ----- 5)Dr. DHARMENDRA KUMAR VERMA Address of Applicant :Assistant Professor-cum-Jr. Scientist, Department of soil science and agriculture chemistry, Bihar Agricultural University, Sabour, 813210 Bihar (India) Sabour -----

(57) Abstract :

ABSTRACT AUTOMATED SOIL NUTRIENT MAPPING SYSTEM The present invention relates to an automated soil nutrient mapping system is a cutting-edge solution for precision agriculture, comprising a UAV equipped with autonomous GPS navigation and a rechargeable lithium-polymer battery with solar-assisted charging. The UAV carries a payload featuring multi-spectral and hyperspectral imaging sensors, capturing reflectance patterns in VIS, NIR, and SWIR bands to detect soil nutrient deficiencies. It also includes a retractable electrochemical sensor probe with ion-selective electrodes for real-time soil analysis of pH, moisture, conductivity, and nutrient levels during low-altitude flight. Data is processed onboard and transmitted to a cloud-based system, where an AI-powered analytics module uses machine learning models to combine sensor data with historical maps, satellite imagery, and weather forecasts. The system's decision support system (DSS) generates zone-based fertilization recommendations and high-resolution GIS nutrient maps, accessible via a user-friendly interface on mobile or desktop devices, enabling farmers to make informed decisions for optimal soil health and crop yield. Figure 1

No. of Pages : 21 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531045206 A

(19) INDIA

(22) Date of filing of Application :09/05/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Encapsulated Microbial Bio-fertilizer composition

(51) International classification :C05F11/08, C05G5/35, C05G3/80, A01N63/20, A61K47/36, A61K33/06, A61K33/30
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a microbial bio-fertilizer composition with an advanced encapsulation matrix designed to enhance shelf-life, microbial stability, and soil nutrient efficiency. The composition comprises nano-silica (20-30% w/w), biodegradable polymers (alginate, chitosan, PLA), and beneficial microbial strains (Rhizobium spp., Phosphate- Solubilizing Bacteria, and Azotobacter spp.) encapsulated within a controlled-release system. The encapsulation process employs UV-absorbing agents and anti-caking agents to ensure prolonged microbial viability under storage conditions ranging from -10°C to 50°C. The encapsulated bio-fertilizer demonstrates a shelf-life of up to 2 years and enables controlled nutrient release over 3-6 months post-application. The invention provides an ecofriendly, efficient, and sustainable solution for enhancing soil fertility and crop productivity

No. of Pages : 22 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531045451 A

(19) INDIA

(22) Date of filing of Application :11/05/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Solar-Powered Autonomous device for Targeted Mechanical Weeding

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(51) International classification	:H02J0003380000, A01M0021040000, A01M0021020000, A01B0039180000, H02J0007350000	
(86) International Application No	:NA	
Filing Date	:NA	
(87) International Publication No	: NA	
(61) Patent of Addition to Application Number	:NA	
Filing Date	:NA	
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

The invention discloses a solar-powered autonomous weeding device that integrates artificial intelligence, robotics, and renewable energy to provide an eco-friendly and precise weed management solution. The device comprises a computer vision system utilizing high-resolution cameras and machine learning algorithms to distinguish weeds from crops in real-time. A mechanical weeding mechanism, including rotating blades or articulated arms, physically removes weeds without disturbing nearby crops. Navigation is enabled through a combination of GPS, LiDAR, and depth sensors, allowing autonomous operation across varied terrains. The robot is powered by photovoltaic panels and onboard batteries, ensuring continuous, off-grid functionality. Additionally, the system includes a wireless communication module and mobile application interface for remote monitoring and control. Designed for both smallholder and large-scale farms, this invention reduces reliance on chemical herbicides and manual labor, promoting sustainable agricultural practices. The scalable and intelligent design enables precision weeding, preserves soil health, and enhances productivity, positioning it as a next-generation solution for modern agriculture.

No. of Pages : 17 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531050586 A

(19) INDIA

(22) Date of filing of Application :26/05/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : NOVEL AMIDE DERIVATIVES OF N-AMINO-11-AZAARTEMISININ, PROCESS OF THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS THEREOF

(51) International classification :A61P33/06, C07D323/06,
C07D401/04
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application :NA
Number :NA
Filing Date :NA
(62) Divisional to Application :NA
Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to novel amide derivatives of N-amino-11-azaartemisinin that exhibits potent antimalarial activity. More specifically, the present invention relates to novel amide derivatives of N-amino-11-azaartemisinin represented by formula I. The present invention also discloses the process of preparing novel amide derivatives of N-amino-11-azaartemisinin and antimalarial compositions comprising the same.

No. of Pages : 44 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531050706 A

(19) INDIA

(22) Date of filing of Application :27/05/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Moisture-Retentive and Microbe-Enriched Biopolymer Seed Coating composition

(51) International classification :A01C0001060000, A01N0063200000, C05F0011080000, A01N0063270000, A61L0015280000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The invention provides a biodegradable seed coating composition comprising chitosan or starch-based polymers (2–7% w/w), superabsorbent hydrogel (0.5–2% w/w), microbial inoculants—Rhizobium (10⁸ CFU/g), Azospirillum (10⁷ CFU/g), Mycorrhiza (1000 spores/g)—and micronutrients including Zn (0.1–0.5%), B (0.05–0.2%), and Fe (0.1–0.4%). The formulation enhances moisture retention by 20–40% and improves germination rates from 68.5% to 91.2% under water-stressed conditions. It increases seedling vigor index by 20–35%, reduces germination time to 2.8 days, and improves root and shoot length by up to 35%. Microbial viability post-coating remains above 87%, and field trials show up to 21% yield increase and 36% higher water use efficiency. The coating offers improved seed adhesion, controlled microbial release, and tailored application based on crop and climatic conditions, making it suitable for rainfed and drought-prone regions.

No. of Pages : 25 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531050709 A

(19) INDIA

(22) Date of filing of Application :27/05/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Biochar-infused soil conditioner formulation

(51) International classification :C05G3/80, C05G1/00, C05D9/00, C05F11/00, C09K17/40, C09K101/00
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :
The present invention relates to a biochar-infused soil conditioner composition and method for enhancing soil health, particularly in degraded, drought-prone, or nutrient-deficient agricultural soils. The composition comprises biochar produced from biomass through controlled pyrolysis, organic additives such as compost or manure, mineral and micronutrient supplements, and water-retention agents including superabsorbent polymers. The formulation is designed to improve water retention, nutrient availability, microbial activity, and long-term carbon sequestration in soils. Field trials demonstrate that application of the composition at 5 tons per hectare increases crop yields by up to 51%, enhances soil water retention by 24.5%, and boosts soil organic carbon by 38.6%. The invention provides a scalable, sustainable, and cost-effective solution for soil restoration and climate change mitigation.

No. of Pages : 24 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531052720 A

(19) INDIA

(22) Date of filing of Application :30/05/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SYSTEM AND METHOD FOR CAPTURING ELECTROMAGNETIC RADIATION (EMR) EMITTED DURING DYNAMIC SHEET-METAL FORMING

(51) International classification	:G01R0013020000, G16H0010600000, G16H0030400000, G01N0027820000, G01R0029080000	(71)Name of Applicant : 1)BIRLA INSTITUTE OF TECHNOLOGY MESRA Address of Applicant :P.O. Mesra, Ranchi, Jharkhand- 835215, INDIA ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)ORAON, Manish Address of Applicant :Associate Professor, Dept. of Industrial and Production Engineering, Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur (C.G.) - 495009, INDIA ----- 2)SHARMA, Vinay Address of Applicant :Professor, Department of Production and Industrial Engineering, Birla Institute of Technology, Ranchi - 835215-Jharkhand, INDIA -----
(86) International Application No	:NA	
Filing Date	:NA	
(87) International Publication No	: NA	
(61) Patent of Addition to Application Number	:NA	
Filing Date	:NA	
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

ABSTRACT A SYSTEM AND METHOD FOR CAPTURING ELECTROMAGNETIC RADIATION (EMR) EMITTED DURING DYNAMIC SHEET-METAL FORMING The present invention provides a system for capturing electromagnetic radiation (EMR) emitted during the incremental micro-forming of sheet metals under dynamic loading conditions. It integrates an antenna positioned on the metal surface, a boost converter with a bandpass filter, and a digital storage oscilloscope (DSO) to amplify and record weak, intermittent EMR signals produced by microstructural changes such as dislocation motion and slip band formation. As the rotating tool deforms the metal along a programmed path, the system filters out electrical noise and vibrations, enabling real-time capture of true deformation-related EMR signals. Software processing, such as with MATLAB, is used to further analyze and interpret the data. This invention allows researchers to monitor deformation and fracture behavior, determine material forming limits, and potentially apply the technology for in-process control and quality assurance in dynamic metal forming operations.

No. of Pages : 20 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531053149 A

(19) INDIA

(22) Date of filing of Application :31/05/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A kit for rapid indirect organogenesis of saffron (Crocus sativus L.)

(51) International classification :A01H0004000000, A61K0036880000, C12N0005000000, C12N0005040000, A61K0031355000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a kit for rapid in-vitro indirect organogenesis of saffron (Crocus sativus L.) using corm, shoot tip, and leaf explants. The kit comprises two optimized types of media compositions: one for callogenesis and another for regeneration. The callogenesis medium is a Murashige and Skoog (MS) basal medium solidified with 0.40% agar and supplemented with vitamins (thiamine-HCl, pyridoxine-HCl, nicotinic acid), phytohormones (2,4-D, Kinetin, BAP), 1.5% sucrose, glycine (0.5–5.0 mg/L), and MES buffer (300–700 mg/L). The regeneration medium is also an agar-solidified MS medium enriched with Kinetin and NAA as phytohormones, along with the aforementioned vitamins, sucrose, glycine, and MES buffer. The invention achieves in vitro callus induction within 15 days and complete shoot and root development within 75 days, significantly reducing the time required for saffron micropropagation. This kit provides an effective platform for the rapid and reproducible regeneration of saffron plants and supports somaclonal variation-based selection for trait improvement.

No. of Pages : 20 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531058749 A

(19) INDIA

(22) Date of filing of Application :19/06/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : e-Cleaning Device for Vegetable disinfection

(51) International classification :A61L0002100000, A61L0009200000, H04W0004380000, A61L0002180000, A61L0002000000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA	(71)Name of Applicant : 1)KINGSTON EDUCATIONAL INSTITUTE Address of Applicant :Bus Stop - Kajibari, Berunanpukuria, P.O. - Malikapur, Adjacent to West Bengal State University, Barasat, Dist. - North 24 Parganas, Kolkata - 700126, West Bengal, India Barasat ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Sudipta Ghosh Sur Address of Applicant :Bus Stop - Kajibari, Berunanpukuria, P.O. - Malikapur, Adjacent to West Bengal State University, Barasat, Dist. - North 24 Parganas, Kolkata - 700126, West Bengal, India Barasat ----- 2)Tanujit Mete Address of Applicant :Bus Stop - Kajibari, Berunanpukuria, P.O. - Malikapur, Adjacent to West Bengal State University, Barasat, Dist. - North 24 Parganas, Kolkata - 700126, West Bengal, India Barasat ----- 3)Abirlal Mondal Address of Applicant :Bus Stop - Kajibari, Berunanpukuria, P.O. - Malikapur, Adjacent to West Bengal State University, Barasat, Dist. - North 24 Parganas, Kolkata - 700126, West Bengal, India Barasat ----- 4)Saikat Biswas Address of Applicant :Bus Stop - Kajibari, Berunanpukuria, P.O. - Malikapur, Adjacent to West Bengal State University, Barasat, Dist. - North 24 Parganas, Kolkata - 700126, West Bengal, India Barasat ----- 5)Gautam Bandopadhyay Address of Applicant :Bus Stop - Kajibari, Berunanpukuria, P.O. - Malikapur, Adjacent to West Bengal State University, Barasat, Dist. - North 24 Parganas, Kolkata - 700126, West Bengal, India Barasat -----

(57) Abstract :

The present invention discloses an electronic cleaning device for the effective disinfection of vegetables, designed to enhance food safety in domestic, institutional, and commercial settings. The device integrates a conveyor mechanism, UV/IR radiation units, microcontroller-based automation, and IoT-enabled mobile application control to sanitize vegetables without the need for chemical agents. Vegetables placed on a tray are moved through a controlled enclosure where they are exposed to UV and/or IR radiation for a predetermined time, effectively reducing microbial load and surface contaminants. The process is automated via sensors and a mobile app interface, which allows remote operation, monitoring, and control of exposure parameters. The system is designed to be compact, water-efficient, and operable by unskilled users, promoting hygiene, sustainability, and ease of use in community kitchens, schools, markets, and restaurants. This invention addresses critical food safety challenges by combining smart technology with sustainable sanitation practices.

No. of Pages : 14 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531058752 A

(19) INDIA

(22) Date of filing of Application :19/06/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Device for Women Self Defense

(51) International classification :F41H0013000000, F21V0033000000, H04W0004900000, F41H0009100000, G08B0025010000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses a multifunctional self-defense device designed specifically for women, integrating three critical safety functionalities into a single, compact unit: a high-intensity LED torch, a non-lethal electric taser, and a GPS-based locator system. The device offers a portable and user-friendly solution for personal protection, capable of delivering an electric shock to incapacitate an attacker, illuminating dark or unsafe environments, and transmitting the real-time location of the user to emergency contacts through mobile connectivity. The locator functionality employs GPS or Bluetooth technology and can be accessed via a smartphone app for rapid location tracking. The device features an emergency activation button for immediate use, minimal operational training requirements, and a rechargeable battery supporting 8 to 12 hours of use. Its integrated design ensures that women can carry a single, discreet, and efficient safety tool instead of multiple separate devices. This innovation addresses a critical gap in non-lethal self-defense tools by providing versatile functionality, ease of use, and enhanced personal safety in a single platform.

No. of Pages : 13 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531058753 A

(19) INDIA

(22) Date of filing of Application :19/06/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Biodegradable Sanitary Napkins from Banana fabric

(51) International classification :A61F0013514000, A61F0013150000, A61L0015600000, A61L0015280000, A61F0013530000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA	(71)Name of Applicant : 1)KINGSTON EDUCATIONAL INSTITUTE Address of Applicant :Kajibari, Berunanpukuria, P.O. - Malikapur, Adjacent to West Bengal State University, Barasat, Dist. - North 24 Parganas, Kolkata - 700126, West Bengal, India Barasat ----- ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Soumi De Address of Applicant :Kajibari, Berunanpukuria, P.O. - Malikapur, Adjacent to West Bengal State University, Barasat, Dist. - North 24 Parganas, Kolkata - 700126, West Bengal, India Barasat ----- ----- 2)Dr. Swapnila Roy Address of Applicant :Kajibari, Berunanpukuria, P.O. - Malikapur, Adjacent to West Bengal State University, Barasat, Dist. - North 24 Parganas, Kolkata - 700126, West Bengal, India Barasat ----- -----

(57) Abstract :

The present invention relates to biodegradable sanitary napkins made from banana fiber fabric, designed to offer an eco-friendly alternative to conventional synthetic sanitary products. The napkin comprises a multi-layered structure incorporating naturally absorbent banana fiber as the core material, optionally combined with plant-based liners and leak-proof biopolymer films. The invention eliminates the use of plastics and non-biodegradable superabsorbents, making it completely compostable and safe for disposal in natural environments. The banana fiber provides high moisture retention, natural antimicrobial properties, and breathability, ensuring comfort and hygiene. This innovation addresses pressing environmental concerns linked to menstrual waste while promoting sustainable menstrual hygiene practices, particularly in rural and low-resource settings.

No. of Pages : 12 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531058785 A

(19) INDIA

(22) Date of filing of Application :19/06/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Thermal-Resistant, Low-Carbon Bricks from Recycled Agro-Industrial Waste

(51) International classification :C04B18/08, C04B28/02,
C04B18/10, C04B22/06

(86) International Application No :NA

Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to :NA

Application Number :NA

Filing Date :NA

(62) Divisional to Application :NA

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(57) Abstract :

The invention relates to a novel composition and process for manufacturing thermal-resistant, low-carbon bricks utilizing recycled agro-industrial waste. The bricks are formulated by combining 75–80% natural clay with synergistic additions of 10–15% rice husk ash, 3–5% wheat straw ash, 5–7% fly ash or lime, and 2–3% gypsum or lime sludge. This optimized blend enhances structural integrity, thermal insulation, and early strength while significantly lowering the carbon footprint compared to conventional clay bricks. The resulting bricks exhibit improved compressive strength (8–12 MPa), reduced thermal conductivity (0.45–0.65 W/m·K), lower density (1600–1800 kg/m³), and enhanced water resistance (12–16% absorption). The invention promotes circular economy practices by repurposing agro-industrial by-products and contributes to sustainable construction through reduced energy consumption and emissions.

No. of Pages : 12 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531058819 A

(19) INDIA

(22) Date of filing of Application :19/06/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Diabetes Control Cookies made from Millets and pumpkin seeds

(51) International classification :A61P0003100000, A23L0033100000, A23L0007100000, A23L0033105000, A61K0036420000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention relates to a novel food composition in the form of cookies formulated specifically for diabetes control and management. The invention combines the hypoglycemic and nutraceutical properties of millets, particularly pearl millet (bajra), and pumpkin seeds—both rich in bioactive compounds known to regulate blood glucose levels. Additional ingredients such as honey, cardamom, and almonds are incorporated for their synergistic effects, including lipid regulation, antioxidant action, and improved palatability. The formulation is fortified with essential macro-minerals to enhance its therapeutic benefits. The cookies are designed as a low-cost, ready-to-eat functional food product suitable for daily consumption by diabetic patients and individuals at risk of developing diabetes. The preparation process involves standardization of ingredient ratios, oven-baking, and biodegradable packaging. This invention addresses the growing public health concern of lifestyle-induced diabetes by offering a sustainable, accessible, and effective dietary solution with commercial applicability in the health-focused bakery segment.

No. of Pages : 13 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531063067 A

(19) INDIA

(22) Date of filing of Application :02/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A Colistin binding and detecting aptamer

(51) International classification :A61K0038120000, C12N0015115000, A61P0019020000, A61B0017000000, H02S0020320000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT Title of Invention: A Colistin binding and detecting aptamer A Colistin binding and detecting 86-nucleotides aptamer COL7 having SEQ. ID. 3 with high affinity and specificity for colistin antibiotic. and the advanced aptamer is found to exhibit low dissociation constant (Kd) of 24.7nM along with Gibbs free energy (ΔG) of -10.4 kcal/mol through ITC study, ensuring a strong and spontaneous binding to colistin. EMSA and CD showed COL7 had very specific and high conformational binding capacity to colistin. COL7 includes a secondary structure having a central loop region containing three smaller hairpin loops that facilitates Colistin capture. Fig. 7

No. of Pages : 31 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531063354 A

(19) INDIA

(22) Date of filing of Application :03/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A ZERO-TILLAGE SEED DRILL

(51) International classification :A01C0005060000, A01C0007000000, A01C0007040000, A01B0049020000, A01B0049060000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA		(71)Name of Applicant : 1)BIHAR AGRICULTURAL UNIVERSITY Address of Applicant :Bihar Agricultural University, Sabour, 813210 Bihar (INDIA) Sabour ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Dr. ANIL KUMAR SINGH Address of Applicant :Director of Research, Bihar Agricultural University, Sabour, 813210 Bihar (India) Sabour ----- 2)Dr. D R SINGH Address of Applicant :Vice-Chancellor, Bihar Agricultural University, Sabour, 813210 Bihar (India) Sabour ----- 3)Dr. RIMA KUMARI Address of Applicant :ssistant Professor-cum-Jr. Scientist, Division of Plant Biotechnology, College of Agricultural Biotechnology, Bihar Agricultural University, Sabour, 813210 Bihar (India) Sabour ----- 4)DR. NINTU MANDAL Address of Applicant :Assistant Professor-cum-Jr. Scientist, Department of soil science and agriculture chemistry, Bihar Agricultural University, Sabour, 813210 Bihar (India) Sabour ----- 5)Dr. PANKAJ KUMAR Address of Applicant :Assistant Professor-cum-Jr. Scientist, Department of Molecular Biology and Genetic engineering, Bihar Agricultural University, Sabour, 813210 Bihar (India) Sabour -----

(57) Abstract :

ABTRACT A ZERO-TILLAGE SEED DRILL The present invention relates to a zero-tillage seed drill designed to enhance soil health and reduce carbon emissions through efficient residue and seed 5 management. The implement features a frame attachable to a tractor, with a front-mounted residue-cutting disc assembly comprising self-sharpening, serrated discs to cut and displace surface biomass. Positioned behind this is a biomass management unit equipped with a rotating flail chopper or roller that lifts, chops, and redistributes crop residues as mulch between seed rows. A precision seed 10 placement assembly follows, incorporating double-disc openers for minimal soil disturbance, along with a seed metering and delivery system that ensures accurate seed depth and spacing. The system includes a pneumatic or mechanical seed delivery unit for precision placement. An adjustable mounting module allows variation in depth and angle of operation, while a traction-optimized chassis 15 design ensures compatibility with low-horsepower tractors, making the drill suitable for sustainable, small-scale, and conservation-focused farming. FIGURE 1

No. of Pages : 23 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531063601 A

(19) INDIA

(22) Date of filing of Application :03/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Real-time Organic Compost Quality Analyzer

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(51) International classification	:G01N0021356300, G01N0021359000, G01N0021310000, G01N0021357700, G01N0033280000	
(86) International Application No	:NA	
Filing Date	:NA	
(87) International Publication No	: NA	
(61) Patent of Addition to Application Number	:NA	
Filing Date	:NA	
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

The present invention relates to a real-time organic compost quality analyzer (100) designed for portable, non-destructive, automated, and multivariate assessment of compost maturity, stability, and nutrient content. The analyzer comprises a spectroscopy module (10) employing near-infrared (NIR) and mid-infrared (MIR) sensors, a multi-sensor suite (16) including pH, electrical conductivity, temperature, humidity, and gas sensors (CO₂, NH₃, CH₄), a processing unit (18) with a self-calibrating algorithm trained on extensive compost samples, a wireless communication module (36) for remote data transmission, a power supply (38), and a user-interface (14) for real-time display of compost quality metrics. The algorithm utilizes spectral absorption patterns alongside sensor data to predict maturity, stability, and eventual nutrient release, thereby guiding process optimization, reducing fertilizer usage, and strengthening sustainable agricultural practices.

No. of Pages : 18 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531065005 A

(19) INDIA

(22) Date of filing of Application :08/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : Method and System of Lightweight Quantum Image Encryption and Decryption using a Novel Chaotic Feistel Network for Quantum Hardware

(51) International classification :H04L0009060000, H04L0009000000, H04L0009080000, G06F0007580000, H04L0009140000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :
This invention relates to method (100) and system of Lightweight Quantum Image Encryption and Decryption using a Novel Chaotic Feistel Network for Quantum Hardware to make image data secure. The proposed method utilizes a 3D chaotic map to generate unique keys for each pixel in the Feistel structure. A novel Feistel structure (F, F') with four data blocks (A0, B0, C0, D0) is designed. At the end of each round, the data blocks (A0, B0, C0, D0) are also randomly permuted based on a key. A chaotic map is used to generate a random image, which is XORed (X) on the plain image before the Feistel rounds (F, F') are applied. An additional global permutation (T) of pixel values is also performed to ensure diffusion is achieved. The chaotic mapping and key scheduling introduce significant randomness and complexity, making the logic resistant to brute-force attacks. Classical simulation and various numerical tests show the durability and resilience against various attacks. [Figure 3A, 3B]

No. of Pages : 49 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :09/07/2025

(21) Application No.202531065667 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Wettable Powder (WP) Formulation of Botanical Fungicide from Ageratum conyzoides L and a process thereof

(51) International classification :A61K0036280000, A61K0036532000, A01N0025140000, B01D0019040000, A61K0009000000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA	(71)Name of Applicant : 1)Dr. Krishnendu Kundu Address of Applicant :Indian National of Department of Plant Pathology, BCKV, Mohanpur, Nadia, Pincode 741252, West Bengal, India. Kolkata ----- 2)Prof. (Dr.) Subrata Dutta 3)Dr. Dipak Kumar Hazra Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Dr. Krishnendu Kundu Address of Applicant :Indian National of Department of Plant Pathology, BCKV, Mohanpur, Nadia, Pincode 741252, West Bengal, India. Kolkata ----- 2)Prof. (Dr.) Subrata Dutta Address of Applicant :Indian National of Department of Plant Pathology, BCKV, Mohanpur, Nadia, Pincode 741252, West Bengal, India. Kolkata ----- 3)Dr. Dipak Kumar Hazra Address of Applicant :Indian National of Department of Agricultural Chemicals, BCKV, Mohanpur, Nadia, Pincode 741252, West Bengal, India. Kolkata ----- 4)Prof. Sujit Kumar Ray Address of Applicant :BCKV, Mohanpur, Nadia, Pincode 741252, West Bengal, India. Kolkata ----- 5)Dr. Ashis Roy Barman Address of Applicant :BCKV, Mohanpur, Nadia, Pincode 741252, West Bengal, India. Kolkata ----- 6)Dr. Raju Das Address of Applicant :BCKV, Mohanpur, Nadia, Pincode 741252, West Bengal, India. Kolkata ----- 7)Dr. Raghunath Mandal Address of Applicant :BCKV, Mohanpur, Nadia, Pincode 741252, West Bengal, India. Kolkata ----- 8)Prof. Subhendu Jash Address of Applicant :BCKV, Mohanpur, Nadia, Pincode 741252, West Bengal, India. Kolkata -----

(57) Abstract :

Wettable Powder (WP) Formulation of Botanical Fungicide from Ageratum conyzoides L and a process thereof Abstract The present invention discloses a wettable powder (WP) formulation of botanical fungicide from Ageratum conyzoides L comprising (25-30) grams of Ageratum conyzoides leaf and stem extract, (0-10) grams of sorptive filler, (0- 5) grams of surfactant, (30-60) grams of diluent, (0-5) grams of antifoaming agents, (1-5) grams of adjuvant, and (10-20) grams wetting agent in a 100g of the said formulation. It is safe for users and environmentally friendly. Additionally, the present invention also discloses the process of preparation of the wettable powder formulation, its physicochemical characterization, and finally its effective bio-efficacy against crop diseases as well as phytotoxic effect on the crop plants. Dated 9th July 2025 (Paramita Saha) Applicants' Agent IN/PA/2154

No. of Pages : 29 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531066301 A

(19) INDIA

(22) Date of filing of Application :11/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : AN ANTHROPOMORPHIC COMPLIANT HAND GRIPPER PROSTHETIC WITH PASSIVE CURLED GRIPPING AND TENDON-DRIVEN UNCURLING ACTUATION.

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(51) International classification	:B25J0009100000, B25J0015000000, B25J0017020000, B25J0015120000, A61F0002580000	Name of Applicant : NA Address of Applicant : NA
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Filing Date	:NA	

(57) Abstract :

ABSTRACT TITLE: AN ANTHROPOMORPHIC COMPLIANT HAND GRIPPER PROSTHETIC WITH PASSIVE CURLED GRIPPING AND TENDON-DRIVEN UNCURLING ACTUATION. The present invention relates to a compliant monolithic, tendon-driven, anthropomorphic hand gripper prosthetic that utilizes the inherent compliance of material to achieve gripping functionality. Unlike conventional rigid link prosthetic designs or previously explored compliant grippers that rely on active actuation working against compliance, this innovation leverages material compliance as a primary mechanism to facilitate grasping. The device comprises a single-piece structure with anatomically inspired finger proportions modeled after human hand geometry, incorporating spiral-based compliant joints that replace traditional rigid revolute joints. In the resting state, the gripper remains in a naturally "closed" or "gripped" position. Actuation tendons, routed over the dorsal side of the fingers, are tensioned via a minimal actuator system—typically two servo motors—to open the grip. Upon relaxation of the tendons, the compliance of the structure enables the fingers to passively return to the gripping configuration, thus securing objects, as a closer mimicry of natural human hand motion, offering an accessible, scalable alternative to complex and expensive robotic prostheses. (Figure 3)

No. of Pages : 31 No. of Claims : 18

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531066823 A

(19) INDIA

(22) Date of filing of Application :14/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : HYBRID PLASMONIC WAVEGUIDE REFRACTIVE INDEX SENSOR FOR TUBERCULOSIS AND PREGNANCY DETECTION

(51) International classification :G01N0021552000, G01N0021410000, B82Y0020000000, G01N0033543000, G01N0021770000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present invention discloses a hybrid plasmonic hexagonal double ring resonator based nanophotonic refractive index (RI) sensor (100) as a bio-sensor for determining medical conditions (like pregnancy and/or tuberculosis) from human biological fluids/ analytes (like blood and/or urine) by detecting minute RI variations of said analytes. The said sensor (100) operates on the principle of Surface Plasmon Resonance for detecting variations in RI of analytes near a metal surface resulting from light-matter interactions. When an analyte is placed surrounding to the metal layer of said sensor (100), a localized variation in the RI is generated which changes the resonance conditions (like wavelength, amplitude, or intensity of an incident light). Such resonance changes are correlated with the quantity and type of the analyte and correspond to the detection of the said medical conditions.

No. of Pages : 42 No. of Claims : 18

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531066889 A

(19) INDIA

(22) Date of filing of Application :14/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : FOOT-WEARABLE CLEANING ARTICLE WITH REMOVABLE SCRUBBING ELEMENT FOR WET FLOOR CLEANING

(51) International classification :A43B0013120000, A47L0013170000, A47L0013160000, A47K0007020000, A43B0013180000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA	(71)Name of Applicant : 1)National Institute of Technology, Patna Address of Applicant :National Institute of Technology Patna, Ashok Rajpath, Patna-800005 Bihar, India. Patna ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)DAS, Bijay Kumar Address of Applicant :Department of Architecture & Planning, NIT Patna, Ashok Rajpath, Patna - 800005, Bihar, India. Patna ----- 2)SRIVASTAVA, Arpita Address of Applicant :Department of Architecture & Planning, NIT Patna, Ashok Rajpath, Patna - 800005, Bihar, India. Patna ----- 3)Shruti Address of Applicant :Department of Architecture & Planning, NIT Patna, Ashok Rajpath, Patna - 800005, Bihar, India. Patna -----

(57) Abstract :

The present invention relates to a foot-wearable cleaning article (100) for cleaning wet bathroom floors. The cleaning article includes an upper structure (101) formed of a flexible synthetic material, configured to secure a user's foot during wearing and cleaning activity. An inner sole (102) is disposed beneath the upper structure (101), the inner sole (102) being cushioned and configured to be waterproof and moisture-resistant to prevent water absorption from an underlying layer. A midsole base layer (103) is disposed beneath the inner sole (102), the midsole being durable and flexible, and configured to structurally separate the inner sole (102) from a scrubbing element (104). The removable, washable or replaceable scrubbing element (104) is positioned beneath the midsole base layer (103) and detachably secured using an attachment mechanism (105). The scrubbing element (104) is configured for wet use to remove stains from bathroom floors through foot movement and gentle applied pressure. The article enables hands-free cleaning while offering user comfort, safety, and reusability. (to be published with Figure 1)

No. of Pages : 13 No. of Claims : 5

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531066990 A

(19) INDIA

(22) Date of filing of Application :14/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : DUAL-HAND SMART GLOVE SYSTEM FOR ISL-TO-ASSAMESE TRANSLATION USING BLE AND EXTERNAL ML PROCESSING

(51) International classification :G06F0003010000, G09B0021000000, G10L0013000000, A41D0019000000, G06V0040200000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

This invention relates to a smart, wearable glove system designed to translate Indian sign Language (IsI) gestures into Assamese text and optionally into speech, offering a practical communication toolfor individuals with hearing and speech impairments-particularly in Assamese-speaking regions. The system includes a pair of sensor-equipped gloves: the righthand glove functions as the primary unit with five flex sensors and an inertial measurement unit (IMU), while the left-hand glove provides additional gesture input using three flex sensors and a separate IMU. Both gloves are powered by lightweight, rechargeable batteries and controlled by energyefficient microcontrollers (such as ESP32 or ESP32-C3) with built-in Bluetooth Low Energy (BLE) capabilities. Finger movements and hand orientations are captured by the flex sensors and IMUs, and this data is collected and encoded by the microcontrollers. The processed sensor data is wirelessly transmitted to a mobile phone or computer, where gesture recognition is performed using trained machine learning algorithms. once identified, the gestures are mapped to their corresponding Assamese characters, words, or phrases, and may also be converted into spoken Assamese using a text-to-speech system. This invention offers a modular, scalable, and low-cost assistive technology that combines wearable electronics, embedded systems, and artificial intelligence. It is designed for comfort, efficiency, and real-time operation, with future possibilities including haptic feedback, voice-assisted input, and on-glove AI processing. overall, it represents a significant step toward inclusive communication in regional languages through intelligent gesture recognition.

No. of Pages : 20 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531067005 A

(19) INDIA

(22) Date of filing of Application :14/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : BAY LEAF AQUEOUS EXTRACT-BASED GEL COMPOSITION FOR CYTOTOXICITY AGAINST A375 MELANOMA CELLS USING MTT ASSAY

(51) International classification :A61K0036540000, A61K0009000000, A61K0009060000, A61K0047320000, A61P0035000000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
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(57) Abstract :

ABSTRACT The present invention provides a novel herbal gel formulation comprising aqueous extract of Cinnamomum Tamala (Bay Leaf) leaves for use in dermatological oncology. The gel is prepared by incorporating 0.05gm of extract into a Carbopol 940 base, and Sodium Hydroxide Solution for pH adjustment. Gel was tested for color (Light Brown), odor (Agreeable), lead (in mg/litre: <0.5 : LOD (Limit of Detection: 0.5), Arsenic (in mg/litre : <0.02, LOD: 0.02), Mercury (in mg/litre : 0.02 : LOD: 0.02), Cadmium (in mg/litre: <0.1 : LOD: 0.1), Total plate count (CFU/g (colony forming unit/g : 650) , Total Yeast and Mould Count (CFU/g: 14000) , Coliforms (CFU/g<10), Escherichia coli (in g : absent) , Salmonella (in 25 g: absent). This invention proves plant-based topical treatments (bay leaves extract gel) for melanoma by demonstrating cytotoxic efficacy (CTC50 in mcg/ml of bay leaves extract gel: 2426.58 calculated by excel using a formula: CTC50 = Trend (Concentrations performed, Toxicity values, 50) against A375 human melanoma cell lines using the MTT assay. The results show significant dose-dependent reduction in cell viability, supporting the gel's potential for therapeutic use against human cancer cell. The invention is cost-effective, safe for dermal application, and offers an accessible alternative to conventional therapies, particularly in resource-limited settings. This herbal gel formulation may serve as an adjunct or standalone treatment in the management of melanoma and is suitable for further clinical evaluation.

No. of Pages : 8 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531067493 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR REGULATING A LOAD FREQUENCY AND TIE-LINE POWER

(51) International classification :H02J3/24
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

The present disclosure pertains to a system (100) and method (800) for regulating a load frequency and tie-line power. The method (800) for regulating a load frequency and tie-line power in real-time includes a second controller configured to detect (802) a deviation in the load frequency and the tie-line power using a measurement unit associated with the system, and generate (804) a control command based on the detection and transmit the control command to the first controller. The method (800) includes a first controller integrated to determine (806) a total deviation of the load frequency and the tie-line power based on the control command, and generate (208) a control signal based on the control command and the total deviation. The method (800) includes a first controller that is configured to transmit (810) the control signal to a power source to regulate the load frequency and the tie-line power in real-time.

No. of Pages : 31 No. of Claims : 8

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531067560 A

(19) INDIA

(22) Date of filing of Application :15/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : METHOD FOR IDENTIFICATION AND IN-SILICO SCREENING OF ANTI-CANCER BIOACTIVE COMPOUNDS IN MOMORDICA DIOICA LANDRACES

(51) International classification :G01N0030020000, G16C0020500000, G01N0021350000, G01N0030060000, A61K0036420000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA	(71)Name of Applicant : 1)Siksha ‘O’ Anusandhan (Deemed to be University) Address of Applicant :J-15, Khandagiri Square, Bhubaneswar-751030, Odisha, India. Bhubaneswar ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Prof. Gyana Ranjan Rout Address of Applicant :Professor & Head of the Department (HOD), Department of Molecular Biology and Biotechnology, Siksha ‘O’ Anusandhan (Deemed to be University), J-15, Khandagiri Square, Bhubaneswar-751030, Odisha, India. Bhubaneswar ----- 2)Dhaneswar Swain Address of Applicant :Laboratory Assistant, Department of Molecular Biology and Biotechnology, Siksha ‘O’ Anusandhan (Deemed to be University), J-15, Khandagiri Square, Bhubaneswar-751030, Odisha, India. Bhubaneswar ----- 3)Sasmita Priyadarshini Dash Address of Applicant :Assistant Professor, Department of Vegetable Science, Siksha ‘O’ Anusandhan (Deemed to be University), J-15, Khandagiri Square, Bhubaneswar-751030, Odisha, India. Bhubaneswar ----- 4)Lipsa Leena Panigrahi Address of Applicant :Research Associate, Department of Molecular Biology and Biotechnology, Siksha ‘O’ Anusandhan (Deemed to be University), J-15, Khandagiri Square, Bhubaneswar-751030, Odisha, India. Bhubaneswar -----

(57) Abstract :

A method for identification and in-silico screening of anti-cancer bioactive compounds in Momordica dioica landraces comprising collection of fruits at different developmental stages, washing, shed drying, and grinding into fine powder stored in sterile containers, soaking the powder in solvent for 48 hours under agitation, filtering through Whatman filter paper No 1, followed by rotary evaporation at 40-50°C, drying under hot circulating air at 35-45°C and lyophilisation to obtain fruit extract, which is then filtered and analyzed using GC-MS with peak identification via NIST MS 2.0 database, FTIR analysis to study metabolic transitions for optimal harvest timing, and molecular docking with Hippo Pathway Effector Protein and Heat Shock Protein 70 to screen compounds based on energetically favourable binding conformations.

No. of Pages : 33 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531067735 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SYSTEM AND METHOD FOR SOLAR-DRIVEN DUAL ORGANIC RANKINE CYCLE WITH CASCADED HEAT RECOVERY INTEGRATION

(51) International classification	:F24S0023740000, F01K0025080000, F24S0010400000, F01K0023100000, H01M0008066200	(71)Name of Applicant : 1)National Institute of Technology Rourkela Address of Applicant :National Institute of Technology Rourkela, Rourkela - 769008, Dist: Sundargarh, Odisha, India Rourkela -----
(86) International Application No	:NA	Name of Applicant : NA
Filing Date	:NA	Address of Applicant : NA
(87) International Publication No	: NA	(72)Name of Inventor :
(61) Patent of Addition to Application Number	:NA	1)ANAND, Mr. Sumeet
Filing Date	:NA	Address of Applicant :Department of Mechanical Engineering, National Institute of Technology Rourkela, Rourkela - 769008, Dist: Sundargarh, Odisha, India Rourkela -----
(62) Divisional to Application Number	:NA	2)KUMAR, Dr. Sumit
Filing Date	:NA	Address of Applicant :Department of Mechanical Engineering, National Institute of Technology Rourkela, Rourkela - 769008, Dist: Sundargarh, Odisha, India Rourkela -----

(57) Abstract :

The present invention relates to a solar-driven dual-loop organic Rankine cycle (ORC) power generation system (100) and method (200) which utilizes a gas-based heat transfer fluid (HTF) in parabolic trough solar collectors (PTSCs) (1). The system (100) comprises a high-temperature topping cycle and a low-temperature bottoming cycle, thermally integrated through a multi-stage heat exchanger to maximize residual heat recovery and enhance thermal efficiency. Carbon dioxide gas is used as the HTF, addressing limitations of conventional liquid HTFs such as corrosion, freezing, and thermal instability. The present invention system (100) and method (200) offers high thermal efficiency, modularity, scalability, and low environmental impact for renewable and waste heat recovery applications in off-grid and industrial environments.

No. of Pages : 29 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531067743 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : FORMULATION, PHYSICOCHEMICAL CHARACTERIZATION AND ASSESSMENT OF ATORVASTATIN LOADED LIPID BASED NANO CARRIERS TO IMPROVE BIO-AVAILABILITY: A STRATEGY TOWARDS BETTER THERAPEUTIC OUTCOMES

(51) International classification :A61K0009127000, A61K0009510000, A61K0009000000, A61K0047690000, A61K0009107000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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Name of Applicant : NA

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3)Dr. Biplab Debnath

Address of Applicant :Professor, Department of Pharmaceutical Chemistry, Bharat Technology, Uluberia, Howrah, West Bengal-711316 -----

(57) Abstract :

[036] The present invention relates to a novel lipid-based nanocarrier formulation for Atorvastatin calcium aimed at enhancing its oral bioavailability and therapeutic efficacy. The formulation comprises a lipid matrix, one or more biocompatible surfactants, and co-surfactants, in which Atorvastatin is encapsulated using a reproducible method involving high-shear homogenization and ultrasonication. The resulting nanocarriers exhibit particle sizes ranging from 50–200 nm, high encapsulation efficiency (>85%), and sustained drug release over 24 hours. In vivo pharmacokinetic studies demonstrate a significant improvement in systemic bioavailability compared to conventional formulations. This invention offers a scalable and effective drug delivery platform for Atorvastatin, with potential for broader application to other poorly water-soluble drugs. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 18 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531067868 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SYSTEM AND METHOD TO PREPARE LOW-TEMPERATURE CARBON ELECTRODE FOR HTL-FREE PEROVSKITE SOLAR CELLS

(51) International classification	:H01L0031180000, H10K0085500000, H10K0071120000, H01L0031022400, H10K0030810000	(71)Name of Applicant : 1)Central University of Jharkhand Address of Applicant :Village- Cheri-Manatu, P.O.- Kamre, P.S.- Kanke, Ranchi- 835222, Jharkhand, India -----
(86) International Application No	:NA	Name of Applicant : NA
Filing Date	:NA	Address of Applicant : NA
(87) International Publication No	: NA	(72)Name of Inventor : 1)Mr. Rohitash Upadhyay Address of Applicant :Village- Nagala Majara Jait, P.O.- Dawari, P.S.- Faizganj Behta, Badaun-243632, Uttar Pradesh, India Badaun -----
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Filing Date	:NA	3)Dr. Avijit Ghosh Address of Applicant :Village and Post: Changual, P.S.: Kharagpur Local, Distt.: PaschimMedinipur, PIN-721301,West Bengal, India PaschimMedinipur -----
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

ABSTRACT A SYSTEM AND METHOD TO PREPARE LOW-TEMPERATURE CARBON ELECTRODE FOR HTL-FREE PEROVSKITE SOLAR CELLS The present disclosure relates to a system and method to prepare a low-temperature processed carbon electrode for perovskite solar cells, particularly suited for HTL-free architectures. The invention provides a carbon paste formulation composed of graphite, carbon nanopowder, and tunable graphene content, integrated with cyanoacrylate as a binder and anisole or chlorobenzene as solvents to ensure compatibility with perovskite active layers. The system includes modules for material mixing, paste homogenization, controlled deposition via blade coating or screen printing, and low-temperature drying at approximately 80 °C. The carbon electrode thus formed performs dual functions as both a hole transport layer and a back electrode, eliminating the need for expensive HTMs and metal contacts. The inclusion of graphene enhances conductivity and interfacial contact, leading to improved power conversion efficiency and ambient stability. This scalable, cost-effective solution significantly simplifies perovskite solar cell fabrication and supports flexible or large-area photovoltaic applications. Fig. 3.

No. of Pages : 29 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531067946 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SHELF-STABLE FORMULATION OF GARLIC- BIRD'S EYE CHILLI SAUCE

(51) International classification :A23L0027600000, A23B0007040000, A23B0007154000, A61P0043000000, A61P0003060000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA	(71)Name of Applicant : 1)COLLEGE OF HORTICULTURE, CENTRAL AGRICULTURAL UNIVERSITY (IMPHAL) Address of Applicant :THENZAWL, MIZORAM 796186 ----- ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)CHINGTHAM CHANBISANA Address of Applicant :INSTITUTE OF BIORESOURCES AND SUSTAINABLE DEVELOPMENT TAKYELPAT, IMPHAL WEST, MANIPUR 795001 ----- ----- 2)RAHUL SADHUKHAN Address of Applicant :COLLEGE OF HORTICULTURE, CENTRAL AGRICULTURAL UNIVERSITY (IMPHAL) THENZAWL, MIZORAM 796186 ----- ----- 3)PRADEEPTO PAL Address of Applicant :COLLEGE OF HORTICULTURE, CENTRAL AGRICULTURAL UNIVERSITY (IMPHAL) THENZAWL, MIZORAM 796186 ----- ----- 4)SHRI DHAR Address of Applicant :COLLEGE OF HORTICULTURE, CENTRAL AGRICULTURAL UNIVERSITY (IMPHAL) THENZAWL, MIZORAM 796186 ----- ----- 5)H. NANA OCHA SHARMA Address of Applicant :INSTITUTE OF BIORESOURCES AND SUSTAINABLE DEVELOPMENT TAKYELPAT, IMPHAL WEST, MANIPUR 795001 ----- ----- 6)VENUS MAHANT Address of Applicant :SCHOOL OF APPLIED AND LIFE SCIENCES, UTTARANCHAL UNIVERSITY, DEHRADUN 248007 - ----- -----

(57) Abstract :

SHELF-STABLE FORMULATION OF GARLIC- BIRD'S EYE CHILLI SAUCE A method for preparing a shelf-stable bird's eye chili and garlic paste is disclosed herein, addressing the challenge of preserving fresh condiments while retaining their authentic flavor and extending shelf life. The method comprises meticulously preparing fresh bird's eye chili and garlic cloves, including stalk separation, washing, and crucial air drying to minimize moisture content. These prepared ingredients are then blended with fresh ginger and non-pungent edible oil to form a smooth paste. The paste undergoes controlled low-flame cooking with continuous stirring, during which black pepper and salt are added. A key step involves cooking until a distinct garlic aroma is secreted and oil separation is observed, indicating optimal doneness. Finally, vinegar is incorporated at the end of cooking to enhance preservation, and the hot paste is filled into dry, sterilized glass jars for ambient storage. This invention provides a convenient, flavorful, and microbiologically stable chili garlic paste without requiring refrigeration or excessive artificial preservatives, offering a significant improvement for consumers and the food industry.

No. of Pages : 19 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :16/07/2025

(21) Application No.202531067975 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : Self-Aware AI Simulation for Emotion Detection

(51) International classification :G10L0025630000, A61B0005160000, G06F0040300000, G16H0020700000, G06V0040160000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA	(71)Name of Applicant : 1)Dik Sharma Address of Applicant :C/O: Pinky Sharma, Pancharatna, Lokhra Road, Lutuma, Binovanagar, Kamrup, Assam-781018 Guwahati ----- ----- 2)Devansh Agarwal 3)Abhilash Borah Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Devansh Agarwal Address of Applicant :S/O: Alok Agarwal, C/O M.G Enterprises, G.S Road, Umsosun, Bara Bazar, Opposite Ajmera Building, Lewduh, East Khasi Hills, Meghalaya, 793002 Shillong ----- 2)Dik Sharma Address of Applicant :C/O: Pinky Sharma, Pancharatna, Lokhra Road, Lutuma, Binovanagar, Kamrup, Assam-781018 Guwahati ----- ----- 3)Dr Prerna Mahajan Address of Applicant :WZ 407 C (GROUND FLOOR), GALI NO-2, JANAK PARK HARI NAGAR, Maya Puri, Maya Puri, South West Delhi, 110064 Bangalore ----- 4)Rahul Patowary Address of Applicant :S/O: Gopi Kanta Patowary, panjabari road, Panjabari, Kamrup, Assam - 781037 Guwahati ----- 5)Dr Pranjit Sutradhar Address of Applicant :C/O: Nripendra Sutradhar, Chedamari, Balapara, Bongaigaon, Assam-783388 Jorhat ----- 6)Abhishek Kakati Address of Applicant :Thana road, near police station, Diphu Karbi Anglong, Assam 782460 Guwahati ----- 7)Dr Neelav Sarma Address of Applicant :C/O: Raju Sarma, KARANGA, Katoni Gaon, Cinnamara. Jorhat, Assam, 785008 Jorhat ----- 8)Dr Azizur Rahman Address of Applicant :C/O: Alimuddin Ahmed, NERIM Group Of Institutions, Tripura Road, Jayanagar, Khanapara, Kamrup Metro, Assam-781022 Guwahati ----- 9)Dr Sunil Prasad Address of Applicant :S/O Ashok Prasad, Santinagar MW, Near Central Park, Jorethang Nagar Panchayat, Nayabazar Forest Block, DIST: South Sikkim-737121 Sikkim -----

(57) Abstract :

This innovation shows a real-time emotion detection and adaptive AI simulation system that models parts of consciousness by using emotional memory, mood progression, and self-reflective interaction. The system employs deep learning to figure out how people are feeling, keeps track of emotional trends, and then uses the AI mood it figures out to make speech answers that are tailored to each person. It can be utilized in AI companions, emotionally intelligent assistants, systems that adapt to how people interact with computers, and in keeping an eye on mental health.

No. of Pages : 9 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531068085 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A METHOD FOR IDENTIFICATION AND FORMULATION OF BACTERIA FOR DEGRADATION OF PLASTIC

(51) International classification	:C12N0001200000, B09C0001080000, A01N0061000000, G06Q0040020000, C12R0001380000	(71)Name of Applicant : 1)SANJANA GHOSH Address of Applicant :Flat no. – 2, 7, Priyanath Ghosh Road, P.O. – Santoshpur, Kolkata, West Bengal, India, 700075 Kolkata ----- 2)Shoham Ghosh 3)Arup Kumar Mitra Name of Applicant : NA Address of Applicant : NA
(86) International Application No	:NA	(72)Name of Inventor : 1)SANJANA GHOSH Address of Applicant :Flat no. – 2, 7, Priyanath Ghosh Road, P.O. – Santoshpur, Kolkata, West Bengal, India, 700075 Kolkata ----- 2)Shoham Ghosh Address of Applicant :Greenfield City, Block-33, Flat-12/E,Joth Sibrampur, Maheshtala Kolkata West Bengal India 700141 Kolkata ---- 3)Arup Kumar Mitra Address of Applicant :62B, Alipore Road, Kolkata, West Bengal, India, 700027 Kolkata -----
Filing Date	:NA	
(87) International Publication No	: NA	
(61) Patent of Addition to Application Number	:NA	
Filing Date	:NA	
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

The present invention describes an enzymatic analysis method that can be employed to identify strains of bacteria that have the ability to break down macroscopic and microscopic particles of plastics. An aspect of the invention, is a method to identify bacterial strains from microplastic contaminated soils and constitute them into a consortium that can enzymatically break down said microplastics. A further aspect of the invention is to provide a kit for application onto soils comprising a concentrated mixture of five bacterial strains and nutrient media for their growth that has been lyophilized into a powder in a water-soluble capsule. The capsule's contents contain around 500 milligrams of said mixture that can be dissolved in water and applied to soil at a ratio of 1:10 for microplastic removal.

No. of Pages : 26 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531068097 A

(19) INDIA

(22) Date of filing of Application :16/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : "A Novel formulation of natural, antimicrobial cream with soothing and hydrating properties, suitable for application across a spectrum of skin types, derived from Curcuma caesia Roxb."

(51) International classification : A61K7/00, A61K8/27, A61K9/06, A61K36/72, A61P17/00 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA	(71)Name of Applicant : 1)Dr Deboja Sharma Address of Applicant :Flat No.201. Block-B, Nilachal Enclave, Survey, Beltola, Kamrup Metro, Assam India 781028 Kamrup ----- 2)Rana Mukherjee 3)Moumita Sarkar Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Dr Deboja Sharma Address of Applicant :Flat No.201. Block-B, Nilachal Enclave, Survey, Beltola, Kamrup Metro, Assam India 781028 Kamrup ----- 2)Rana Mukherjee Address of Applicant :9/114 Umesh Mukharji Road, 17 Belghariya, North 24-Parganas Kolkata West Bengal India 700056 Kamrup ----- 3)Moumita Sarkar Address of Applicant :D/O: Manoranjan Sarkar, 397, Bimala Bora Rath, Faujadari Patty, Nagaon, Nagaon Padel, Kamrup Metro, Assam India 782003 Nagaon -----

(57) Abstract :

The present invention relates to a natural anti-microbial soothing cream formulated with a blend of Curcuma caesia Roxb. (Black Turmeric), Aloe vera, Coconut oil, and Sandalwood oil, designed to provide anti-inflammatory, anti-bacterial, anti-fungal, and antioxidant benefits. The cream is specifically developed to moisturize, soothe, and heal the skin, making it suitable for a variety of skin types, including sensitive and irritated skin. It is particularly effective for treating conditions such as eczema, sunburns, minor burns, acne, and other skin irritations. The formulation is free from synthetic chemicals and preservatives, offering a natural and safe alternative to conventional skincare products. Additionally, the cream provides UV protection, enhances skin hydration, and promotes skin healing, making it a multi-functional skincare solution. The invention provides a safe, effective, and cost-effective option for improving overall skin health and appearance.

No. of Pages : 15 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531068282 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A VERTICAL STEP SHAPE HETERODIELECTRIC FERROELECTRIC TUNNEL JUNCTION (SSHD-FTJ) DEVICE AND ITS FABRICATION METHOD

(51) International classification	:H01L0029780000, H01L0029660000, H01L0029510000, H01L0021020000, H01L0021280000	(71)Name of Applicant : 1)National Institute of Technology Mizoram Address of Applicant :Chaltlang, Aizawl – 796012, Mizoram India Aizawl -----
(86) International Application No	:NA	Name of Applicant : NA
Filing Date	:NA	Address of Applicant : NA
(87) International Publication No	: NA	(72)Name of Inventor :
(61) Patent of Addition to Application Number	:NA	1)Puja Ghosh
Filing Date	:NA	Address of Applicant :Indian Institute of Information Technology Ranchi (IIIT Ranchi), BSNL Campus, Getlatu, Ranchi, Jharkhand, India, 835217, Ranchi -----
(62) Divisional to Application Number	:NA	2)Kvan Lalawmpuia
Filing Date	:NA	Address of Applicant :Department of Electronics and Communication Engineering, National Institute of Technology Mizoram, Aizawl, India– 796012 Aizawl -----

(57) Abstract :

The present invention relates to a Vertical Step Shape Heterodielectric Ferroelectric Tunnel Junction (SSHD-FTJ) device designed to enhance tunneling efficiency and electrical performance for advanced electronic applications. The device comprises a semiconductor substrate with a p+ source region and n+ drain region, separated by an intrinsic channel region. A silicon-doped HfO₂ ferroelectric layer is incorporated at the tunnel junction to leverage negative capacitance and energy band bending, boosting the ON current and reducing the subthreshold swing. A vertical n+ pocket is introduced between the source and channel regions to enhance the tunneling rate. The gate electrode features a step-shaped design with heterodielectric layers, including a high-k dielectric near the source and a low-k dielectric near the drain, optimizing leakage current and ambipolar effects. The metal gate, with a work function of 4.25 eV, and optimized architecture make the SSHD-FTJ device suitable for low-power, high-performance future semiconductor technologies.

No. of Pages : 28 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531068335 A

(19) INDIA

(22) Date of filing of Application :17/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A SYSTEM AND A METHOD FOR SKILL-BASED RECRUITMENT AND VERIFICATION OF A SKILLED WORKER

(51) International classification :G06Q10/10, G06N99/00, G06Q10/06 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA		(71)Name of Applicant : 1)SUSMITA MISHRA Address of Applicant :18, SAI ANANDAM COMPLEX, PATIA, ODISHA, BHUBANESWAR- 751024, INDIA BHUBANESWAR ----- ----- 2)AMIYA KUMAR MISHRA Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)AMIYA KUMAR MISHRA Address of Applicant :18, SAI ANANDAM COMPLEX, PATIA, ODISHA, BHUBANESWAR- 751024, INDIA BHUBANESWAR ----- ----- 2)RUPESH MISHRA Address of Applicant :PLOT NO 558/3762. SISUPALGARH, ODISHA, BHUBABESWAR - 751002, INDIA BHUBANESWAR ---- -----

(57) Abstract :

A system (100) for skill-based recruitment and verification of a skilled worker is provided. A user input module (120) receives a plurality of registration details in a user-preferred language, allowing selection from a predefined list and proposing new entries with document-based verification. A verification module (125) verifies the plurality of registration details. A validation module (130) enables a job coordinator to review, validate, and approve the plurality of registration details. A job seeker module (135) facilitates job searches based on preferences, while a job provider module (140) enables job postings with weighted selection criteria. A scoring module (145) applies an artificial intelligence model computes match scores to align candidate profiles with job requirements, generating shortlists and explanation. An alert generation module (150) notifies users when scores exceed thresholds. A recommendation module (155) identifies one or more skill gaps and provides a personalized upskilling recommendation. FIG. 1

No. of Pages : 44 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531068584 A

(19) INDIA

(22) Date of filing of Application :18/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A heterojunction bipolar transistor (HBT) based on AlGaAsP/GaAsP for high frequency applications

(51) International classification	:H01L0029660000, H01L0029737000, H01L0029080000, H01L0029400000, H01L0029730000	(71)Name of Applicant : 1)INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES), DHANBAD Address of Applicant :Dhanbad - 826004, Jharkhand, India Dhanbad ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Swastik Kumar Sahu Address of Applicant :Department of Electronics Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, Dhanbad - 826004, Jharkhand, India Dhanbad ----- 2)Sarita Gupta Address of Applicant :Department of Electronics Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, Dhanbad - 826004, Jharkhand, India Dhanbad ----- 3)Kaushik Mazumdar Address of Applicant :Department of Electronics Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, Dhanbad - 826004, Jharkhand, India Dhanbad -----
(86) International Application No	:NA	
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(61) Patent of Addition to Application Number	:NA	
Filing Date	:NA	
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

The present invention relates to a heterojunction bipolar transistor (HBT) (1) based on AlGaAsP/GaAsP for high frequency applications. The HBT (1) comprises an initial layer as an emitter layer (10) of AlGaAsP configured with a high donor concentration, a first GaAsP Layer (20) below the emitter layer (10), a second GaAsP Layer (30) below the first GaAsP Layer (20), a base layer (40) formed with AlGaAsP below the second GaAsP layer (30) and heavily doped with acceptor concentrations of $2 \times 10^{19} \text{ cm}^{-3}$, having thickness critical to minimize recombination losses and to allow rapid diffusion of electrons, a collector layer (50) formed with AlGaAsP below the base layer (40) to facilitate efficient collection of electrons that diffuse across the base layer (40), a sub-collector layer (60) made of AlGaAsP, incorporated below the collector layer (50) and a collector contacts area (70) below the sub collector region (60). The proposed transistor (1) achieves improved high-frequency performance by combining a wide-bandgap emitter, a thin high-doped base, and an efficiently designed collector structure. This design addresses the limitations of conventional bipolar transistors and offers significant enhancements in current gain and speed, making it ideally suited for modern high-frequency applications. [Figure 1]

No. of Pages : 17 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531068844 A

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(43) Publication Date : 25/07/2025

(54) Title of the invention : FLEXIBLE MODELLING OF DIRECTLY COMPRESSED TABLETS OF PANTOPRAZOLE SODIUM

(51) International classification :A61K0009000000, A61K0009200000, A61K0031443900, A61P0001040000, A61K0009500000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA	(71)Name of Applicant : 1)BHABANI SANKAR MOHANTA Address of Applicant :DEPARTMENT OF PHARMACEUTICS, KANAK MANJARI INSTITUTE OF PHARMACEUTICAL SCIENCES, ROURKELA-769015, ODISHA, INDIA ----- -- 2)SUBHASHREE SAHOO 3)PRAKASH KUMAR PALAI Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)BHABANI SANKAR MOHANTA Address of Applicant :DEPARTMENT OF PHARMACEUTICS, KANAK MANJARI INSTITUTE OF PHARMACEUTICAL SCIENCES, ROURKELA-769015, ODISHA, INDIA ----- -- 2)SUBHASHREE SAHOO Address of Applicant :DEPARTMENT OF PHARMACEUTICS, KANAK MANJARI INSTITUTE OF PHARMACEUTICAL SCIENCES, ROURKELA-769015, ODISHA, INDIA ----- -- 3)PRAKASH KUMAR PALAI Address of Applicant :DEPARTMENT OF PHARMACEUTICAL ANALYSIS & QA, KANAK MANJARI INSTITUTE OF PHARMACEUTICAL SCIENCES, ROURKELA-769015, ODISHA -- -----

(57) Abstract :

Abstract: The present study focuses on the formulation and evaluation of pantoprazole sodium-loaded pH-sensitive floating tablets designed to minimize drug release in the acidic environment of the stomach and protect the drug from degradation. Utilizing a direct compression method, pantoprazole sodium, an acid-labile drug, was effectively incorporated into pH-sensitive polymers, particularly hydroxypropyl methylcellulose phthalate (HPMCP HP55), to achieve targeted site-specific drug delivery. Various formulation parameters, including surfactant type and concentration, polymer-to-drug ratio, and phase ratios, significantly influenced the particle size, encapsulation efficiency, drug loading, and release profile of the developed systems. The study concludes that appropriate concentrations of HPMC, PEG, and sodium bicarbonate can be effectively utilized to develop gastroretentive floating tablets of pantoprazole sodium with sustained drug release and improved stability in the gastrointestinal tract.

No. of Pages : 7 No. of Claims : 8

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(21) Application No.202531069053 A

(19) INDIA

(22) Date of filing of Application :19/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : PORTABLE ISOPROPYL ALCOHOL FLUSHING SKID FOR MITIGATING DRY GAS SEAL FAILURES IN COMPRESSOR SYSTEMS

(51) International classification	:F16J0015340000, F16J0015000000, B01D0029600000, B08B0009032000, F04D0029020000	(71)Name of Applicant : 1)Mr. Dilip Kumar Singh Address of Applicant :Department of Mechanical Engineer A-3/17/1/1 New, Sanghaati pally, P.O: Garden Reach, South 24 Parganas, West Bengal, Kolkata -700024 -----
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Filing Date	:NA	Name of Applicant : NA
(87) International Publication No	: NA	Address of Applicant : NA
(61) Patent of Addition to Application Number	:NA	(72)Name of Inventor :
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(62) Divisional to Application Number	:NA	Address of Applicant :Department of Mechanical Engineer A-3/17/1/1 New, Sanghaati pally, P.O: Garden Reach, South 24 Parganas, West Bengal, Kolkata -700024 -----
Filing Date	:NA	2)Mr. Shiw Kumar Singh
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(57) Abstract :

[042] The present invention discloses a portable isopropyl alcohol (IPA) flushing skid system designed for the effective cleaning and decontamination of dry gas seal systems in gas compressors. The system comprises a 1000-liter AISI 316 stainless steel tank, flameproof centrifugal pump, dual filter housings, and submicron polypropylene filter bags (0.5 and 1 micron) to remove fine contaminants such as carbon, graphite, and hydrocarbon particles. The invention achieves turbulent flow conditions with Reynolds numbers exceeding 5000, enabling deep flushing and ensuring optimal seal cleanliness. Integrated safety features including pressure safety valves, flame arrestors, and gauges make the system suitable for both onshore and offshore operations. Post-flushing, the system is dried using nitrogen to achieve a dew point of -30°C, preventing moisture-related failures. The invention provides a reliable, efficient, and field-deployable solution that significantly enhances compressor seal life, reduces unplanned downtimes, and offers a valuable alternative to conventional flushing methods limited by poor filtration and fixed installations. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 20 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531069173 A

(19) INDIA

(22) Date of filing of Application :20/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : IOT-ENABLED INTELLIGENT SYSTEM FOR AUTOMATED BRAIN TUMOUR DETECTION AND WHO-BASED SEVERITY PREDICTION

(51) International classification :G16H0050200000, G06T0007000000, G06N0003045000, G06N0003080000, G16H0030200000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA		(71)Name of Applicant : 1)Gandhi Institute Of Engineering And Technology University Address of Applicant :Gunupur, At – Gobriguda, Po- Kharling, Gunupur, Dist. - Rayagada, Odisha 765022, India Gunupur ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Mr. Bhaskar Mekala Address of Applicant :PhD Scholar, School of Engineering and Technology, Department of Computer Science and Engineering, Gandhi Institute Of Engineering And Technology University, Gunupur, At – Gobriguda, Po- Kharling, Gunupur, Dist. - Rayagada, Odisha 765022, India Gunupur ----- 2)Dr. Neelamadhab Padhy Address of Applicant :Professor & Dy. Dean Research, Computational Science School of Engineering and Technology, Department of Computer Science and Engineering, Gandhi Institute Of Engineering And Technology University, Gunupur, At – Gobriguda, Po- Kharling, Gunupur, Dist. - Rayagada, Odisha 765022, India Gunupur ----- 3)Dr. Kiran Kumar Reddy Address of Applicant :Prof. in CSE, MRIET, Near Dhulapally Medchal, Maisammaguda, Hamlet, Secunderabad-500014, Telangana, India Secunderabad -----

(57) Abstract :
ABSTRACT IOT-ENABLED INTELLIGENT SYSTEM FOR AUTOMATED BRAIN TUMOUR DETECTION AND WHO-BASED SEVERITY PREDICTION The present invention relates to an intelligent, IoT-integrated system for real-time brain tumour detection and severity grading. MRI brain scans are acquired using IoT-enabled imaging devices and transmitted securely to a central server or cloud. A custom convolutional neural network (CNN), enhanced with residual blocks, attention mechanisms, and multi-scale feature extraction, processes the images to detect and classify tumours such as glioma, meningioma, and pituitary types. A severity prediction engine further assigns tumour grades in accordance with WHO standards (Grades I–IV). The system generates interpretable heatmaps, confidence scores, and structured diagnostic reports that include patient and tumour metadata. It automates the end-to-end pipeline—from image acquisition to clinical decision support—and supports scalable deployment in hospitals, diagnostic centers, and remote healthcare units. The invention addresses limitations in existing systems by providing real-time diagnostics, WHO-aligned severity grading, and human-interpretable outputs, significantly reducing diagnostic time and improving accessibility in underserved regions. [To be published with Fig.1]

No. of Pages : 13 No. of Claims : 10

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202531069174 A

(19) INDIA

(22) Date of filing of Application :20/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : SPRAY DRYING METHOD FOR PRODUCING POWDERED SALAPA JUICE FROM CARYOTA URENS SAP

(51) International classification :A61K0036185000, A61P0037040000, A23L0003460000, A23L0033105000, A23L0002390000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA	(71)Name of Applicant : 1)Gandhi Institute Of Engineering And Technology University Address of Applicant :Gunupur, At – Gobriguda, Po- Kharling, Gunupur, Dist. - Rayagada, Odisha 765022, India Gunupur ----- ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Dr. Santosh Kumar Bindhani Address of Applicant :Chemical Engineering Department, Gandhi Institute Of Engineering And Technology University, Gunupur, At – Gobriguda, Po- Kharling, Gunupur, Dist. - Rayagada, Odisha 765022, India Gunupur ----- 2)Siba Prasad Ratha Address of Applicant :Chemical Engineering Department, Gandhi Institute Of Engineering And Technology University, Gunupur, At – Gobriguda, Po- Kharling, Gunupur, Dist. - Rayagada, Odisha 765022, India Gunupur ----- 3)Asimjyoti Jena Address of Applicant :Chemical Engineering Department, Gandhi Institute Of Engineering And Technology University, Gunupur, At – Gobriguda, Po- Kharling, Gunupur, Dist. - Rayagada, Odisha 765022, India Gunupur ----- 4)Namita Giri Address of Applicant :Chemical Engineering Department, Gandhi Institute Of Engineering And Technology University, Gunupur, At – Gobriguda, Po- Kharling, Gunupur, Dist. - Rayagada, Odisha 765022, India Gunupur -----

(57) Abstract :

ABSTRACT SPRAY DRYING METHOD FOR PRODUCING POWDERED SALAPA JUICE FROM CARYOTA URENS SAP The present invention relates to a method for producing a stable powdered supplement from the sap of the Salapa tree (Caryota urens) using spray drying technology. The process involves selecting mature trees with healthy inflorescences, tapping the flower stalk to extract sap, and collecting it in a container. The sap is filtered and optionally pasteurized to prevent fermentation, then mixed with a carrier agent such as maltodextrin (10–20% w/w). The mixture is subsequently spray dried at an inlet temperature of $160 \pm 5^{\circ}\text{C}$ and outlet temperature of $85 \pm 5^{\circ}\text{C}$ to obtain a fine powder with a moisture content of 3–6%. The resulting powder is packaged in airtight pouches for long-term storage. This powdered Salapa juice retains its nutritional and bioactive properties and can be used as a natural energy booster or immune-support supplement. The invention ensures high stability, shelf life, and commercial applicability of the traditionally perishable Salapa sap. [To be published with Fig.1]

No. of Pages : 14 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :20/07/2025

(21) Application No.202531069175 A

(43) Publication Date : 25/07/2025

(54) Title of the invention : REAL-TIME DEEP LEARNING-BASED MEDICAL IMAGE ENHANCEMENT SYSTEM WITH MODALITY-SPECIFIC OPTIMIZATION

(51) International classification :G06N0003045000, G16H0030200000, G06N0003080000, G06T0007000000, G16H0040200000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA	(71)Name of Applicant : 1)Gandhi Institute Of Engineering And Technology University Address of Applicant :Gunupur, At – Gobriguda, Po- Kharling, Gunupur, Dist. - Rayagada, Odisha 765022, India ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Dr. Sachikanta Dash Address of Applicant :Gandhi Institute Of Engineering And Technology University, Gunupur, At – Gobriguda, Po- Kharling, Gunupur, Dist. - Rayagada, Odisha 765022, India Gunupur ----- ----- 2)Aparna Baboo Address of Applicant :Gandhi Institute Of Engineering And Technology University, Gunupur, At – Gobriguda, Po- Kharling, Gunupur, Dist. - Rayagada, Odisha 765022, India Gunupur ----- ----- 3)Soumya Ranjan Mishra Address of Applicant :Gandhi Institute Of Engineering And Technology University, Gunupur, At – Gobriguda, Po- Kharling, Gunupur, Dist. - Rayagada, Odisha 765022, India Gunupur ----- ----- 4)Kedarnath Panda Address of Applicant :Gandhi Institute Of Engineering And Technology University, Gunupur, At – Gobriguda, Po- Kharling, Gunupur, Dist. - Rayagada, Odisha 765022, India Gunupur ----- ----- 5)Sankar Kumar Patra Address of Applicant :Gandhi Institute Of Engineering And Technology University, Gunupur, At – Gobriguda, Po- Kharling, Gunupur, Dist. – Rayagada, Odisha 765022, India Gunupur ----- -----

(57) Abstract :
ABSTRACT REAL-TIME DEEP LEARNING-BASED MEDICAL IMAGE ENHANCEMENT SYSTEM WITH MODALITY-SPECIFIC OPTIMIZATION The present invention relates to a real-time medical image enhancement system utilizing deep learning to improve diagnostic accuracy across imaging modalities. The system integrates a convolutional neural network (CNN) and transformer-based attention mechanism to enhance diagnostically relevant regions while preserving fine anatomical details. A modality detection module automatically identifies the imaging type—X-ray, CT, MRI, or ultrasound—and routes input through specialized enhancement subnetworks. An edge-aware histogram optimizer further refines contrast based on anatomical structures. The model is optimized for GPU acceleration, enabling sub-100 millisecond processing on standard or edge devices. DICOM-compliant integration with PACS and RIS systems allows seamless clinical workflow deployment. Clinicians can adjust enhancement intensity and apply task-specific presets, such as lung nodule or vessel clarity enhancement. The system demonstrates improved PSNR and SSIM metrics and reduces false negatives in clinical evaluations, offering a robust, real-time solution for enhanced medical imaging across multiple diagnostic settings. [To be published with Fig.1]

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(21) Application No.202531069237 A

(19) INDIA

(22) Date of filing of Application :21/07/2025

(43) Publication Date : 25/07/2025

(54) Title of the invention : A System and a Method to Monitor Crop Health in Real-Time Using Edge-Based Spectral Analysis and Predictive Agro-Digital Simulation

(51) International classification	:G06N0007010000, G16H0050200000, G05B0019418000, G06F0030200000, A01M0007000000	(71)Name of Applicant : 1)Dr. Asutosh Goswami Address of Applicant :Assistant Professor, Department of Geography, Rabindra Bharati University, Kolkata 700050, West Bengal ----- 2)Dr. Argha Ghosh 3)Dr. Arkadeep Dutta Name of Applicant : NA Address of Applicant : NA
(86) International Application No	:NA	(72)Name of Inventor : 1)Dr. Asutosh Goswami Address of Applicant :Assistant Professor, Department of Geography, Rabindra Bharati University, Kolkata 700050, West Bengal ----- --
Filing Date	:NA	2)Dr. Argha Ghosh Address of Applicant :Assistant Professor, Department of Agricultural Meteorology, College of Agriculture, Odisha University of Agriculture and Technology, Bhubaneswar- 751 003, Odisha -----
(87) International Publication No	: NA	3)Dr. Arkadeep Dutta Address of Applicant :Assistant Professor (P.T), Department of Earth Sciences and Remote Sensing, JIS University, kolkata 700109, West Bengal -----
(61) Patent of Addition to Application Number	:NA	
Filing Date	:NA	
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

ABSTRACT A System and a Method to Monitor Crop Health in Real-Time Using Edge-Based Spectral Analysis and Predictive Agro-Digital Simulation The present disclosure relates to a system and method of detecting crop health conditions in real time, and performing adaptive interventions in agriculture utilizing multi-spectral imaging, edge artificial intelligence, and digital twin simulation. The system includes a multi-spectral imaging unit, environmental and soil sensors, an edge AI processor, data fusion module, and a digital twin engine that simulates the potential outcomes of the intervention through a digital twin model prior to the intervention actually taking place. Using AI analysis and predictive modeling, this system generates optimized decisions regarding irrigation, fertilization or pesticide application, which can then be activated through IoT-enabled actuators. The system includes a traceability module that utilizes blockchain technology to provide accountability and transparency for the actions taken and decisions made, as well as a user interface that enables farmers to receive insights and execute control. The invention solves the technological barriers presented by traditional agricultural methods, effectively integrating sensing, prediction, automation and recording securely, and represents a technically advanced and scalable precision agriculture option for farmers and growers which provides a real-time, autonomous and data driven alternative to the limitations of traditional methods. Fig. 3.

No. of Pages : 21 No. of Claims : 10

CONTINUED TO PART- 3