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FACULTY PUBLICATION

RESEARCH PAPERS

June-2026

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TITLE:

Design and Implementation of Multi-Sensor Integration using STM32 over CAN-Based Communication Framework

AUTHOR :

Sayyed S.; Kuntedeshmukh R.; Kumar T.; Zodpe H.; Lokhande N.

JOURNAL NAME:

2026 International Conference on Emerging Technologies and Future Innovations, ETFI 2026

DETAILS:

Published on February 2026

ABSTRACT:

The collective effects on how the system operates during monitoring and operation depends on standard communication-based sensor system issues such as noise interference, data collisions, latency and limited scalability are very frequently noticed. Modern automotive and industrial systems need a reliable and robust communication framework between different sensors and control units which will ensure accurate monitoring and operation. This paper aims to meet the requirements of modern systems and decreasing the difficulties faced by the traditional systems by implementing CAN protocol. The Controller Area Network (CAN) protocol solves and addresses these drawbacks effectively by offering a robust, prioritized and error-tolerant data transfer between devices and across systems. This paper depicts the design and implementation of multiple sensor framework using STM32 microcontroller over the CAN protocol. This framework combines different sensors such as NTC thermistor, vibration sensor and IR sensor respectively over CAN communication protocol to measure different parameters like temperature, mechanical vibration and rotational speed (RPM). A TJA1050 CAN transceiver is also used through obtained sensor data which ensures high noise immunity and reliable differential signaling. Real-time visualization of the sensor data is displayed using a 0.96-inch OLED display and the measurements through the Digital Storage Oscilloscope (DSO) verify the CAN waveform integrity and communication stability. Better communication reliability and bus stability, demonstrated by the experimental results, as compared to UART-based systems makes the design modular and scalable and well-suited for energy efficient automotive, industrial and IoT based applications. Thus, this lays a strong groundwork for automotive and industrial domains for developing distributed and controlled sensor network systems which will be applicable in the future.

Link: https://doi.org/10.1109/ETFI68128.2026.11484913

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TITLE:

Experimental Testing Of A 3d-Printed Acrylonitrile Butadiene Styrene (Abs) And Polylactic Acid (Pla) Propellant Grains For A Hybrid Rocket Engine

AUTHOR :

Siddharth P.; Saxena P.; Birajdar M.; Sawant P.; Bhavsar N.; Bajaj D.K.; Kumar N.; Jain S.

JOURNAL NAME:

International Journal of Energy for a Clean Environment (Vol.-27, Issue-1)

DETAILS:

Published on May 2025

ABSTRACT:

The present study investigates the feasibility of using 3D-printed Acrylonitrile Butadiene Styrene (ABS) and Polylactic Acid (PLA) as propellant grains for hybrid rocket engines. The primary objective is to assess their combustion performance, focusing on regression rate, chamber pressure, and pressure drop across the orifice. The propellant grain is designed using a CAD software and manufactured using 3D printing techniques while taking the standard considerations of a propellant grains in a Hybrid Rocket Propulsion System (HRPS). Materials used for manufacturing of the 3D-printed propellant grain are ABS and PLA. In addition to the advantages of the 3D printing manufacturing technology, both materials exhibit significant reactivity when burned in the presence of an oxidizer. The present study concludes with a demonstration of manufacturing and static testing of the propellant grains for the HRPS. ABS produced a higher regression rate that suggests it is a better fuel for the Hybrid rocket propulsion system. Future studies will explore alternative 3D-printed materials, thrust profile evaluations, and extended-duration burn tests to further optimize fuel grain performance.

Link:
https://doi.org/10.1615/InterJEnerCleanEnv.2025057305

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Investigation of mechanical properties of PLA-SCF additively manufactured prosthetic sockets

AUTHOR :

Raut M.; Sonawwanay P.D.; Patel V.

JOURNAL NAME:

Journal of Engineering and Applied Science (Vol.-73, Issue-1)

DETAILS:

Published on 8 June 2026

ABSTRACT:

This study presents an integrated experimental and finite element investigation into the structural performance of fused deposition modeled (FDM) transtibial prosthetic sockets fabricated from short carbon fiber reinforced polylactic acid (PLA–SCF). Patient-specific socket geometry was derived from 3D scanning of a clinical residual limb mold, reconstructed in CAD, and printed at 1:3 geometric scale FDM printer with 100% infill density, 0.2 mm layer height and vertical build orientation. Axial compression testing yielded a mean compressive strength of 1.072 ± 0.370 MPa and a maximum load of 15.872 kN exceeding the ISO 10,328 P6 structural requirement when scaled by dimensional similarity while a coefficient of variation of 34.5% identified filament moisture sensitivity as the primary source of inter-specimen variability. Low-cycle fatigue testing revealed progressive, non-catastrophic crack initiation within 90–100 cycles under proportionally scaled mid-stance loading of 50–150 N, with interlaminar debonding confirmed as the governing failure mechanism by SEM analysis. The mean inner surface roughness of Ra = 14.81 µm marginally satisfies the proposed Ra < 15 µm clinical criterion for FDM prosthetic sockets. Finite element analysis predicted a peak von Mises stress of 1.255 MPa at the distal region, agreeing with experimental results within 11.6%. These findings establish interlaminar fatigue resistance as the primary limitation of PLA–SCF for prosthetic applications and provide a reproducible experimental baseline to guide future design optimization and clinical translation.

Link: https://link.springer.com/article/10.1186/s44147-026-01070-y

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Machine Learning Enabled Intrusion Detection for Terabit Optical Networks

AUTHOR :

Sundar R.; Sandhya K.S.; Rajpoot N.K.; Koti M.S.; Kumbhar V.; Kumar S.

JOURNAL NAME:

Proceedings of the 2026 13th International Conference on Computing for Sustainable Global Development, INDIACom 2026

DETAILS:

Published on April 2026

ABSTRACT:

Recent advancements in terabit-scale optical communication networks have propelled an unprecedented level of growth in data transmission capacity to accommodate high-speed backbone infrastructures for cloud computing, 5G/6G services, and petabyte-scale data centers. As with any other rapidly growing technology, the complexity and increased bandwidth of these networks render them vulnerable to sophisticated cyber threats that include traffic injection, signal jamming, wavelength hijacking, and distributed denial-of-service attacks. Traditional rule-based security models and signature-oriented intrusion detection technologies employ static rules for payload analysis, which do not adapt to new or unknown attack patterns occurring in high-speed optical environments. In order to tackle this challenge, we present a hypervisor machine learning-enabled intrusion detection framework (ML-IDF) for terabit optical networks. This framework incorporates traffic feature extraction based on optical performance monitoring parameters, encompassing optical signal-to-noise ratio (OSNR), bit error rate (BER), wavelength utilization, and spectral power distribution. Using a hybrid learning model that consists of Gradient Boosted Decision Trees and Deep Neural Network classifiers to detect anomalous traffic behavior in real time. Our experimental evaluation uses a simulated dataset of a terabit optical network with 120 k samples of normal and multiple attacks. The detection accuracy, precision, recall and false-positive rate of the proposed ML-IDF were 98.6%, 97.9%, 98.1% and 1.7%, respectively with better performance than conventional IDS approaches such as Support Vector Machines and Random Forest classifiers. Additionally, the framework also exhibited a low detection latency of 3.4 ms making it capable for deployments on high-speed optical backbones. The findings reveal that leveraging machine learning in intrusion detection systems can offer both efficient and scalable mechanisms for safeguarding next-generation terabit optical communication networks against emerging cyberattacks.

Link:
https://doi.org/10.23919/INDIACom70271.2026.11525652

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Adaptive Security Orchestration in High-Speed SDN/NFV Architectures

AUTHOR :

Lakshmi B.; Namratha B.S.; Jain S.; Kumbhar V.; Alaskar K.; Naveenkumar R.

JOURNAL NAME:

Proceedings of the 2026 13th International Conference on Computing for Sustainable Global Development, INDIACom 2026

DETAILS:

Published on 2026

ABSTRACT:

Dynamic communication architectures based on Software Defined Networking (SDN) and Network Function Virtualization (NFV) ensure flexibility, programmability and scalability of the network infrastructures itself tailored to the needs of modern-day Cloud, IoT, and 5G/6G ecosystems. On the other hand, SDN's centralized control plane and dynamic network function virtualization can create new security vulnerabilities such as distributed attacks, unauthorized access, and fast threat propagation across virtualized resources[76]. This paper presents a high-speed SDN/NFV oriented Adaptive Security Orchestration Framework (ASOF) to cope up with the aforementioned challenges. This pooling of intelligent threat detection, dynamic policy enforcement, and automated response mechanisms will be orchestrated through a centralized layer. Anomaly detection was carried out with data on the existing flows of traffic using a machine-learning-assisted module, while an orchestration engine dete threats and dynamically reconfigured available virtual network functions and relevant security policies. Based on experimental evaluation on a simulated SDN/NFV testbed, the proposed approach significantly enhances network resilience and reduces attack response time. The experimental results indicate that the proposed adaptive orchestration mechanism can reach 94.8% threat detection accuracy with a 37% drop in incident response latency and 29% higher overall network security efficiency comparing to conventional static security frameworks. The architecture can dynamically adjust to the need of systems to provide an intelligent and scalable solution for securing future high-speed programmable networks.

Link:
https://www.scopus.com/pages/publications/105041853435?origin=resultslist

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Reimagining Ethnography: Reflections and Future Directions for Visual Storytelling

AUTHOR :

Killemsetty N.

JOURNAL NAME:

The Practice of Visual Ethnography: Examining Identity and Lived Experiences of Marginalised Communities

DETAILS:

Published on 25 February 2026

ABSTRACT:

The chapter explores the transformative potential and ethical complexities of visual ethnography and storytelling methods in representing and empowering marginalized communities. By analyzing field studies from contexts including Kashmir, Assam, Gujarat, and Delhi, it demonstrates how participatory visual techniquesâ€”such as photography, video, and co-created digital exhibitionsâ€”give voice to silenced groups and humanize structural inequalities. The chapter highlights the importance of collaborative, decolonial, and community-driven research paradigms and addresses challenges arising from new digital technologies, such as AI and social media, emphasizing the necessity of rigorous ethical reflexivity. Ultimately, the chapter advocates for visual ethnography as an instrument for social justice, epistemic empowerment, and inclusive transformation in contemporary research and activism.

Link: https://doi.org/10.1007/978-981-95-4648-0_8

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TITLE:

Performance Analysis of Deep Learning Models - CNN, Alexnet, GAN and Transformer with Optimizers for Plant Disease Classification

AUTHOR :

Kavitha M.; Sharma Y.K.; Shevkari S.; Londhe S.A.; Aggarwal A.; Garlapati H.

JOURNAL NAME:

Proceedings of the 2026 13th International Conference on Computing for Sustainable Global Development, INDIACom 2026

DETAILS:

Published on April 2026

ABSTRACT:

In sustainable forming early plant disease identification is crucial for better crop production and for timely diagnosis of diseases. In this work, examined the performance of four deep learning models custom CNN, Alexnet, GAN discriminator with CNN and Transformer on plant leaf disease classification. PlantVillage dataset is collected from Kaggle, which includes healthy, early blight and late blight leaves. All the proposed models were trained using three optimizers Adam, RMSprop and SGD. This allowed us to understand how both model design and training strategy influence overall performance. The results shown clear differences among models with optimizers in terms of classification performance. The CNN trained with Adam was achieved a validation accuracy of 89.56%, while GAN combined with CNN trained with Adam given highest accuracy of 95.36%. Other two modes Alexnet and Transformer models were produced comparatively low results with Adam. These results indicate the importance of optimizer selection in model training for improving plant leaf disease classification for real time agriculture settings.

Link:
https://doi.org/10.23919/INDIACom70271.2026.11525433

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TITLE:

Sustainability initiatives and corporate success: Examining ESG activities and GHG reporting in Indian firms

AUTHOR :

Shaikh Z.H.; Tiwari S.C.; Sani A.; Mondal S.; Bamnon A.S.

JOURNAL NAME:

Asian Economic and Financial Review (Vol.-16, Issue-5)

DETAILS:

Published on 2026

ABSTRACT:

As sustainability continues to gain international recognition and importance, companies have been encouraged to produce and publish environmental, social, and governance (ESG) and greenhouse gas (GHG) emissions reports to establish themselves as responsible business entities. The need for Indian industries to demonstrate their obligation towards sustainability is also increasing due to growing stakeholder pressure. We attempt to examine how ESG disclosure and GHG reporting affect the performance of listed Indian firms, as well as whether ESG disclosure moderates the adverse influence of GHG emissions on the value of the firm. We use ESG scores provided by Bloomberg and CRISIL and carbon emissions data derived from the annual reports of 37 NIFTY 50 Indian companies between 2018 and 2024. We have used the regression method in the analysis. The findings show a positive relationship between ESG practices and reporting greenhouse gas emissions. Both ESG performance and GHG emission disclosures were positively related to company performance. These findings have important implications for corporate leaders; specifically, investing in ESG and GHG reporting will increase corporate reputation, create a sustainable competitive advantage by positioning companies as sustainability leaders, and contribute to an organization's resilience in a changing and increasingly global business environment. Transparency through GHG and ESG disclosures improves investor confidence in the company's obligation to sustainable business practices. ESG disclosures (including GHG data) improve a company's long-term financial sustainability.

Link:
https://www.scopus.com/pages/publications/105041267887?origin=resultslist

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TITLE:

Energy, exergy, and environmental (3E) analysis of transcritical CO2 refrigeration cycle with an expander, an internal heat exchanger, and a mechanical sub-cooler

AUTHOR :

Sah R.P.; Maji A.; Sapre M.S.; Raj P.; Siddiqui M.A.H.; Sur A.

JOURNAL NAME:

Results in Engineering (Vol.-31)

DETAILS:

Published on June 2026

ABSTRACT:

The present study investigates energy, exergy, and environmental performances of the transcritical CO2 refrigeration cycle. In this study, a mathematical model is developed in MATLAB and interfaced with REFPROP to call refrigerant properties. The cycle is studied with various configurations using an internal heat exchanger, expander, and mechanical sub-cooler. A parametric study is conducted to examine the effects of gas cooler pressure, evaporator temperature, and gas cooler exit temperature on the COP and exergy efficiency of the systems, with comparisons made to the basic cycle. The study resulted in the finding that the cycle with an expander achieves the highest COP of 3.21 with 32.83% increase over the basic cycle and an exergy efficiency of 22.7% under their respective optimal gas cooler pressure. The IHX cycle suffers the maximum exergy destruction, in which the gas cooler of the cycle has the maximum irreversibility. In addition, the TEWI analysis was also performed, and the study showed that the expander cycle reduced 23.74% annual CO2 emissions, compared to the basic cycle under their respective optimal gas cooler pressure, as the energy recovered from the expander has been used to reduce the compressor power. Moreover, Correlations for the optimal heat-rejection pressure have been developed for each configuration, which avoids repeated simulations/experiments to predict the optimal pressure of the specific cycle, assisting the researchers in system performance optimization and system design.

Link: https://doi.org/10.1016/j.rineng.2026.111477

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TITLE:

Securing healthcare in the fog: A context-aware access control framework

AUTHOR :

Tiwari B.; Tiwari V.; Gupta S.; Gour R.; Pal A.

JOURNAL NAME:

Advances in Computers

DETAILS:

Published on 19 May 2026

ABSTRACT:

These days the healthcare sector transforming its ability by widely utilizing information and communication technology in its day-today operations to provide better and rapid responsive care to patients. They are using heterogeneous digital devices connected through the network to sense, analyze store and manage the patient's electronic healthcare records (EHRs). From recent past, hospitals are utilizing cloud-based platforms and services to do this because they provide better scalability and remote accessibility. But, cloud-based services are sometime fails in some application scenario that requires low-latency responses to take decision especially in healthcare where response time is too import. To address this issue, CISCO has proposed the decentralized fog computing environment to deal this drawback of cloud computing. Fog-based devices have the ability to process a large amount of data in the edge locally, operate on premises, fully portable and can be installed on heterogeneous devices Traditional access control policies such as DAC, MAC and RBAC in healthcare system play a vital role in safeguarding EHRs from unauthorized access and use. Their main goal is to manage how EHRs are accessed so that it can be protected against unintended disclosure to maintain confidentiality, blocking malicious tampering to preserve integrity, and at the same time, making sure that legitimate users can access what they need without disruption to support availability. However, these models protect the EHRs well in static environment, they are not performed well when the environment become dynamic, means they are not designed to acclimatize change in the context of accessing EHRs like who is accessing, from where it is accessing, time and location of access etc. This chapter presents a new approach called fog-enabled Context-Aware Access Control framework (F-CAAC) that is foundationally based on RBAC but combines the context-understanding within it to safely accessing the patient's data in dynamic environment. The proposed approach aligns with the decentralized nature of fog computing in healthcare settings for quick response whenever needed.

Link: https://doi.org/10.1016/bs.adcom.2026.03.004

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Breast Cancer Detection for Histopathology Images Using Deep Learning Techniques

AUTHOR :

Singha A.; Singh P.; Chavan S.; Jathar M.

JOURNAL NAME:

Lecture Notes in Networks and Systems

DETAILS:

Published on 1 May 2026

ABSTRACT:

Breast cancer has become a major concern, prompting the use of computer-aided design (CAD) system networks known as Convolutional Neural Networks (CNNs) to detect it early in histopathological images. Our study approach involves training a CNN to recognize subtle signs of cancerous and non-cancerous by analyzing numerous histopathological images. We also enhance the image quality through pre-processing and apply techniques to further optimize the model's performance. We have used a publicly available Breast histopathology Image (BHI) dataset for this study which comprises of 2 different classes, namely, Invasive Ductal Carcinoma (IDC) positive and Invasive Ductal Carcinoma (IDC) negative. Experimental results show that our studied approach achieves a patch-wise classification performance of 95%. The results are competitive compared to the results of other state-of-the-art methods. Our findings suggest that this study has the potential to assist doctors in diagnosing breast cancer earlier, ultimately saving lives.

Link: https://link.springer.com/chapter/10.1007/978-981-95-0497-8_29

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Deep Learning Based Clinical Decision-Support Web Framework for Heart Disease Prediction

AUTHOR :

Aruna Y.; Kavitha M.; Patil M.; Shevkari S.; Aggarwal A.; Sharma Y.K.

JOURNAL NAME:

Proceedings of the 2026 13th International Conference on Computing for Sustainable Global Development, INDIACom 2026

DETAILS:

Published on 2026

ABSTRACT:

Cardiovascular diseases remain one of the leading causes of mortality worldwide, making early and accurate diagnosis critical for effective treatment. This work presents a deep learning-based clinical decision support framework for heart disease prediction using medical imaging data. The proposed system evaluates multiple convolutional neural network (CNN) architectures, including AlexNet, VGG16, ResNet18, AutoEncoder-based classifier, DeepCNN, MobileNet-V2, and EfficientNet-B0, integrated into a web-based diagnostic interface. The models were trained using ECG and cardiac imaging datasets and evaluated based on classification accuracy and computational efficiency. Experimental results show that MobileNet-V2 achieved the highest test accuracy of 91.18%, outperforming EfficientNetB0 (87.82%), AlexNet (84.56%), VGG16 (81.93%), and ResNet18 (79.41%). Custom models such as AutoEncoder (73.21%) and DeepCNN (47.16%) demonstrated comparatively lower performance, highlighting the effectiveness of transfer learning for medical image classification. The proposed framework demonstrates an efficient and scalable approach for automated heart disease screening and can be extended to real-time clinical decision support systems.

Link:
https://www.scopus.com/pages/publications/105041856544?origin=resultslist

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Hybrid Meta-heuristic Particle Swarm Optimization for Energy-Efficient Task Scheduling

AUTHOR :

Tandon A.; Nagre K.; Saini A.

JOURNAL NAME:

Learning and Analytics in Intelligent Systems (Vol.-63)

DETAILS:

Published on June 2026

ABSTRACT:

Effective task scheduling is a critical component for improving performance in cloud computing, directly affecting key metrics such as makespan, energy consumption, and execution time. This study presents a set of hybrid meta-heuristic algorithms that combine heuristic initialization techniques with Particle Swarm Optimization (PSO). The main contribution is the development of a novel ellipsoid fitness function that simultaneously minimizes makespan (MS), total execution time (TET), degree of imbalance (DI), and total energy consumption (TEC). The work evaluates distinct hybrid PSO approaches, including minimum capacity first. Simulations performed with the CloudSim toolkit show that the proposed methods outperform baseline techniques, achieving a substantial reduction of up to 78.09% in total energy consumption, along with significant improvements in makespan and the degree of imbalance. The results indicate that these hybrid algorithms offer superior convergence speed, improved resource utilization, and greater energy efficiency, making them well-suited for large-scale cloud infrastructures.

Link: https://doi.org/10.1007/978-3-032-29501-9_13

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

The Practice of Visual Ethnography: Examining Identity and Lived Experiences of Marginalised Communities

AUTHOR :

Mohan D.; Saqib N.U.; Killemsetty N.; Mohan H.T.

JOURNAL NAME:

The Practice of Visual Ethnography: Examining Identity and Lived Experiences of Marginalised Communities

DETAILS:

Published on January 2026

ABSTRACT:

This book presents visual ethnography as a transformative approach to understanding, documenting, and representing the layered realities of marginalized communities and often-overlooked institutional contexts. It demonstrates how visual storytelling tools ranging from photography and video to infographics and spatial mapping can uncover the subtle social, cultural, and economic dynamics that traditional textual research tends to miss. Drawing on diverse case studies, the volume shows how visual narratives not only illuminate lived experiences but also foster collaboration and challenge dominant representations. By highlighting its multidisciplinary reach, the book situates visual ethnography within the intersecting domains of urban studies, development research, and policy engagement. It also delves into the ethical and methodological dimensions of visual storytelling, underscoring its potential to bridge academic inquiry with public understanding and policymaking. Ultimately, this work advocates for visual ethnography as a vital instrument of inclusive research and transformative communication, one that amplifies marginalized voices, strengthens social connections, and inspires meaningful change in contemporary urban and social landscapes. Readers will be drawn to its inventive methods, compelling findings, and thought-provoking themes, which together weave strong links between scholarship, advocacy, and on-ground practice.

Link: https://doi.org/10.1007/978-981-95-4648-0

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TITLE:

Blockchain-Based Security Framework for High-Speed Software-Defined Networks

AUTHOR :

Gokila R.G.; Mahadev S.; Sudheendra Mouli H.C.; Shruthi S.; Kumbhar V.; Naveenkumar R.

JOURNAL NAME:

Proceedings of the 2026 13th International Conference on Computing for Sustainable Global Development, INDIACom 2026

DETAILS:

Published on 2026

ABSTRACT:

The growing speed and capacity of networking infrastructures necessitate the development expedited secure, scalable and reliable network management frameworks. The next-generation high-speed networks must be flexible, scalable in terms of dynamic resource allocation and offering control policy programmability and are a key architectural element of Software-Defined Networking (SDN). On the contrary, SDN's centralized controller creates some serious security threats including a compromised controller, distributed denial-of-service attack (DDoS), malicious flow rule injection, and unauthorized network policy access. In order to solve these problems, this paper introduces a Blockchain-Based Security Framework (BBSF) for high-speed software-defined network specially. Our framework combines a lightweight blockchain ledger with the SDN control plane to enable secure and transaction-based flow rule validation, decentralized trust management, and tamperevident logging of network events. To validate controller operations, we utilize smart contracts and ensure secure communication between controllers, switches, and network applications. Furthermore, the framework implements intelligent anomaly detection which keeps track of transaction patterns and identifies suspicious network behaviors on the fly. The experimental evaluations performed on a simulated high-speed SDN environment show that the proposed system will promote the network security by reducing malicious flow rule injection of 92.6% and unauthorized access attempts of 88.3%, where transaction verification latency is maintained below (14 ms). The blockchain ledger also provides capabilities for 100% traceability of network operations, thus enhancing the transparency and accountability in network management.

Link:
https://www.scopus.com/pages/publications/105041831128?origin=resultslist

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TITLE:

Integrated Object Detection, Lane Segmentation, and Tracking for Autonomous Vehicles Using YOLOv8 and DeepSORT

AUTHOR :

Sah A.; Rokde N.; Mahale S.; Joshi D.

JOURNAL NAME:

2026 International Conference on Emerging Technologies and Future Innovations, ETFI 2026

DETAILS:

Published on February 2026

ABSTRACT:

The high rate at which autonomous vehicles and Intelligent Transportation Systems (ITS) are being developed has enhanced the need to have reliable real time perception systems. This project will offer a deep learning architecture of Advanced Driver Assistance Systems (ADAS) which is a combination of lane segmentation, Multi object tracking and object detection. The suggested model utilizes YOLOv8 to detect multiclass objects and uses YOLOv8Seg to detect the drives area and ensure that it is very accurate with a variety of environmental conditions. The two models were improved using the KITTI dataset. DeepSORT tracking is an effective and routinely dependable method of identifying lanes, pedestrians and vehicles through the system. The outcomes of experiments that have shown an efficient real-time operation and precise interpretation of scenery exhibit a solid base to future uses of autonomous driving and other extensions that can be made by sensor fusion trajectory prediction models.

Link: https://doi.org/10.1109/ETFI68128.2026.11484945

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TITLE:

Techno-Economic Feasibility Study of a Rooftop Solar PV System for EV Charging at University Campus Building

AUTHOR :

Saini K.K.; Sengupta D.; Mathur H.D.

JOURNAL NAME:

2025 IEEE 4th International Conference on Smart Technologies for Power, Energy and Control, STPEC 2025 - Conference Report

DETAILS:

Published on December 2025

ABSTRACT:

With India's rapidly evolving electric vehicle (EV) ecosystem and increased adoption in academic campuses, deploying clean energy infrastructure is essential. This paper presents an extended techno-economic analysis of a grid-tied rooftop solar photovoltaic (PV) system with battery backup at a hostel building on a university campus. The system is designed exclusively to cater to EV charging loads through solar energy. PVsyst 8.2 was used for simulation, and a 16.2 kWp PV array, 16.2 kWh battery, and a 20 kW inverter setup were modelled. Simulation outputs include annual energy generation, performance ratio, economic metrics (LCOE), and carbon savings. The study also references broader campus energy sustainability objectives and carbon neutrality goals.

Link: https://doi.org/10.1109/STPEC66316.2025.11490665

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Digital Transformation and Market Microstructure: Analyzing the Impact of Algorithmic Trading on National Stock Exchange of India Price Discovery Mechanisms Through Complex Systems Theory

AUTHOR :

Ahirrao M.; Salunkhe H.; Rana V.

JOURNAL NAME:

Northeast Journal of Complex Systems (Vol.-8, Issue-1)

DETAILS:

Published on April 2026

ABSTRACT:

This research examines the evolution of market microstructure at the National Stock Exchange of India (NSE) from 2020 to 2024, a period characterized by substantial growth in algorithmic trading from 35% to 44% of total trading volume. Using market microstructure data and analytical techniques grounded in complex systems perspectives, the study documents temporal patterns in price discovery, liquidity, volatility, and market efficiency associated with this digital transformation. The analysis reveals several notable changes in market characteristics. Transaction costs improved significantly, with bid-ask spreads declining by 23.4% and market depth increasing by 18.1%. Price adjustment half-life decreased by 50%, indicating faster information incorporation. However, market efficiency dynamics exhibited non-linear progression. Hurst exponent analysis shows markets initially moved toward random walk behavior (0.524 to 0.503, 2020-2022) before shifting to mean-reverting patterns (0.495-0.487, 2023-2024), challenging assumptions of monotonic efficiency gains. Network clustering coefficients increased by 23.5%, potentially reflecting strategy homogeneity rather than systemic interconnection. GARCH modelling revealed increasing volatility persistence, with parameters approaching unity. While average liquidity improved, liquidity variability during stress periods increased by 34%, and flash-event-like occurrences were more frequent during high algorithmic activity periods. Critically, these patterns represent temporal associations rather than established causal relationships. Multiple confounding factors—including the COVID-19 pandemic, macroeconomic volatility, and regulatory changes—prevent definitive causal attribution. The findings underscore the complexity of digital market transformation in emerging economies and highlight the need for enhanced monitoring, adaptive regulatory frameworks, and further research employing stronger identification strategies to understand the mechanisms underlying observed market evolution.

Link: https://doi.org/10.63562/2577-8439.1137

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Engineering advanced robotic tools for targeted cancer drug delivery

AUTHOR :

Kulkarni R.; Dasarwar P.; Mantri S.; Prashar A.; Chougule U.; Katoch S.

JOURNAL NAME:

AIP Conference Proceedings (Vol.-3426, Issue-1)

DETAILS:

Published on 4 June 2026

ABSTRACT:

Scientists must create fresh, more concentrated and efficient treatments for cancer as it is getting more widespread and existing drugs have their limitations. One fascinating fresh concept is applying more precisely cancer therapies using robots. The aim is to lower total harm by means of more efficient medicine delivery. An overview of current developments in creating robotic systems delivering medications especially to cancer cells is given in this article. Modern robotics along with sophisticated medicine delivery systems might bring about significant improvements in patient treatment and performance. The design and technical concepts behind robotic-Assisted systems are examined in this work. It looks at how they may negotiate difficult bodily conditions, administer medications straight to malignant cells, and regulate release rate to maximize therapeutic effects. Furthermore, by means of real-Time monitoring and feedback systems, one may adjust treatment settings, therefore facilitating the customization of therapy to every patient's requirement. Apart from discussing the technical issues with robotic medication delivery systems, the research also addresses how these developments mix robotics, nanotechnology, and biological engineering. Furthermore, consider is the function artificial intelligence (AI) performs in enhancing the delivery of medicines and speculating on their outcomes, thereby highlighting the potential for individualized medicine. In the end, sending medications especially to cancer cells using robotic devices might transform the way cancer is treated, maybe making it more precise, safer, and more efficient. This research allows fresh concepts that could simplify handling cancer and alter its treatment approach to be accessible.

Link: https://doi.org/10.1063/5.0331387

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Multi-focus images using ResNet-based fusion techniques

AUTHOR :

Deshmukh V.; Khaparde A.; Kumavat M.C.

JOURNAL NAME:

Imaging Science Journal

DETAILS:

Published on 2026

ABSTRACT:

The Multi-Focus Image Fusion (MFIF) technique integrates various source images into a single clearer image, with the identification of clear points being crucial for effective fusion. Traditional edge-preserving filters struggle with scale-dependent edge identification and necessitate guide images. This research introduces a ResNet-based image super-resolution technique paired with Non-Subsampled Shearlet Transform (NSST) Coefficient Extraction and Energy of Gradient (EOG) focus measurement. It employs a small area elimination process and a rolling guidance filter to enhance the initial decision map. The fusion of weighted source images and decision maps yields superior results, with performance metrics like MI of 9.3670, QY of 0.9770, and a runtime of 60.23 s, outperforming existing models such as SR, BF, and CNN variants. This framework significantly enhances resolution while preserving structural details in multi-focus image fusion.

Link:
https://www.scopus.com/pages/publications/105041114017?origin=resultslist

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Performance Study of Artificial Neural Network Based Control for Electric Vehicle to Vehicle Energy Transfer

AUTHOR :

Gupta V.K.; Yeolekar S.

JOURNAL NAME:

Proceedings of the 4th International Conference on Augmented Intelligence and Sustainable Systems, ICAISS 2026

DETAILS:

Published on April 2026

ABSTRACT:

This paper presents a data driven control approach for direct vehicle to vehicle (V2V) energy exchange, where an Artificial Neural Network (ANN) regulates the current delivered between two electric vehicles. The control scheme supports energy sharing through onboard converter hardware while ensuring stable current tracking under diverse operating conditions. A detailed simulation model is developed in MATLAB/Simulink to capture nonlinear behavior associated with battery characteristics, switching devices and converter interactions. System responses from a wide range of operating states are collected to form a training dataset, enabling the ANN to learn the relationship between measured variables and the required duty cycle. After training, the ANN controller replaces conventional control logic within the V2V model to achieve closed loop current regulation across different transfer modes. Simulation results indicate quicker settling, lower overshoot and improved current tracking. Overall, the study highlights ANN based control as a practical option for enhancing reliability and adaptability in emerging V2V charging systems.

Link: https://doi.org/10.1109/ICAISS68683.2026.11525447

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

LeafNet: An Intelligent System for Plant Disease Classification with Deep Learning Models

AUTHOR :

Kalyani M.; Manaswini M.; Shevkari S.; Sinkar J.; Tyagi L.K.; Sharma Y.K.

JOURNAL NAME:

Proceedings of the 2026 13th International Conference on Computing for Sustainable Global Development, INDIACom 2026

DETAILS:

Published on April 2026

ABSTRACT:

In agriculture, early identification of plant diseases is crucial for increasing productivity of the crop and decreasing the economic loss. This paper describes a deep learning-based framework proposed for the classification of plant diseases into multiclass categories based on the PlantVillage dataset, which consists of 15 disease categories. Several models, such as CNN, Autoencoder, AlexNet, VGG16, and ResNet, were implemented and compared. Top three models were selected and applied soft voting ensemble mechanism for better outcome. The images were preprocessed through resizing, normalizing, and data augmentation techniques. Experimental results showed that transfer learning models outperformed conventional architectures, with the highest accuracy achieved by VGG16 at 78.4%, followed by ResNet at 73.8% and AlexNet 72.3%. The Soft Ensemble model built using top three models were performed well and given 82.6%. The proposed system supported for real-time disease prediction with Flask-based web interface for real-time disease prediction. These results reveal the capability of deep learning models in assisting precision agriculture with automated disease diagnosis.

Link:
https://doi.org/10.23919/INDIACom70271.2026.11525518

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Expanding Horizons: Methodological Innovations and Literature in Contemporary Ethnography

AUTHOR :

Mohan H.T.; Killemsetty N.; Saqib N.U.; Mohan D.

JOURNAL NAME:

The Practice of Visual Ethnography: Examining Identity and Lived Experiences of Marginalised Communities

DETAILS:

Published on 25 February 2026

ABSTRACT:

This chapter situates visual ethnography within the broader evolution of ethnographic research, tracing the shift from conventional participant observation to methods such as digital and visual approaches. It reviews key debates on power, representation, and ethics, highlighting narrative and visual storytelling as central to engaging with marginalized voices. By discussing positionality, authorship, and participatory methods, it lays the conceptual foundation for later case studies. The chapter shows how contemporary ethnography engages with socio-economic and spatial inequalities, reframing research as a collaborative and politically engaged practice.

Link: https://doi.org/10.1007/978-981-95-4648-0_2

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Experimental Study on Removal of Methylene Blue Dye from Wastewater Using Chitosan: Rice Straw Hydrogel Composite

AUTHOR :

Jadhav A.; Parikh S.; Wadgaonkar V.S.; Khurpade P.D.; Lekhadia K.

JOURNAL NAME:

Lecture Notes in Civil Engineering

DETAILS:

Published on 1 May 2026

ABSTRACT:

The increasing presence of dyes in wastewater necessitates the development of efficient and sustainable remediation methods. This study investigates the potential of a novel bio-sorbent, chitosan-rice straw (CHRS) composite hydrogel particles, for the removal of methylene blue dye from aqueous solution. Systematic experiments were conducted by varying dye concentrations and bio-sorbent dosages and contact time. Furthermore, UV–Vis spectroscopy, scanning electron microscopy analysis, and FTIR test were employed for the analysis of removal efficiency of dye. The adsorption behavior of methylene blue dye on bio-sorbent followed Freundlich adsorption isotherm model ($R2 = 0.894$). Overall result analysis indicated that bio-sorbent synthesized using chitosan-rice straw composite hydrogel particles efficiently removed the methylene blue dye with efficiency of 92.81% after 24 h of contact time. The findings demonstrate the CHRS as an affordable, effective, and eco-friendly alternative to conventional adsorbents used in wastewater treatment methods.

Link: https://link.springer.com/chapter/10.1007/978-981-95-1438-0_17

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Introduction to Blockchain

AUTHOR :

Bansode V.A.; Tiwari P.K.; Bedekar M.

JOURNAL NAME:

New Trends in Blockchain

DETAILS:

Published on 2026

ABSTRACT:

The chapter "Introduction to Blockchain" offers an easy-to-understand overview of blockchain technology. It starts by explaining where blockchain came from and how it has evolved, beginning with Bitcoin and expanding to many other applications today. The chapter covers the basic elements of blockchain, such as decentralized ledgers, consensus mechanisms, cryptographic hashing and smart contracts. It also explores how blockchain is being used in various fields, including finance, supply chain management, healthcare and government and highlights the technology's many uses and strengths. Additionally, the chapter discusses some of the challenges blockchain faces, such as scalability, energy use and regulatory concerns. This introduction provides readers with a solid understanding of blockchain, setting the stage for more detailed exploration and practical use in later chapters.

Link:
https://www.scopus.com/pages/publications/105042003076?origin=resultslist

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Multivariate Time-Series Prediction of Energy Consumption Using Recursive Feature Elimination (RFE) and LSTM–Keras

AUTHOR :

Bajeli P.; Praveen S.; Kadam S.; Sonawani S.

JOURNAL NAME:

Lecture Notes in Networks and Systems

DETAILS:

Published on 1 May 2026

ABSTRACT:

Accurate short-term forecasting of household energy consumption is a fundamental premise for efficient smart-grid operation and sustainable planning. Many conventional statistical models, such as ARIMA and regression, fail to learn nonlinear, long-term temporal dependencies intrinsic in energy data. In this work, we propose a multivariate time-series forecasting approach that incorporates Recursive Feature Elimination coupled with an LSTM network implemented in Keras. The architecture first selects the most informative inputs (e.g., voltage, reactive power, and sub-metering) and subsequently learns temporal dynamics in order to forecast short-term demand. Using the UCI Individual Household Electric Power Consumption dataset, we compare the proposed model against a strong Random Forest baseline. In its present configuration, the Random Forest yields lower MAE and RMSE on the test set; nevertheless, the RFE–LSTM still achieves a non-trivial coefficient of determination ($R2 \approx 0.60$) and enjoys feature selection offering a transparent and extensible framework for smart-grid energy management. The Adam optimizer with a learning rate of $1 \times 10\text{-}3$, $\beta 1 = 0.9$, and $\beta 2 = 0.999$, which minimized the mean squared error loss with early stopping on validation loss, was used for training the model.

Link: https://link.springer.com/chapter/10.1007/978-3-032-20606-0_49

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Foreign Direct Investment and Maritime Transportation Infrastructure: Competition Effects Under the Belt and Road Initiative

AUTHOR :

Vechiu N.; Sharma M.K.

JOURNAL NAME:

World Economy

DETAILS:

Published on 29 May 2026

ABSTRACT:

In this paper, we analyse the determinants of maritime connections, with a special focus on the importance of foreign direct investments (FDI) in improving maritime transportation networks and in restructuring them. We are also interested in how China, in particular, impacts countries' integration to global supply chains through maritime transportation. We work on a heterogeneous panel of bilateral maritime connections as measured by UNCTAD's bilateral liner shipping connectivity index, and we find that FDIs between two partner countries do not significantly impact their maritime connection. However, we do find that Chinese FDIs in countries concerned by the Belt and Road Initiative (BRI) reinforce bilateral maritime connections between countries, in general, be they BRI countries or not. The Chinese influence is also significant via their maritime presence: maritime connections between two countries are significantly higher when host countries have strong maritime ties to China. A deeper analysis through several interaction effects also shows the Chinese influence is conditional on host countries' attributes. For instance, a maritime connection with China is more beneficial to developing/poorer host countries, who see their connection to origin countries increase more as compared to developed/richer host countries.

Link: https://doi.org/10.1111/twec.70096

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Sentiment analysis of news using BERT and neural networks on stock market

AUTHOR :

Shah B.; Malwade S.; Mahajan J.; Shah S.

JOURNAL NAME:

AIP Conference Proceedings (Vol.-3410, Issue-1)

DETAILS:

Published on 21 May 2026

ABSTRACT:

The economy is heavily dependent on the stock market and a positive uptrend indicates growth whereas a downward trend indicates recession. Predicting the stock market has thus been a profitable endeavour with widespread research interest. Being able to predict short term movements enables the investors to reap greater return. Stock Prices are sensitive to financial markets and the information available. In this paper we use deep learning networks to predict the stock market with financial news articles from an array of news articles. Creation of neural networks such as a MultiLayer Perceptron an Artificial Neural Network (ANN) or complex Recurrent Neural Network (RNN) like Long Short Term Memory (LSTM) paired with FinBERT, a pre-trained BERT model. The models will integrate the sentiments of news headlines and descriptions of articles to predict stock price with greater accuracy. We then train the model on NIFTY 50 index stock data and news articles to evaluate the performance of both MLP, LSTM models with news headlines and news description using mean absolute error (MAE), mean absolute percentage error (MAPE) metrics for accuracy.

Link: https://doi.org/10.1063/5.0330107

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Measuring student perceptions of marine engineering curriculum: scale development and validation

AUTHOR :

Chavare P.P.; Srivastava A.P.; Vihari N.S.

JOURNAL NAME:

Australasian Journal of Engineering Education

DETAILS:

Published on June 2026

ABSTRACT:

Students are essential stakeholders in the education system. However, there needs to be more focus on how their perceptions can be understood to improve or redesign the curriculum. Thus, this paper attempts to develop a comprehensive scale to measure the perception of engineering students of their curriculum specifically for marine engineering education. The study identified a 12-dimensional construct that covers aspects of a quality curriculum. The data collected using cross-sectional sampling supports this dimensional structure of the attributes of quality curriculum and the internal consistency and validity of the scale. The outcome of this paper will add to the existing knowledge pool by understanding students' viewpoints about curriculum quality and further help accommodate these in designing curricula. Though this scale focuses on marine engineering education, owing to its proximity to other domains of technical education and the global nature of the primary construct, the same may be administered and tested for the quality of the curriculum of technical education in general.

Link: https://doi.org/10.1080/22054952.2026.2688665

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Analyzing The Impact Of Hybrid Deep Learning For Nft Classification In Iot Enabled Metaverse Environments

AUTHOR :

Ahamad S.; Talukdar V.; Pankajam A.; Mamatha G.; Nagendra C.S.; Jain V.; Dhamodaran S.; Padmapriya S.

JOURNAL NAME:

Journal of Theoretical and Applied Information Technology (Vol.-104, Issue-10)

DETAILS:

Published on 31 May 2026

ABSTRACT:

Research is becoming harder to classify NFTs in metaverse settings that use IoT, and this research tries to help with that. In these kinds of situations, traditional deep learning models usually have trouble with scalability, feature extraction, and computing efficiency. It utilized a dataset to look at how changes in epochs affected the validity, efficiency, and accuracy of four distinct neural network models: CNN, DenseNet, Inception, and a Hybrid model. The Hybrid model always has better validation accuracy than its competitors. With an accuracy of 95.1 percent, it beat the previous record at epoch 30. The Hybrid approach works better than other methods. The Hybrid model does well on a number of classification tasks, as seen by accuracy measures, which back up this tendency. Efficiency research looked at testing and training times, computational complexity, and resource use, and it found that the Hybrid model was the best way to classify NFTs. The Hybrid model only needed 2.5 hours of training, whereas Inception and DenseNet needed 3.2 and 2.8 hours, respectively. The Hybrid model cut testing time by a lot, only taking 18 seconds for each batch. This is a big difference over CNN and DenseNet. The Hybrid approach makes the most of processing time by maximizing performance and efficiency. It does require a little more computing power since its average GPU use is 78% compared to CNN's 70%. Our research shows that a Hybrid model is a good option for classifying NFTs using deep learning since it combines several architectures to improve accuracy and efficiency. The main outcome of this study is a hybrid architecture that efficiently integrates complementary strategies to address the shortcomings of individual deep learning models.

Link: https://doi.org/10.5281/zenodo.20497492

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

AI-Driven Sustainable Infrastructure: Ethico-Legal Challenges, and an Adaptive Policy Framework

AUTHOR :

Yadav V.S.

JOURNAL NAME:

Proceedings of SPIE - The International Society for Optical Engineering

DETAILS:

Published on 18 May 2026

ABSTRACT:

Artificial intelligence (AI) is transforming the sustainable infrastructure in terms of its ability to optimize energy consumption efficiency, urban planning, and resource management. Nevertheless, its data-driven nature poses severe legal and privacy issues, such as data breaches, insufficient models of consent, and algorithm bias. To explore these issues both in India and globally, this research employs a mixed-methods approach, combining a systematic literature review (conducted according to PRISMA guidelines) with qualitative case study analysis. The results indicate that the Digital Personal Data Protection Act of India (DPDPA) does not specifically address AI, whereas international regulations such as the GDPR are not entirely suitable for implementation in India. The APS Policy Framework proposed finds its balance by incorporating stakeholder cooperation, adaptive regulation, and privacy-by-design, which do not conflict or undermine innovation. Tailored to India's socio-economic needs, it employs methods such as differential privacy and promotes fair and sustainable infrastructure growth aligned with the Sustainable Development Goals (SDGs). It is recommended that pilot projects be conducted to verify their effectiveness.

Link: https://doi.org/10.1117/12.3107741

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Zero-Trust Security Models for High-Speed Industrial IoT Networks

AUTHOR :

Verma R.; Pokhariya H.S.; Gnanaprakasam C.; Manjunath T.G.; Kumbhar V.; Naveenkumar R.

JOURNAL NAME:

Proceedings of the 2026 13th International Conference on Computing for Sustainable Global Development, INDIACom 2026

DETAILS:

Published on April 2026

ABSTRACT:

Industrial Internet of Things (IIoT) infrastructures have revolutionized industrial environments with a new level of automation and intelligence, however the integration and combination of thousands of devices not only exacerbates organizational vulnerability but also introduces great cybersecurity challenges as all physical place entities become connected and subject to attacks by malicious actors like any other cyber-entity in traditional cyberspace. Relying on perimeter-based security architectures as a primary defense for industrial networks against elaborate cyber-attacks which leverage methods such as device spoofing, lateral movements or unauthorized access is no longer adequate. In this paper, we introduce a Zero-Trust Security Model (ZTSM) for High-Speed Industrial IoT Networks that solves these issues by verifying devices, users and applications in real time before allowing access towards critical industrial resources. The new framework leverages identity-based authentication, device behavior profiling, micro-segmentation and lightweight machine-learning anomaly detection techniques in real-time to ensure secure yet ultra-low latency communication. An adaptive security policy engine evaluates device identity, network behavior and more data points to provide a dynamic trust score that guides access control in industrial edge environments. Experimental results on a simulated high-speed IIoT network are used to show that the proposed model achieves 98.2% threat detection accuracy, suppresses unauthorized access attempts by 91.4%, and keeps the network latency low at less than 3.5 ms, all necessary to accept real-time operation in industrial environment. The findings suggest that Zero-Trust lifecycle-based security paradigms ensure the resilience to cyber threats and maintain the performance requirements of future Industrial 4.0/smart factory systems.

Link:
https://doi.org/10.23919/INDIACom70271.2026.11525462

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

A novel LSTM framework for multitask learning: Enhancing tooth stage classification and dental age estimation through sequence modeling

AUTHOR :

Sable S.; Jahagirdar A.; Mishra S.; Gaikwad T.; Maini A.

JOURNAL NAME:

AIP Conference Proceedings (Vol.-3410, Issue-1)

DETAILS:

Published on 21 May 2026

ABSTRACT:

While the brain stores our memories, our teeth quietly record the passage of time, holding secrets of our age. Teeth unveil the story of our age through their growth patterns, wear, and developmental stages, each marking a chapter in our life's timeline. Dental age estimation has been significant in dental treatment planning, forensics, criminal investigation, and illegal immigration. Traditional Dental Age Estimation methods like Demirjian's method, Cameriere's Method, etc. though effective in classifying developmental stages, do not account for age progression indicators beyond full dentition, such as wear and tear that naturally occur with time. In this study, we propose a novel approach that leverages the combined strengths of VGG16 and LSTM networks to address the complex task of dental age estimation while effectively overcoming the inherent limitations of traditional age estimation approaches. We use Dental Radiographs i.e. OPG (Orthopantomogram) for predicting age based on tooth stages. The labelling of tooth stages was conducted according to Demirjian's method, which is a widely accepted framework for assessing dental maturation. We have trained two LSTM models for this task: one for classifying the tooth stages and the other for predicting age. The outcomes of this study would primarily assist in automating dental age assessment w.r.t the permanent teeth in the left mandible using deep learning and analyse the performance of the LSTM model in image-based tooth stage classification and sequence-based age estimation tasks. We achieved a validation MAE of 2.23 for male and 2.36 for female for our age prediction model and an accuracy of 0.9921, 0.9886, 0.9746, 0.9764, 0.9659, 1.0, 0.9554, 0.8900 on teeth 31, 32, 33, 34, 35, 36, 37, and 38 (as per FDI Notation) respectively for tooth stage classification model.

Link: https://doi.org/10.1063/5.0329261

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

New Data On The Distribution Of Two Coenagrionidae Damselflies Ishnura Rufostigma Rufostigma Selys, 1876 And Aciagrion Approximans Krishna Fraser, 1921 From Central India; [Novi Podaci O Rasprostranjenju Dviju Vrsta Coenagrionidae Ishnura Rufostigma

AUTHOR :

Tiple A.; Deokar A.; Payra A.; Koparde P.

JOURNAL NAME:

Natura Croatica (Vol.-35, Issue-1)

DETAILS:

Published on 8 November 30 June 2026

ABSTRACT:

Opportunistic surveys on odonates were conducted in the different parts of central India between January 2020 and December 2022. The survey revealed occurrence of two Coenagrionidae damselflies Ishnura rufostigma rufostigma Selys, 1876 and Aciagrion approximans krishna Fraser, 1921 for the first time from the central Indian landscape of Maharashtra and Madhya Pradesh, India, based on the photographic evidence. The present findings underscore the immediate need of further intensive surveys in central India, to strengthen the knowledge of diversity and distribution of odonate species of the region.

Link: https://hrcak.srce.hr/en/347154

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Unseen and Unequal: An Integrative Review of Gender Differences in Adverse Childhood Experiences

AUTHOR :

Korde V.A.; Choudhari V.

JOURNAL NAME:

Asian Journal of Human Services (Vol.-30, Issue-3)

DETAILS:

Published on May 2026

ABSTRACT:

Adverse Childhood Experiences (ACEs) refer to a variety of traumatic events faced early in life, such as abuse, neglect, or dysfunctional family patterns. Extensive research identifies ACEs as important predictors of long-term physical, emotional, and psychological health problems. Over and beyond their health effects, ACEs significantly influence personality development, emotional regulation, and relationship skills throughout a person's life. Although the impact of ACEs is well established, studies on gender differences remain limited. This comprehensive review combines current findings to examine the relationship between ACEs and gender. It looks at how common these experiences are, their types, and coping strategies across genders. Additionally, it investigates gender differences in access to social support. The review also considers how cultural norms shape gendered experiences and perceptions of childhood adversity. Understanding the gender-specific aspects of ACEs is essential for developing targeted prevention methods and improving trauma-informed care. This review emphasizes the urgent need for models that include gender perspectives when analyzing the lasting effects of ACEs.

Link: https://doi.org/10.14391/ajhs.e3003.2.001

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Acute and subacute toxicity evaluation of a polyherbal blend in rats

AUTHOR :

Murudkar P.H.; Baheti A.M.; Pawar A.T.

JOURNAL NAME:

Drug and Chemical Toxicology

DETAILS:

Published on 11 January 2026

ABSTRACT:

Many people often assume the safety of herbs and use them in the form of polyherbal blends to treat various health conditions. The present study aimed to evaluate the acute and subacute oral toxicity profile of a polyherbal blend in Wistar rats. The polyherbal blend was prepared to contain Terminalia chebula Retz., Terminalia bellirica (Gaertn.) Roxb., Phyllanthus emblica L., Curcuma longa L., Tribulus terrestris L., Pterocarpus marsupium Roxb., Tinospora cordifolia (Willd.) Miers, and Cinnamomum verum J. Presl. An acute oral toxicity study of a prepared polyherbal blend was conducted as per OECD guideline 423 and the subacute toxicity study was performed as per OECD 407 guidelines. There was no mortality and signs of toxicity at 2000 mg/kg single oral administration of polyherbal blend, indicating that the oral median lethal dose (LD50) is greater than 2000 mg/kg. The results of the subacute toxicity study indicated no significant changes in body weight, food and water consumption, hematological and biochemical parameters in rats treated with polyherbal blend at 250, 500 and 1000 mg/kg for 28 days when compared to their respective controls. Organ weights and histopathology showed no significant alterations in treated or satellite groups as compared to controls. It is concluded that the polyherbal blend is safe at a single dose of 2000 mg/kg and 28 days repeated dose of 1000 mg/kg by oral route in rats.

Link: https://doi.org/10.1080/01480545.2026.2612974

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Empowered by Energy: A Review and Text Mining Analysis of Research on Clean Cooking Fuel and Women's Empowerment

AUTHOR :

Siddiqui M.S.; Sharma R.; Tarkar P.; Ali Z.; Rahisha; Khan W.

JOURNAL NAME:

Wiley Interdisciplinary Reviews: Energy and Environment (Vol.-15, Issue-2)

DETAILS:

Published on 26 May 2026

ABSTRACT:

This study conducts a comprehensive bibliometric analysis combined with text mining to explore the influence of clean cooking fuel on women's empowerment. Here, we have analyzed 305 research publications indexed in the Web of Science to explore trends in research on clean cooking fuels, shedding light on their intersection with gender dynamics, health, and socio-economic development. The bibliometric analysis showed a significant growth in terms of published papers from 2015 onwards, influenced by global attention to clean energy and its socio-environmental benefits. We identified six common topics through topic modeling, including the health benefits of clean cooking technologies for women, reduced indoor air pollution, and the socio-economic advantage of cleaner fuels. The results underscore the critical role of clean cooking fuels in enhancing women's health, reducing their domestic labor burden, and advancing gender equality. Geographical disparities in how impactful research is highlighted; the USA and China lead for citations. Despite such progress, challenges such as economic and cultural barriers to adoption in rural populations remain, necessitating targeted policy action. Although previous literature had focused on clean energy transitions, this study contributes by demonstrating the potential benefits of clean cooking programs on women's empowerment and general well-being. This article is categorized under: Human and Social Dimensions > Gender Equity Sustainable Development > Goals Policy and Economics > Research and Development.

Link: https://doi.org/10.1002/wene.70032

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Nanotheranostics in Hormone Therapy for Breast Cancer

AUTHOR :

Trideva Sastri K.; Venkatesh M.P.; Kiran P.K.; Darshan G.S.; Namratha G.S.; Syed J.M.; Chalasani S.H.

JOURNAL NAME:

Nano Theragnostics in Breast Cancer: Advances, Challenges, and Future Prospects

DETAILS:

Published on 8 January 2026

ABSTRACT:

Hormone-receptor-positive breast cancer accounts for roughly 70% of diagnoses, yet long-term control is undermined by endocrine resistance driven by ESR1 mutations, adaptive signaling crosstalk, and sanctuary-site metastasis. Nanotheranostics platforms, which are nanoscale constructs that incorporate both imaging agents and endocrine payloads, provide an innovative approach to enhancing hormone therapy. They enable real-time visualization coupled with precise drug delivery. Polymeric micelles, lipid nanoparticles, and superparamagnetic iron-oxide cores have been engineered to ferry selective oestrogen-receptor degraders (SERDs), such as elacestrant, approved in 2023 for ESR1-mutated metastatic disease, deep into tumor and bone-marrow niches while simultaneously enhancing MRI, PET, or photoacoustic contrast. Acid-labile or enzyme-cleavable linkers trigger drug release only within the acidic or protease-rich tumor microenvironment, minimizing off-target exposure that underlies osteoporosis, thromboembolic events, and cardiometabolic toxicity seen with free endocrine drugs. Beyond single-agent therapy, multifunctional surfaces accommodate aromatase-inhibitor prodrugs, siRNA that silences mutant ESR1, and immunomodulatory ligands, enabling concerted attacks on both tumor cells and stromal resistance loops. Magnetic or acoustic guidance further concentrates these hybrids in brain and bone lesions, historically impervious to conventional endocrine agents. In pre-clinical models, such "all-in-one" nanocarriers deliver ≥10-fold higher intratumoral SERD levels, restore endocrine sensitivity, and allow longitudinal imaging to verify target engagement. At the same time, early human pilot studies indicate improved lesion conspicuity and acceptable safety. This chapter traces the evolution of nanotheranostics for hormone therapy from materials engineering and resistance-targeted payload design to imaging physics, translational milestones, safety considerations, and future clinical integration providing a concise roadmap for researchers and clinicians seeking to harmonize diagnosis and endocrine intervention in breast cancer.

Link: https://doi.org/10.1007/978-981-95-3682-5_23

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Impact of Blockchain-Based Smart Contracts on Business Transparency and Operational Efficiency

AUTHOR :

Khatri K.; Adhana D.K.; Thumar V.; Gupta N.K.; Kulkarni A.; Kulkarni P.

JOURNAL NAME:

International Journal of Special Education (Vol.-41, Issue-6s)

DETAILS:

Published on 2026

ABSTRACT:

The rapid growth of the digital economy has created an environment where businesses have rapidly adopted innovative technologies (such as artificial intelligence) to increase their competitiveness and performance. One such emerging technology is Blockchain Technology. Blockchain is a distributed database technology which provides a transparent and secure way to create and share immutable records with multiple parties without the need for a central authority. Smart Contracts represent one of the most exciting uses of Blockchain Technology. Smart Contracts are self-executing contracts which automatically fulfill contractual terms based upon pre-defined rules when certain conditions are met. Smart Contracts provide several benefits over traditional contracts. They allow for a removal of intermediaries, decrease in transaction costs, increased transparency, and decreased time to complete a transaction. Therefore, many organizations in financial services, logistics/supply chains, health care, insurance, and manufacturing use smart contracts based on blockchain technology to increase efficiency and improve governance. By enabling the automation of workflows and providing real-time visibility into all transactions, smart contracts have a direct effect on increasing both organizational efficiency and investor confidence. With the potential to transform how traditional business processes operate by allowing for decentralization, immutability, and automation; blockchain technology represents a potentially transformative and disruptive technological innovation. Smart Contracts (one of the major applications of blockchain technology) also enable the execution of agreements autonomously and independently of third-party intermediaries, thus improving business_transparency (BT), accountability & the overall operational_efficiency (OE) of an organization.

.Link:
https://www.internationalsped.com/index.php/ijse/article/view/3167

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Comparative Evaluation of Custom CNN Architectures and Transfer Learning Models for Image Classification in PyTorch

AUTHOR :

Chinni H.; Sharma Y.K.; Shevkari S.; Vydehi J.L.; Saurabh; Kavitha M.

JOURNAL NAME:

Proceedings of the 2026 13th International Conference on Computing for Sustainable Global Development, INDIACom 2026

DETAILS:

Published on April 2026

ABSTRACT:

This paper presents a controlled comparative evaluation of a custom convolutional neural network and several pre-trained deep learning architectures for image classification. The objective of the study is to analyze the impact of architectural depth and transfer learning on classification performance and computational efficiency. All models were implemented in PyTorch and trained under identical experimental conditions, including preprocessing, data augmentation, optimization strategy, and training schedule, to ensure a fair comparison. The experimental results show that the custom CNN achieves faster training with a smaller number of parameters but attains lower classification accuracy. Among the pre-trained models, ResNet-50 achieved the highest accuracy (94.36), followed by DenseNet-121 (93.5), demonstrating strong generalization capability. ResNet-18 provided a balanced trade-off between accuracy and training efficiency, while VGG-16 required higher computational resources with comparatively lower performance. MobileNet-V2 achieved competitive accuracy (88.29) with significantly fewer parameters, making it suitable for resource-constrained environments. The findings highlight the trade-off between accuracy and computational cost and indicate that transfer learning is generally more effective than training a custom CNN from scratch when higher classification performance is required.

Link:
https://doi.org/10.23919/INDIACom70271.2026.11525435

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Graph Neural Networks for Detecting Coordinated Cyber-Attacks in Large-Scale Networks

AUTHOR :

Maskarenkhas K.; Gulgulia K.; Gaikwad H.; Kardekar A.; Joshi D.

JOURNAL NAME:

ESIC 2026 Proceedings - 6th International Conference on Emerging Systems and Intelligent Computing

DETAILS:

Published on February 2026

ABSTRACT:

This paper explores the application and use case for Graph Neural Networks (GNNs) for the detection of coordinated cyber-attacks for large scale networks. Most of intrusion detection systems and conventional ones cannot capture the structural relationships existed among different entities of the network. Based on graph representations, GNNs can be applied to learn such topological patterns as synchronized Scanning or botnet behavior. The project is based on the CIC-IDS 2017 dataset, and each model consists of a GNN that detects unusual sub graph structure, and therefore, malicious activity. The results indicate that the graph-based approaches exhibit a high accuracy of 93.8 with very low false positives which was an indicator of the efficiency and accuracy of graph-based approaches for cyberspace threat detection.

Link: https://doi.org/10.1109/ESIC68176.2026.11495613

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Visible Light Communication for IoT-Enabled Healthcare: Applications, Challenges, and Future Directions

AUTHOR :

Salvi L.; Jethani A.; Apune S.; Salvi S.

JOURNAL NAME:

2025 International Conference on Electronics and Computing, Communication Networking Automation Technologies, ICEC2NT 2025

DETAILS:

Published on September 2025

ABSTRACT:

This review article focuses on the application of Visible Light Communication (VLC) in IoT-enabled healthcare systems. It systematically surveys recent advancements across multiple studies to analyze VLC's integration into medical environments, drawing insights from over 40 cited works. The review explores diverse healthcare use cases such as real-time patient monitoring, secure medical data transmission, indoor asset tracking, and assistive technologies for the visually impaired. Key findings highlight VLC's advantages, including high data transmission speed, enhanced privacy, low power consumption, and immunity to electromagnetic interference-making it especially suitable for sensitive medical contexts. However, challenges such as environmental light interference, limited coverage, system alignment issues, and interoperability remain significant barriers to large-scale adoption. The article concludes with future directions, recommending AI-driven VLC systems, hybrid VLC-RF models, energy-efficient frameworks, and the development of ethical and regulatory standards to ensure safe and scalable deployment in next-generation smart hospitals.

Link:
https://doi.org/10.1109/ICEC2NT65402.2025.11379954

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Revolutionizing Diagnosis of Respiratory Diseases Through Fusion Neural Network Model

AUTHOR :

Gunasundari B.; Fouzia Sulthana K.; Sivasakthi K.; Mantri S.; Rudraraju A.; Khatana K.

JOURNAL NAME:

Lecture Notes in Networks and Systems (vol.-1672 LNNS)

DETAILS:

Published on 1 May 2026

ABSTRACT:

Diseases of the respiratory system such as pneumonia, tuberculosis, and COVID-19, along with clinical findings such as lung opacity are considered serious global health problems as they contribute immensely to morbidity and mortality throughout the world. Pneumonia refers to inflammation of the lungs usually due to any form of bacterial or viral infection, and it poses the danger of often leading to fatal respiratory failure if the individual is not diagnosed at an appropriate time. Tuberculosis (TB) is a chronic contagious disease primarily affecting the lung tissue and manifests by persistent cough, loss of weight, and chest pain. Lung opacity refers to the abnormal conditions produced in X-ray images as a result of specific pathologies and are indicative of various conditions such as infections or tumors. It is a disease caused by the SARS-CoV-2 virus and manifests serious respiratory symptoms and complications, as well as having potential long-term health effects. This research introduces a model of hybridizing CNN and Transformer for classifying the respiratory diseases. This means that it is involved with integration of a pre-trained VGG19 network for spatial feature extraction with a Transformer encoder for contextual representation learning, thus improving diagnostic accuracy with deep learning techniques. The methodology makes use of appropriate preprocessing, cleaning, and preparation of the dataset, data augmentation techniques to improve generalization of model, and dimensionality reduction through Uniform Manifold Approximation and Projection (UMAP) to boost model efficiency. This dataset consisted of X-ray images of pneumonia, tuberculosis, lung opacity, COVID-19, and normal available for training and evaluation purposes. Proposed framework had achieved a classification accuracy of 97.2%, making the most out of it through CNN-Vision Transformer model for early detection and precise diagnosis of respiratory diseases. This can subsequently improve the outcome of patients through timely and accurate diagnostics to support healthcare professionals, thus making great strides to better the respiratory health globally.

Link: https://doi.org/10.1007/978-981-95-3492-0_7

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Lightweight Cryptographic Protocols for Ultra-Fast Data Plane Processing

AUTHOR :

Raju C.G.; Ravikumar H.C.; Krishna M.V.; Manjunath T.G.; Kumbhar V.; Naveenkumar R.

JOURNAL NAME:

Proceedings of the 2026 13th International Conference on Computing for Sustainable Global Development, INDIACom 2026

DETAILS:

Published on April 2026

ABSTRACT:

Given your level of expertise and near access to this paper until October 2023, the above is quite sufficient. Traditional cryptographic mechanisms impose large computation overheads, which is often unacceptable in ultra-fast data plane environments where boundaries are monitored at line speed. We propose a Light-weight Cryptographic Protocol for Ultra-fast Data Plane (LCP-UFDP), which is specifically designed for communication in ultra-fast data plane. We propose a new protocol having a streamlined symmetric-key cipher, efficient key-derivation function and an easy authentication framework that minimizes processing delay while attaining sound security guarantees. The encryption architecture has a lightweight substitution-permutation structure, and the adaptive session key generation combined with it can realize the packet-level protection rapidly at an acceptable computational cost. We implement the protocol in a programmable data plane architecture and evaluate its performance in terms of throughput, encryption latency, packet processing delay and energy consumption. Experimental results show that the proposed protocol reduces cryptographic processing latency by up to 42% and increases throughput by 37%, compared with conventional AES security frameworks while providing strong protection against replay, spoofing and man-in-the-middle attacks. FA can also be continued function in a deployment of the high-speed assembly cluster network without losing their security communication and does not diminish the performance of this FS. The lightweight cryptographic protocol introduced here provides an efficient basis for security in future ultra-low latency networking architectures.

Link:

https://doi.org/10.23919/INDIACom70271.2026.11526040

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Leveraging Wearable Technology and Machine Learning for Real-Time Posture Correction in Yoga Practice

AUTHOR :

Biradi B.; Patil M.; Raza S.S.; Mishra D.; Jani H.; Dave Y.

JOURNAL NAME:

Proceedings of IEEE International Conference on Emerging Engineering Technologies and Applications, IC-EETA 2025

DETAILS:

Published on November 2056

ABSTRACT:

The historical practice of yoga promotes both cognitive and physical well-being. Yoga allows for self-learning, but bad postures can seriously harm ligaments and muscles. However, precision and accuracy are crucial when it comes to a yoga practice that aims to produce results while performing the right poses. An improved lung function, increased muscle endurance and adaptability, and physiological impacts on the body are all achieved with proper yoga positions. Numerous individuals incorporate yoga into their daily lives, and the value of autonomous learning yoga techniques has grown throughout COVID-19. Individuals can practice yoga properly on their own with the help of a yoga position identification structure that uses machine learning (ML) and human posture assessment approaches. The main drawback of the majority of the yoga stance identification techniques used today is their high processing cost and incompatibility for real-time usage. To verify the accuracy of the yoga poses during practice, this study has created a novel system known as a smart supportive gadget for position recognition and its characteristic extraction employing ML methods. To obtain time series statistics from detectors for the identification of various positions, this study has created an integrated wearable sensor-based system. The Xg-Boost algorithm was found to be the most effective algorithm for real-time yoga posture detection, with an accuracy of 95.15%, precision of 95.37%, recall of 95.03%, and a F1 value of 95.18%. The suggested framework has an optimal lag of 9 ms and an overall dimension of 514 KB, making it highly effective.

Link: https://doi.org/10.1109/IC-EETA66496.2025.11548363

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Smart Diagnostics for Skin Cancer: The Role of AI, CNNs, and IoT in Early Detection

AUTHOR :

Bhandarkavthekar N.; Pawgi J.; Sanap A.

JOURNAL NAME:

2026 International Conference on Emerging Technologies and Future Innovations, ETFI 2026

DETAILS:

Published on February 2026

ABSTRACT:

Skin cancer is one of the most rapidly increasing diseases, demanding early detection to ensure successful treatments. Old diagnostic methods, which depend on a learning curve by the dermatologist looking for/ not looking for microvasculature / pigmentation and human error are both time-consuming. With recent developments of AI and CNNs, automated accurate detection of skin lesion via dermatoscopic images has been achievable. This paper is a systematic literature review of fifteen IEEE articles (from 2020 to 2025) on AI, deep learning and Internet of Things (IoT) in the field of skin cancer detection. The proposed classifier has been tested with several well known architectures including VGG, ResNet, DenseNet, MobileNet and YOLO on public datasets such as HAM10000, ISIC and Kaggle with accuracies up to 99.31%. Recent research shows a trend towards light-weight, real-time and explainable AI systems suitable for deployment on mobile devices and edge computing nodes to support remote health care. This review emphasizes that advanced technology such as deep learning, IoT and explainable AI would bring nextgeneration diagnostic tool for skin cancer detection.

Link: https://doi.org/10.1109/ETFI68128.2026.11484091

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Daoist Self-Cultivation and Employee Well-Being: Evidence from Indian IT Companies

AUTHOR :

Deshmukh S.B.; Gupta Y.; Bhagat S.; Dhulipala M.; Dash S.; Nandurkar P.

JOURNAL NAME:

Journal of Daoist Studies (Vol.-19)

DETAILS:

Published on June 2026

ABSTRACT:

The current investigation appraises the role of self-cultivation in employee well-being. This study analyses the Employees of Indian IT companies. Present study shows that mindfulness, emotional equanimity, meditation and other similar practices enhance the psychological well-being of employees. Moreover, the Daoist philosophy was considered for exploring the spiritual self-cultivation of workers. The employees make of a variety of contemplative practices, like meditation, mindfulness and emotional balance for decreasing stress and increase emotional resilience. Apart from that, these practices enhance the job satisfaction and work-life balance of employees. This study employed a descriptive and analytical research design. A sample of 220 Employees working in Indian IT companies Non-probability sampling was used to select these employees for primary data. TCS, Infosys and Wipro were the companies registered within the selected companies. To collect primary data a structured questionnaire was used. Various statistical tools were used for drawing the conclusion of this study.

Link:
https://journalofdaoiststudies.org/index.php/journal/article/view/114

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Digital Leadership and ICT Readiness in ASEAN: A Comparative Study of Educational Innovation in Southeast Asia

AUTHOR :

Sharma E.; Sharma M.

JOURNAL NAME:

Digital Leadership and Innovation in ASEAN Education

DETAILS:

Published on 2026

ABSTRACT:

This chapter aims to examines the relationship between the digital leadership and the ICT readiness across selected ASEAN education systems. The study was comparative in nature, and purely based on the data-driven approach. The study analyzed the leadership-related indicators, ICT readiness measures, and the student digital skill used as proxies for the outcomes, for seven ASEAN countries. The findings revealed that there is a substantial cross-national variation in their digital preparedness, leadership capacity which is emerging as a critical differentiating factor beyond their economic conditions. Systems having coherent digital policies, and sustained leadership development, are truly aligned with the ICT investment. And these systems have demonstrated the higher ICT readiness scores, and a stronger learning outcome.

.Link: https://www.igi-global.com/chapter/digital-leadership-and-ict-readiness-in-asean/408066

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Secure Ultra-Low Latency Data Transport for High-Speed Edge-Cloud Networks

AUTHOR :

Ravikumar K.I.; Bhadula S.; Mahesh Kumar A.S.; Lavanya K.; Kumbhar V.; Sharma A.

JOURNAL NAME:

Proceedings - IEEE International Conference on Future and Advanced Computing Technologies, ICFACT 2026

DETAILS:

Published on March 2026

ABSTRACT:

The emergence and evolution of data-driven clinical decision support (CDS) systems have marked a rapid progress of computer-aided diagnosis and disease prognosis. But the centralized aggregation and labeling of sensitive medical data present serious challenges to patient privacy, data security, and compliance with regulation. Furthermore, insufficient labeled clinical samples might lead to low generalization ability for traditional supervised deep learning models. In order to solve above problems, in this paper we present the Privacy-Preserving Disease Diagnosis Framework Based on Self-Supervised Deep Learning (PP-SSDL). The proposed method makes use of self-supervised representation learning to learn clinically-interpretable representations from unlabeled medical data with reduced dependence on labeled samples. The approach relies on the use of contrastive and reconstruction-based pretext tasks to learn complex latent embeddings from multimodal medical data, such as images and physiological signals, while being robust to outliers. An alphanumeric vector is then fine-tuned with a slim classifier for the downstream detection of diseases. Privacy is maintained using decentralized training and encrypted updates of models, thereby enabling clinical sites to retain local copies of sensitive patient data. Experimental analysis is performed on standard medical datasets, including chest X-ray and ECG, with non-IID data distributions in a realistically sensitive setting. By contrast, the proposed PP-SSDL framework yields a mean diagnostic accuracy of 97.6% with precision, recall and F1-score of 96.9%, 97.3%, and 97.1%, respectively, demonstrating superiority to the conventional supervised DLMs by a margin ranging between [4-7]%. Further, compared with centralized learning methods, the model can save 65% on the labeling cost and reduce risks of privacy leakage. Our results show that self-supervised deep learning can provide an effective, scalable privacy-preserving solution to the next generation of medical diagnosis systems, especially when dealing with data-limited and privacy-sensitive healthcare regimes.

Link: https://doi.org/10.1109/ICFACT66887.2026.11518063

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Optimized parking system with automated management

AUTHOR :

Kale R.S.; Kuveskar M.R.; Kulkarni C.S.; Reddy D.H.; Pawar A.G.; Navale Y.R.

JOURNAL NAME:

AIP Conference Proceedings (Vol.-3426, Issue-1)

DETAILS:

Published on 4 June 2026

ABSTRACT:

Parking issues are prevalent in many global cities; parking availability is limited and poorly distributed, generating congestion, loss of time, under-utilization of zoned space, and pollution from cars. This system involves exploiting to overcome these problems. This paper proposes an optimised, innovative parking system with automated management based on Arduino. The complete system consists of an IR sensor for vehicle detection, an RFID reader for entry and reservation, servo motors for controlling the gate, and an LCD to display the current parking availability. It is responsive to allocating parking spaces to curb congestion and maximise efficiency while introducing a buffer mechanism to avoid false detections. RFID authentication provides security, and manual overrides are possible if your card is lost. The system is meant to be cost-effective and rapidly integrated, helping people to make the most of parking space while being easy to use and secure. With IoT and automation, innovative parking technology helps nurture sustainable urban mobility by efficiently using urban infrastructure resources, making it the new-Age solution for modern-day cities.

Link: https://doi.org/10.1063/5.0338239

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Rethinking Marketing for a Sustainable Future: The Role of Green Practices in Brand Strategy

AUTHOR :

Koluguri S.; Gaurav K.; Dash P.; Ray A.S.; Gupta A.A.; Vats S.

JOURNAL NAME:

Sustainable and Inclusive Practices for Building Authentic Brands

DETAILS:

Published on 2026

ABSTRACT:

The imperative for sustainable development has compelled businesses worldwide to integrate environmental and ethical considerations into their core strategies. This chapter has focused on the historical evolution, modes of adoption, and effects of green marketing practices on contemporary brand strategy, especially in relation to long-term sustainability. With a solid foundation based on an extensive literature review, the chapter began with the conceptual framing of sustainability and green marketing, then covered their historical evolution and significance in the present global marketplace. This chapter also discusses the key drivers for the mainstreaming of sustainable marketing, including changing consumer expectations, regulatory pressures, competitive advantage, andshifting socialvalues. Eventually, this chapter argues that sustainability can no longer be consigned to a peripheral concern and must now be counted among the strategic necessities.

Link: https://www.igi-global.com/chapter/rethinking-marketing-for-a-sustainable-future/398792

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

IoT-Based Soil Quality Index System Using NPK and Moisture Data for Smart Agriculture

AUTHOR :

Abhyankar D.; Mahajan A.; Shaha D.; Rawandale U.; Nath D.

JOURNAL NAME:

2026 International Conference on Emerging Technologies and Future Innovations, ETFI 2026

DETAILS:

Published on February 2026

ABSTRACT:

Maintaining adequate soil nutrient balance and moisture availability is essential for sustainable crop production. Conventional laboratory-based soil testing, although accurate, is often slow, costly, and unsuitable for continuous field monitoring. This work presents the design and implementation of a real-time IoT-based soil monitoring system that measures nitrogen, phosphorus, potassium, and soil moisture using embedded sensors. The sensed parameters are normalized and combined to compute a Soil Quality Index (SQI), which provides a universal indicator for soil fertility. The developed prototype was deployed and tested on soil samples under Indian field conditions, and the computed SQI values were found to align well with observed fertility levels. The proposed system offers a practical and low-cost decisionsupport tool for precision agriculture and improved soil management.

Link: https://doi.org/10.1109/ETFI68128.2026.11484777

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Operating parameter optimization for particle size control in spray and flow drying of edible flavors

AUTHOR :

Meshram A.; Deshmukh M.

JOURNAL NAME:

Drying Technology

DETAILS:

Published on 13 June 2026

ABSTRACT:

Spray drying and flow drying are widely used in the food industry for the encapsulation and stabilization of edible flavors because of their scalability, cost-effectiveness, and ability to produce stable free-flowing powders. However, controlling particle size distribution during drying remains a major industrial challenge that directly affects powder quality, drying efficiency, flavor stability, and product recovery. Non-uniform particle sizes can result in excessive fines generation, poor cyclone separation efficiency, agglomeration, uneven drying, reduced flowability, flavor degradation, and increased energy consumption during processing and storage. Therefore, understanding the relationship between drying operating conditions and particle formation is essential for improving industrial drying performance and product functionality. This review critically examines the influence of operating and formulation parameters on particle size control in spray and flow-dried edible flavor systems, with particular emphasis on process optimization for industrial applications. The effects of atomization parameters, including nozzle type, atomization pressure, and feed rate, together with drying conditions such as inlet and outlet temperature, airflow rate, and residence time, are systematically discussed in relation to droplet formation, drying kinetics, encapsulation efficiency, particle morphology, and powder quality. In addition, the influence of formulation characteristics, including carrier material, viscosity, solid content, and emulsifiers, on particle formation and flavor retention is comprehensively evaluated. The review further analyzes the relationship between particle size and functional properties, including solubility, oxidative stability, flowability, flavor release behavior, and sensory perception. Unlike conventional reviews that mainly focus on encapsulation materials and general drying technologies, this study specifically correlates drying operating conditions with particle size distribution and industrial powder performance to identify the suitable processing strategies for achieving uniform particle formation and improved encapsulation efficiency.

Link: https://doi.org/10.1080/07373937.2026.2685771

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

The future of Waqf in India after the 2025 amendment act in the light of Islamic jurisprudence

AUTHOR :

Sayed B.A.; Sopan Yadav V.

JOURNAL NAME:

Social Sciences and Humanities Open (Vol.-13)

DETAILS:

Published on June 2026

ABSTRACT:

Waqf is a religious endowment made by a Muslim to a religious, educational, or charitable cause. The Waqf (Amendment) Act, 2025, has instituted significant changes to the legal framework governing the Muslim charitable endowments in India, posing thought-provoking questions about the state control over religious autonomy and the personal law system. Through doctrinal research, this article aims to explore the various key provisions of the amended Act, for instance, the new act mandates the inclusion of non-Muslims in Waqf Boards, the abolition of "waqf by user," the expansion of the government's role in regulating waqf properties and adjudicating disputes related to them, the prerequisite of being a qualified practicing Muslim to be a donor, and the application of the Limitation Act, amongst many others, and analyze them from the perspective of classical Islamic jurisprudence on waqf (endowment), sadaqah jariyah (ongoing charity), and niyyah (intention). Falling back on Quranic principles, Hadiths, appraisals of major Islamic legal schools, and the analyses accentuate the theological rigidity and socio-political inference of these policies. The article argues that while the state's intent of promoting transparency and accuracy is a valid concern, a few provisions jeopardize the foundations of Islamic principles. By positioning the discussion between the state regulation and Islamic charity, this article proposes a re-evaluation of such legal reforms in religious institutions, like that of the Waqf Board in India, a pluralistic, democratic, and secular country. The primary objective of this research is to critically evaluate the compatibility of the Waqf (Amendment) Act, 2025 provisions with classical Islamic jurisprudence principles.

Link: https://doi.org/10.1016/j.ssaho.2026.103063

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Federated Machine Learning for Skin Lesion Diagnosis

AUTHOR :

Upasani S.K.; Pawar S.N.; Aglawe T.P.; Nehete P.U.

JOURNAL NAME:

2026 International Conference on Emerging Technologies and Future Innovations, ETFI 2026

DETAILS:

Published on February 2026

ABSTRACT:

The significance of detecting skin diseases early stems from its influence on patient outcomes because appropriate treatment provides better results. The clinical diagnosis of psoriasis and rosace together with eczema and melanoma proves to be difficult to detect. The prevalence of skin disorders affecting 30 to 70 percent of worldwide human population requires more precise and reliable diagnostic tools to be developed. The proposed research presents a privacy-protecting method for skin disease detection through Federated Learning implementation alongside ConvNeXt and Vision Transformer models. Both models bring valuable strengths to the table where ConvNeXt enhances feature extraction and ViT provides exceptional abilities to grasp dermatoscopic picture details. FL allows multiple organizations to develop training models through collaborative efforts while preserving patient data privacy while obeying regulations.

Link: https://doi.org/10.1109/ETFI68128.2026.11484991

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Hybrid Statistical-Machine Learning Framework for Forecasting Municipal Solid Waste Generation in Indian Cities: Seasonal, Climatic, and Event-Driven Dynamics

AUTHOR :

Latpate S.; Kale A.B.; Walase S.P.; Ghotekar S.V.; Sisodiya S.R.; Litke S.D.; Kargaonkar S.N.

JOURNAL NAME:

Journal of Solid Waste Technology and Management (Vol.-52)

DETAILS:

Published on February 2026

ABSTRACT:

Rapid-urbanization, population-growth, and changing consumption-patterns have led to a continuous rise in municipal-solid-waste (MSW) generation across Indian cities, exerting substantial pressure on collection, treatment, and disposal infrastructure. Reliable forecasting of MSW is therefore essential for sustainable urban-planning, landfill-diversion, recycling-optimization, and WtE-deployment. However, forecasting-practices used by many urban-local-bodies continue to rely on linear extrapolation or single-model approaches that inadequately capture seasonal-variability, climatic-influences, and event-driven waste surges characteristic of Indian urban systems. To address these limitations, the present study proposes a hybrid statistical-machine learning framework exclusively focused on MSW-generation forecasting. The framework integrates interpretable statistical time-series models, namely ARIMA and Holt-Winters exponential-smoothing, with ML-algorithms such as RF and GB to model both long-term trends and nonlinear-fluctuations in waste-generation. Secondary data for the period 2015-2024 were compiled from municipal-corporation records, CPCB-publications, and national urban development reports. Seasonal-indicators, including festival-periods and monsoon-months, along with climatic variables and selected socio-demographic drivers, were incorporated to enhance model responsiveness. Forecast performance was evaluated using RMSE, MAPE, R2, and k-fold cross-validation. Results indicate that standalone ARIMA and Holt-Winters models achieved average R2 values of 0.86 and 0.88, respectively, while ML-models improved predictive accuracy beyond 0.91. The proposed hybrid ensemble consistently outperformed both statistical and ML approaches, recording R2 values above 0.94 and achieving approximately 20-25% reductions in RMSE and MAPE, while preserving interpretability for policy-oriented applications.

Link: https://doi.org/10.5276/jswtm/iswmaw/521-2/2026.268

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

CCTV based Automated Peripherals Security and Monitoring System for Computer Labs

AUTHOR :

Patel V.; Shaikh A.; Soni D.; Bobdey S.; Desai S.

JOURNAL NAME:

2026 IEEE International Conference for Convergence in Computing Technology, I3CTCON 2026

DETAILS:

Published on March 2026

ABSTRACT:

In computer laboratories, theft and removal of peripherals such as keyboards and mice disrupt academic activity frequently and create recurring costs for replacements. The conventional CCTV-based surveillance relies on either manual monitoring or simple motion alarms, which are fundamentally difficult to differentiate between legitimate usage and malicious activity. This paper proposes an AI-based Automated Asset Security and Monitoring System for multi-desk computer laboratories. The system involves a cascaded model architecture comprising the YOLOv11-Pose algorithm for macro human pose estimation and a custom-trained YOLOv11s object detector for micro asset detection. Each desk is modeled by a polygonal region of interest and is associated with a Finite State Machine that encodes contextual rules regarding occupancy and expected inventory. Algorithmically, it employs global GPU batch inference coupled with multithread I/O to enable real-time processing of multiple RTSP camera streams on one workstation. Extensive experiments with a self-recorded dataset of 350 annotated images show that the YOLOv11s model outperforms YOLOv11m in an mAP@0.5, standing at 84.43% in precision and 87.97%, which were both trained under similar conditions. The presence of the FSM logic cuts off apparently false positives if temporary occlusions occur due to users' hands and arms. Results indicate that the proposed architecture is practical and effectively scales low latency for educational computer laboratories towards automated asset monitoring.

Link:
https://doi.org/10.1109/I3CTCON68242.2026.11507597

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Development of a Vision-Based Heuristic Control Framework for Multi-Axis Articulated Robot

AUTHOR :

Pawar A.S.; Patil S.M.; Shahane G.J.; Nibe N.V.; Patil S.S.; Mahajan A.M.

JOURNAL NAME:

MAS Journal of Applied Sciences (Vol.-11, Issue-2)

DETAILS:

Published on June 2026

ABSTRACT:

Traditional robotic teleoperation in industrial and hazardous environments often relies on physical joysticks, wearable sensor gloves, or computationally intensive depth-sensing cameras. These conventional methods inherently introduce significant deployment costs, mechanical constraints, and high computational overhead. To address these limitations, this paper presents the development and evaluation of a lightweight, low-cost monocular vision-based teleoperation framework designed specifically for a 4-degree-of-freedom (4-DOF) 3D-printed articulated robotic arm. Utilizing a standard consumer-grade RGB webcam, the proposed system extracts continuous hand skeletal keypoints in real time via the MediaPipe framework. To deliberately minimize processing overhead and eliminate the need for specialized GPU hardware, the algorithm isolates only the thumb tip (Landmark 4) and index fingertip (Landmark 8). A training-free heuristic threshold engine translates the calculated Euclidean distance between these two spatial coordinates into discrete servo commands, including Grip, Toggle, and Idle. Crucially, a software-level dynamic deadzone filter is integrated to explicitly reject sub-pixel landmark noise, successfully suppressing 85% of unwanted mechanical micro-motions during stationary poses. Hardware actuation is seamlessly executed via asynchronous PyFirmata serial communication to an Arduino Uno microcontroller. Rigorous experimental evaluation across 100,000 continuous inference cycles demonstrated a highly responsive mean end-to-end processing latency of 44.2 ms, comfortably satisfying the 100 ms upper bound for seamless Human-Robot Interaction (HRI). Furthermore, the system achieved a robust overall gesture classification F1-score of 95.2% across 5,472 controlled test cycles. Ultimately, this study validates that an optimized deterministic heuristic approach provides a highly efficient, cost-effective alternative to deep learning classifiers for real-time robotic teleoperation.

Link: https://doi.org/10.5281/zenodo.20343082

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

An Overview of Architecture in Cyber Physical Systems

AUTHOR :

Kulkarni A.; Harihar D.; Jahagirdar A.

JOURNAL NAME:

Smart Innovation, Systems and Technologies

DETAILS:

Published on 1 May 2026

ABSTRACT:

Throughout the evolution of industries, the processes have shifted from large, complex, manual-dependent systems to scalable, automated, intelligent systems. Each industrial revolution emerged as a response to the challenges of the previous one. Cyber Physical Systems have proven to be a foundational base in this transformation by enabling a connection between the physical and software systems. Industry 3.0 emphasized automation through electricity, while Industry 4.0 centers on digitalization and embedding cognitive, decision-making intelligence into machines. The paramount feature that Cyber Physical Systems exhibit is the management and supervision of hardware components with the help of computing elements to control the physical systems. This paper studies the architectural evolution of CPS from Industry 3.0 to Industry 4.0 and highlights the challenges in the architectures. We further discuss the role of cybersecurity while pointing to the severity of cyber-attacks in various architecture layers and outline the future directions including Industry 5.0, human-centric CPS and integration of digital twins and sustainable systems.

Link: https://doi.org/10.1007/978-3-032-21164-4_46

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Rice Crop Disease Detection using a Hybrid CNN-ViT Model enhanced with Explainable AI and Attention-Based Interpretability

AUTHOR :

James N.M.; Panchal N.

JOURNAL NAME:

2025 International Conference on Electronics and Computing, Communication Networking Automation Technologies, ICEC2NT 2025

DETAILS:

Published on September 2026

ABSTRACT:

Given the increasing threats to the yield of rice crop, early identification of diseases has become important for prompt intervention and sustainable agriculture, preserving the economic growth. This paper compares four deep learning architectures-Resnet50, MobileNetV2, DeiT-Tiny and MobileViT with a custom-designed hybrid CNN-ViT model on the Paddy Doctor dataset across eight disease classes and one healthy class. The proposed methodology of hybrid CNN-ViT model uses CNN for feature extraction of spatial patterns and a transformer-based encoder for analyzing global patterns in the image. All models were evaluated based on the accuracy and efficiency achieved. The hybrid model achieved maximum accuracy of 96.54% proving its supreme efficiency in crop disease monitoring. Furthermore, Grad-CAM++ and Attention Heatmaps were used for explainability to provide better interpretability. The integrated framework showed reliable performance in rice crop disease detection making it suitable for agricultural monitoring.

Link:
https://doi.org/10.1109/ICEC2NT65402.2025.11379973

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Liquid Biopsy in Early-Stage Breast Cancer

AUTHOR :

Pallavi P.; Trideva Sastri K.; Sanjay H.N.; Mohan R.; Syed J.M.; Chalasani S.H.

JOURNAL NAME:

Nano Theragnostics in Breast Cancer: Advances, Challenges, and Future Prospects

DETAILS:

Published on 8 January 2026

ABSTRACT:

Early-stage breast cancer (ESBC) is generally treatable, yet 15-25% of patients may experience a recurrence due to the presence of undetected residual disease that evades surgical procedures and conventional imaging techniques. Liquid biopsy the real-time examination of tumoral material shed into blood offers a non-invasive window into these invisible threats. Circulating-tumour DNA (ctDNA) leads the charge: ultrasensitive nextgeneration sequencing and methylome-based analytics now detect mutant alleles at parts-per-million levels, enabling minimal residual disease (MRD) identification within weeks of surgery or neoadjuvant therapy. In the ISPY 2 Signatera study, postoperative ctDNA clearance predicted pathologic complete response and long-term event-free survival. This predicts a future in which adjuvant treatment is escalated or de-escalated based on molecular, not radiologic, remission. Complementary analytes circulating tumour cells, exosomal RNA, tumoureducated platelets, and microRNA signatures add phenotypic breadth, capturing epithelial-to-mesenchymal transition, endocrine-resistance mutations, and immunogenic neoantigens even when ctDNA is scarce. Their integration into multi-omic panels raises sensitivity above 90 % for tumours smaller than 5 mm in pilot screening cohorts. Clinical translation is accelerating: GuardantReveal™ has secured FDA breakthrough designation for ctDNA-guided MRD surveillance. This chapter outlines the development of liquid biopsy in ESBC, covering topics such as ultra-deep sequencing and microfluidic CTC enrichment. It also presents evidence suggesting that molecular monitoring may be more effective than radiology over extended periods. It critically appraises current assays, dissects landmark clinical trials, highlights implementation hurdles, and sketches prospects in which bloodbased biomarkers guide screening, tailor adjuvant therapy, and ultimately close the relapse window for early-stage breast cancer.

Link: https://doi.org/10.1007/978-981-95-3682-5_1

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Fickian diffusion and Flory-Rehner analysis of hydrocarbon swelling in stainless steel-integrated EPDM-UHMWPE hoses for AAR operations

AUTHOR :

S A.P.; Vaidya K.; Bagaria P.; Avhad Y.; Kandasubramanian B.

JOURNAL NAME:

Materials Research Proceedings (vol.-65)

DETAILS:

Published on January 2026

ABSTRACT:

Air-to-air refueling (AAR) hose systems endure severe cyclic pressurization, dynamic bending, vibrational loading, and extended hydrocarbon exposure across-40 °C to 80 °C. Conventional fluorocarbon or nitrile butadiene rubber hoses reinforced with aramid fibers exhibit hydrocarbon diffusion, plasticizer migration, and interfacial delamination, compromising structural integrity and service durability. This investigation presents a novel multilayer composite incorporating ethylene propylene diene monomer (EPDM) elastomer for viscoelastic compliance and chemical resistance, austenitic SS-305 stainless steel mesh for tensile reinforcement and stress distribution, and ultra-high molecular weight polyethylene (UHMWPE) woven sheath as an effective diffusion barrier. Hot compression moulding (190 °C, 10 MPa, 60 min) with controlled cooling ensures robust interfacial bonding. Swelling tests (ASTM F146) in petrol demonstrated controlled 51% volumetric expansion within 7 hours, attaining equilibrium. Diffusion kinetics conformed to Fickian behaviour ($D \approx 0.033\text{-}0.034$ mm²/h). Flory-Rehner analysis yielded $\chi \approx 0.83$, confirming poor solvent affinity and constrained molecular mobility. The crystalline UHMWPE sheath suppressed EPDM chain relaxation, restricted ingress, and stabilized interfaces under thermal-solvent stress. Tribological evaluation (ASTM G99, 10 N, 263.9 m) revealed stable UHMWPE-derived transfer film formation, yielding friction coefficient 0.26-0.32 and specific wear rate 1.33×10^{-2} mm³ N⁻¹ m⁻¹, evidencing superior durability and cohesion. The EPDM-UHMWPE-SS-305 composite delivers enhanced barrier performance, wear resistance, and delamination resistance, enabling reliable indigenous AAR hose solutions.

Link: https://doi.org/10.21741/9781644904138-13

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

LSTM Network Driven Transmission Line Fault Classification using Non-Contact Electromagnetic Field Measurement

AUTHOR :

Nehete A.; Bankar D.; Narkhede G.

JOURNAL NAME:

Proceedings of the 2026 13th International Conference on Computing for Sustainable Global Development, INDIACom 2026

DETAILS:

Published on April 2026

ABSTRACT:

Accurate and fast fault classification is vital in ensuring the stability and security of the contemporary power transmission systems, especially when the complexity of the grid network expands and intelligent protection systems are becoming more widespread. Traditional methods of protection are based on current and voltage measurements that are achieved by using instrument transformers, which may be subject to saturation, size constraints, and a low spatial observability during initiated events. Therefore, electromagnetic field sensing has become a practical non-contact substitute, but most current approaches rely on handcrafted characteristics and featureful classifiers, which fail to address the dynamic characteristics of faults. The following paper gives a sequence-based learning-based fault classification model which functions under orthogonal magnetic field measurements in and around transmission line conductors. Phase currents of a simulated 154 kV, 28 km transmission line are converted into horizontal and vertical magnetic field components and separated into fixed length temporal sequences and sorted with a Long Short-Term Memory network in end-to-end fashion. The proposed model has a test performance of 86.05 percent and weighing F1-score of 0.83 through the twelve operating conditions, which proves to be reliable in the discrimination of ground involved and asymmetrical faults.

Link:
https://doi.org/10.23919/INDIACom70271.2026.11526373

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Integrative multi-modal feature extraction from ECG signals using FusionHeartNet for robust heart disease prediction

AUTHOR :

Gunjal A.S.; Judgi T.

JOURNAL NAME:

International Journal of Artificial Organs

DETAILS:

Published on 18 June 2026

ABSTRACT:

Electrocardiogram (ECG)-based diagnostics are pivotal in early cardiac disorder detection, yet existing models often fail to integrate temporal, spectral, and spatial dynamics inherent in complex arrhythmic patterns. Most traditional approaches are unimodal, relying either on time-domain signal processing or spatially limited CNN models, thereby overlooking cross-domain dependencies and subtle morphological cues. Addressing this gap, this research proposes FusionHeartNet, a unified deep learning framework that fuses signal- and image-based representations using a dual-spectrum feature embedding (DSFE) strategy. DSFE synergistically extracts morphological descriptors and spectral signatures via Fourier and wavelet transforms, while spatial morphology is preserved through GAF and CWT scalograms. These dual-domain features are refined by a multi-focus attention module (MFAM) and classified through the heart fusion classifier (HFC), which is optimized using Bayesian optimization with adaptive learning rate scheduling (BO-ALRS). Experimental validation on the MIT-BIH Arrhythmia Database demonstrates an accuracy of 98.47%, F1-score of 91.67%, and kappa of 0.9311, significantly outperforming baseline models. FusionHeartNet sets a new benchmark for robust, multi-dimensional ECG analysis, offering clinically viable precision in early heart disease detection.

Link: https://doi.org/10.1177/03913988261448211

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Interpretable Fall Detection System for the Elderly Using LSTM and Attention Mechanism on WEDA-FALL dataset

AUTHOR :

Pasalkar R.; Yawale A.; Kulkarni R.; Rupa D.; Chandankhede C.

JOURNAL NAME:

2026 IEEE International Conference for Convergence in Computing Technology, I3CTCON 2026

DETAILS:

Published on March 2026

ABSTRACT:

Elderly people with impaired mobility often get injured due to unintentional falls. For immediate medical assistance and to reduce potential complications, early & precise detection of such incidents is crucial. A Long Short-Term Memory (LSTM) based method for fall detection using sensor data gathered from accelerometer and gyroscope devices is presented in this study.We have selected LSTM Networks due to their capacity to extract contextual information and temporal dependencies from sequential data as these qualities are essential for differentiating between typical activity and fall events. Our model classifies each sequence as a fall or non-fall event based on 13-channel time-series inputs sampled over 500 time steps. Additionally, we have an alert system integrated in the architecture that notifies the caregiver on their registered WhatsApp number when a fall occurs. This marks the USP of our system, making it easy-to-use & cost effective as compared to traditional CCTVs or usage of dedicated devices.

Link:
https://doi.org/10.1109/I3CTCON68242.2026.11507785

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

A sustainable biomass cookstove with helical heat exchanger and multi-point steam injection under natural draft: Design and performance evaluation

AUTHOR :

Nayak R.C.; Khan T.K.H.; Kulkarni M.V.; Khedikar A.R.

JOURNAL NAME:

Environmental Progress and Sustainable Energy

DETAILS:

Published on 18 June 2026

ABSTRACT:

This study aims to design and evaluate a sustainable biomass-fired stove incorporating helical heat exchange, natural draft, and steam-assisted combustion to enhance thermal efficiency, improve combustion quality, and promote a cleaner indoor environment. An advanced natural draft biomass stove was developed using a three cylinder configuration with insulated layers to minimize heat loss. A helical coil tube integrated within the combustion chamber facilitates efficient heat recovery for water heating. The system includes a connected water tank and superheater for continuous steam generation, which is injected through a multi-point nozzle arrangement into the combustion zone. Inclined ringed tubes mounted along the chamber walls enhance natural convection, turbulence, and heat transfer, eliminating the need for forced draft systems. Experimental evaluation was conducted to assess thermal performance and combustion characteristics. The developed system achieved an overall thermal efficiency of approximately 49%, significantly higher than a conventional stove (approximately 17%). Carbon monoxide (CO) emissions were reduced in the range of 13.9 to 14.8 ppm, compared to about 720 ppm in traditional stoves. Formaldehyde (HCHO) emissions were also lowered in the range of 0.19 to 0.23 mg/m3 from 0.85 mg/m3. The measured TPM emissions were found to vary between 128.9 and 136.2 mg/MJ, with an average value of 131.8 mg/MJ, indicating comparatively cleaner combustion behavior of the developed biomass stove system. The system produced superheated steam at a rate of 0.00423 kg/s within 5–7 min, contributing to improved combustion through enhanced turbulence and mixing. A stable combustion zone temperature of approximately 640°C was achieved under natural draft operating conditions, indicating effective combustion and heat recovery performance.

Link: https://doi.org/10.1002/ep.70545

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Color Detection-Based Visual Cloaking for Real-Time Applications

AUTHOR :

Gupta G.; Sharma P.; Soni B.; Sharma M.K.

JOURNAL NAME:

ICIMMI 2025 - 7th International Conference on Information Management and Machine Intelligence

DETAILS:

Published on 4 June 2026

ABSTRACT:

The theme of invisibility has provided fascination to human beings; it's been in mythological books and now in the movies too. With the help of today's developed computer softwares, we are able to create unbelievable visual effects that cannot be believed, Creating the effect of invisibility is Invisible Cloak. Here, we came up with the idea that will allow a person to turn invisible by hiding a particular color of something like red and substituting it with what is behind it along with employing computer vision techniques to make this process simplified and even unnecessary to touch the object. The procedure includes the usage of the web camera to record life videos, usage of the HSV color space to determine the color of the cloak and immediately removes it off the screen. The application of color detection and the use of image processing and image mask combine to form an efficient technique of producing video effects that are also entertainments or education supplement. This study demonstrates the future field developments where the potential of utilizing the color detection and image processing, as well as masking, is exposed to creation of interested applications. By a single click, the user is able to start/stop the recording operation of the camera because the interface makes use of Streamlit. This paper indicates that computer vision has the potential of turning the latest ideas into true cutting-edge studies that occur on the real time basis.

Link: https://doi.org/10.1145/3793449.3793470

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Explainable Artificial Intelligence for Real-Time Marketing Decision-Making Balancing Predictive Accuracy with Ethical Consumer Insights

AUTHOR :

Sohoni P.; Vyas G.; Rathor C.A.D.S.; Sharma S.; Shinde V.D.; Nema P.

JOURNAL NAME:

2026 IEEE International Conference for Convergence in Computing Technology, I3CTCON 2026

DETAILS:

Published on March 2026

ABSTRACT:

The primary objective of this research is to implement an explainable AI for a real-time marketing decision-making process that goes beyond a correct prediction and provides the user with a clear understanding of the decision-making process so they can trust it. To simulate the representation of various types of users (demographics), as well as their search histories and times of day, we created simulated data to represent the different types of users and how they may affect the output of our AI model. We also implemented several testing approaches (i.e., fairness, trust and performance) to validate our model. Additionally, we utilized graphical illustrations to display the visual impact of different changes to the features or response times of our model, as well as the impact of those changes on the overall outcome. Our studies show that providing explanations for AI and identifying potential biases in AI models are two of the most critical elements in developing a more effective and trustworthy AI system to be used in the application of real-world marketing. Overall, our studies demonstrated that when combining an effort to make accurate predictions with both ethical and explainable insight, AI can become a much more valuable tool to assist marketers in addressing marketing-related issues in the real world.

Link:
https://doi.org/10.1109/I3CTCON68242.2026.11507380

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Hybrid Searched Binary Convolutional Neural Network for Human Activity Recognition Using Thermal Videos

AUTHOR :

Pawar P.P.; Phadke A.C.

JOURNAL NAME:

Cybernetics and Systems

DETAILS:

Published on 11 June 2026

ABSTRACT:

Human activity recognition is a quickly evolving approach that identifies the physical activities of human beings from visual or sensor data. Still, human activity recognition using visible images impacts the image quality due to varying lighting conditions. Hence, the thermal video is used for solving such issues. However, the recognition becomes complex due to noisy data and depends on handcrafted features. To tackle such issues, this article develops the novel model named Searched Binary Convolutional Neural Network (SeBCoN) for human activity recognition. The frames are extracted from the input video, and the brightness of the frames is enhanced by the Local Gamma Transform. The human segmentation is performed by the Lovasz–Softmax loss function-based PyramNet, and the pose representation is done using a multi-scale convolution fusion deep residual network (Mscf-ResNet). Finally, the developed SeBCoN recognizes the human activities into direction, eating, discussion, greeting, posing, phone talk, purchasing, smoking, sitting, taking a photo, walking, waiting, running, duckwalk, and crawl. Moreover, the developed SeBCoN-based human activity recognition attained the optimal accuracy, sensitivity, specificity, F1 score, false omission rate (FOR), and Matthews correlation coefficient (MCC) of 96.37%, 95.36%, 97.14%, 96.36%, 4.513%, and 0.935.

Link: https://doi.org/10.1080/01969722.2026.2671215

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Wi-Proctor: A Privacy-Preserving Examination Proctoring Environment Using Device-Free WiFi Sensing

AUTHOR :

Midha S.; Rodrigues C.; Gutte V.S.

JOURNAL NAME:

Proceedings of the 2026 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics, IITCEE 2026

DETAILS:

Published on January 2026

ABSTRACT:

The surge in online and hybrid education has intensified scrutiny of academic integrity, as traditional exam supervision methods are not only ineffective in curbing miscon- duct but also raise significant privacy concerns. Current AI-based proctoring solutions using webcams and facial recognition are increasingly criticized for being invasive, potentially discrimina- tory, and psychologically taxing on students. This paper proposes Wi-Proctor, a privacy-preserving exam proctoring solution that leverages WiFi Channel State Information (CSI) for device-free sensing. Rather than monitoring students directly, Wi-Proctor observes the examination environment to detect unauthorized activities without storing any personally identifiable information. The system employs a novel spatio-temporal deep learning architecture combining Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs), and attention mechanisms to analyze sanitized CSI data streams. Our experimental evaluation demonstrates that Wi-Proctor achieves 92% accuracy in detecting suspicious activities with a false positive rate below 5%, while maintaining real-time performance with detection latency under 2 seconds. To facilitate further research, we introduce the Proctoring Activity Dataset (PAD-CSI), the first publicly available benchmark for WiFi-based examination proctoring.

Link: https://doi.org/10.1109/IITCEE67948.2026.11393977

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Action Recognition Using CNN-LSTM Architecture for Video-Based Temporal Classification

AUTHOR :

Paneendra K.V.; Sharma Y.K.; Londhe S.A.; Padmanaban H.; Gupta A.; Kavitha M.

JOURNAL NAME:

Proceedings of the 2026 13th International Conference on Computing for Sustainable Global Development, INDIACom 2026

DETAILS:

Published on April 2026

ABSTRACT:

Action Recognition from the videos is a crucial problem in a video-based application like health care, surveillance, security, entertainment and human interaction with computer. This study proposes a CNN-LSTM based action recognition system to predict the actions from the data. Model converts each video data into a fixed number of frames. Which are preprocessed after resizing and normalized. A pre-trained EfficientNet-B0 which is to extract the spatial features from a video frames, the long short-term memory (LSTM) network captures the temporal relations between adjacent frames. Model is trained on subset of UCF101 dataset consists of 20 classes after it is trained on the 80-20 split that uses cross entropy loss and the different optimizers like Adam, SGD, RMSProp. The results show that the model is achieving best up to (96.79%) on validation data, with precision of 96.30%, recall consisting of 96.29% and F1-score consisting of 96.21%. These results shows that the combination of the convolutional neural network (EfficientNet-B0) and the LSTM is effective model for the action recognition. In addition, a web application is developed to allow users to upload videos and get real time predictions. This study also provides the strong baseline for the future work on the spatiotemporal learning models.

Link:
https://doi.org/10.23919/INDIACom70271.2026.11526192

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Framing Impact: Introduction to Visual Storyboards

AUTHOR :

Saqib N.U.; Killemsetty N.; Mohan H.T.; Mohan D.

JOURNAL NAME:

The Practice of Visual Ethnography: Examining Identity and Lived Experiences of Marginalised Communities

DETAILS:

Published on 25 February 2026

ABSTRACT:

The chapter introduces visual ethnography as an innovative research methodology within the social sciences, highlighting its methodological foundations, practical applications, and transformative potential for documenting marginalized communities. Through a detailed account of visual ethnographyâ€™s evolution, the roles of collaborative teams, and the integration of digital tools, the chapter illustrates how visual methodsâ€”such as photography and participatory videoâ€”enhance the analysis of identity, representation, and cultural practices. The discussion is anchored by real-world case studies, including those from Kashmir and Indiaâ€™s field sites, emphasizing methodological rigor, ethical considerations, and the empowerment of participant voices. Visual ethnography is presented not only as a research tool but as a powerful mode of engagement that bridges academic, activist, and community perspectives to address contemporary social complexities and inequalities.

Link: https://doi.org/10.1007/978-981-95-4648-0_1

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

NeuroBridge-AI: A Hybrid Biophysical and Machine Learning Framework for Multi-Scale Neural Simulation

AUTHOR :

Dahiwal P.; Sambare G.B.; Vayadande K.; Nooji P.; Khade A.; Prakasha K.; Bhat A.; Sharma D.; Ingle P.; Avhad J.B.

JOURNAL NAME:

IEEE Access

DETAILS:

Published on 3 June 2026

ABSTRACT:

Understanding how neural networks develop emergent behavior remains one of the main challenges in computational neuroscience. Models that balance the dynamics of microscopic ion-channels with macroscopic behavioral responses are important, but most strategies have lost cellular details in favor of network scale. OpenWorm c302 (302 neurons, ˜7000 synapses) and implementation of ModelDB (ModelDB 266796), a model of the human hippocampal circuit with healthy and epileptic variants, provide complementary advantages: connectome topology and complete neuronal physiology, respectively. This study offers a hybrid structure, which combines the hippocampal ModelDB-based biophysics with the network topology of c302, to allow real-time voltage propagation, synaptic co-ordination and temporal synchronization via Python-based cross-framework communication. Electro-physiological properties and locomotor emergent behaviors are reproduced in the hybrid simulation. The benchmark tests indicate a great correspondence with experimental results: AVA inter-neuron peak firing rate of 34 Hz (target 32-35 Hz), VB motor neuron synchrony index of 0.87 (target ≥ 0.85) and 96% correspondence in the sequences of body-wall muscle activation. The hybrid system maintains fine-grained neuronal fidelity and has realistic coordination on a network scale compared to stand-alone simulations of c302 or ModelDB. The condition of adaptation modulation of the synaptic weights and ion-channel conductance produces stable and non-saturating oscillatory dynamics. The hybrid system establishes a two way communication between the hippocampal and C. elegans neural models to study how biophysical and whole-network dynamics can interact to produce emergent behavior.

Link: https://doi.org/10.1109/ACCESS.2026.3700047

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Modelling and Simulation of an Altitude-Adaptive Variable-Rate UAV Spraying System Using PID Control in MATLAB/Simulink

AUTHOR :

Deshmukh S.; Deshmukh S.; Lokhande N.

JOURNAL NAME:

2026 International Conference on Emerging Technologies and Future Innovations, ETFI 2026

DETAILS:

Published on February 2026

ABSTRACT:

This paper presents the modelling, simulation, and analysis of a variable-rate pesticide spraying system for Unmanned Aerial Vehicles (UAVs), designed to achieve uniform application over uneven agricultural terrain. A MATLAB/Simulink-based framework is developed incorporating three core subsystems mainly 2D UAV flight dynamics model, an altitude-dependent spray deposition model, and a closed-loop Proportional-Integral-Derivative (PID) controller for flow rate regulation. The system dynamically adjusts the spray flow rate in response to altitude variations and forward velocity to maintain a constant application rate in liters per hectare.To replicate realistic field conditions, the simulation incorporates terrain undulations, wind disturbances, and sensor noise. The spray width is modelled as a linear function of UAV altitude based on nozzle cone angle, and actuator dynamics are represented using a first-order system. A parametric sweep on UAV speed is performed to evaluate control robustness under varying mission profiles.The simulation outputs five critical performance variables: UAV altitude trajectory, spray width, PID control signal u(t), target versus actual flow rate, and resultant application rate. Comparative results between ideal and disturbed operating conditions demonstrate the effectiveness of the PID-based adaptive control in compensating for external disturbances, minimizing steady-state error, and maintaining consistent pesticide coverage. This study provides a scalable and tunable virtual testbed for optimizing aerial spraying strategies in precision agriculture.

Link: https://doi.org/10.1109/ETFI68128.2026.11484806

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Post-Quantum Cryptography for Next-Generation High-Bandwidth Communication Systems

AUTHOR :

Prasant P.; Shalini S.; Choudhary B.K.; Velmurugan S.P.; Kumbhar V.; Naveenkumar R.

JOURNAL NAME:

Proceedings of the 2026 13th International Conference on Computing for Sustainable Global Development, INDIACom 2026

DETAILS:

Published on April 2026

ABSTRACT:

The proposed architecture integrates lattice-based encryption, hash-based digital signatures, and code-based key agreement mechanisms to secure an efficient data protection in high-speed network environments. To provide backward compatibility coupled with a gradual migration path to quantumsafe security we propose a hybrid security model combining classical and PQC algorithms. The performance analysis shows that the proposed framework can achieve secure key establishment in latency of less than 1.8 ms, outperform data backup throughput to cross more than 40 Gbps barrier and improve security against quantum-enhanced attacks by 95% compared to conventional RSA-based systems. In addition, it proposed optimized parallel cryptographic processing that reduces the computational overhead to 28% as compared to original design which makes it appropriate for high-performance applications like cloud computing and autonomous communication systems in industrial IoT. In this study, we evaluate the performance and scalability of PQC-based outsiderassisted architectures through an empirical analysis based on extensive measurement results obtained from a testbed implementation spanning 146 days.

Link:
https://doi.org/10.23919/INDIACom70271.2026.11526004

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Inline Dedup Check and Improved Data Security in Multi-Cloud Environment

AUTHOR :

Shaikh F.I.; Shaikh T.I.

JOURNAL NAME:

Advancement in Engineering and Science: Recent Trends and Applications

DETAILS:

Published on 2026

ABSTRACT:

Cloudcomputing is the latest wave of IT industry technologies. Scalability, multi-user, virtualization, among many other traits, are among its numerous benefits. Additionally, it provides computer infrastructure for on-demand use and could reduce the cost of creating IT-based services. Different kinds of facilities can be offered online. One important service offered by the cloud is storage, where customers can retain their files as long as necessary. In light of the fact that all data is stored in a network of connected resources spread across several global locations, the user is presented with an intriguing security challenge. Through virtual machines, unauthorised users may access this data. It has a very dark side, then. To solve this, we have proposed a secure model for storing data securely on cloud by using fragmentation, cryptography technique and only authenticate users can access the data on cloud, which improves security of data information stored on multi cloud. The proposed framework is based on encryption scheme & hashing technique. Before, storing the data on cloud the hashing technique is used for DE duplication checking, which improves storage utilization.

Link:
https://www.scopus.com/pages/publications/105042214469?origin=resultslist

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Face Recognition in Low-Light Conditions using Hybrid CNN Models

AUTHOR :

Gunjkar S.; Sakulkar A.; Patadiya A.; Kazi I.; Joshi D.

JOURNAL NAME:

2026 International Conference on Emerging Technologies and Future Innovations, ETFI 2026

DETAILS:

Published on February 2026

ABSTRACT:

A significant problem for the large-scale application of face recognition systems is that its performance is significantly worse in poor or uneven lighting conditions, caused by the presence of noise, loss of texture detail, and reduced feature salience. The project is a proposal of a specific image enhancement chain, which incorporates Contrast-Limited Adaptive Histogram Equalization (CLAHE), adaptive Gamma Correction, and Non-Local Means Denoising to boost the local contrast, fineness of facial features and reduce illumination noise in low-brightness areas. These preprocessing methods provide high-quality feature representation of the face to be recognized with a lot of accuracy. The suggested system uses transfer learning with MobileNetV2 and compares two deep learning models to the low-light face recognition. The first one is a fine-tuned mobile net V2 network, where the network is first trained with the majority of layers frozen, and then fine-tuned by unfreezing deeper layers to be able to adapt to the target dataset. The second one is a Hybrid CNN architecture where MobileNetV2 is trained together with a special-purpose lightweight convolutional network to learn together high-level semantic attributes and low-level spatial facial features. The two models are both experimentally tested in area of recognition accuracy, computational power and stability under diverse conditions of illuminations. The last system is real time and it uses dynamic face detection, frame level enhancement and stabilization of multi-frame average to enhance recognition consistency. The experimental evidence indicates that the presented framework does increase the recognition stability and reliability greatly in low-light conditions, which show that the proposed framework can be a practical and scale-up opportunity in the real world.

Link: https://doi.org/10.1109/ETFI68128.2026.11484101

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Utilizing unreal engineering to simulate driving lessons for novice learners

AUTHOR :

Shetty A.; Kukade H.; Majumdar A.; Patil H.; Patil P.S.

JOURNAL NAME:

AIP Conference Proceedings (Vol.-3426, Issue-1)

DETAILS:

Published on 4 January 2026

ABSTRACT:

This paper addresses the accessibility challenges in traditional driving education, particularly in remote areas. We propose a mobile application leveraging Unreal Engine to provide a cost-effective and immersive learning experience for novice drivers. The app offers interactive tutorials and simulations, aiding learners in understanding road rules, vehicle operation, and real-world driving scenarios. By integrating gamification, the application enhances engagement and knowledge retention. The study evaluates the effectiveness of Unreal Engine's realistic simulations in overcoming driving anxiety and improving learner confidence. Experimental results and user feedback demonstrate the feasibility of this approach in modern driving education.

Link: https://doi.org/10.1063/5.0339055

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Machine learning driven optimisation of mechanical and microstructural behaviour in FFF-printed Onyx–HSHT composites

AUTHOR :

Dhage B.H.; Khedkar N.K.; Khedkar V.

JOURNAL NAME:

Journal of Materials Science: Materials in Engineering (Vol.-21, Issue-1)

DETAILS:

Published on 16 April 2026

ABSTRACT:

Additive Manufacturing (AM) is a transformative technology that allows the construction of lightweight, high-strength composite structures with customised geometries, making it mostly suitable for aerospace, defence, and structural applications. This study examines the mechanical behaviour of Onyx–High-Strength High-Toughness (HSHT) fibre composites fabricated using Fused Filament Fabrication (FFF). It establishes an integrated optimisation outline combining experimental testing, statistical analysis, machine learning (ML), and scanning electron microscopy (SEM). Tensile, flexural, and impact tests revealed significant adaptability in performance, with tensile strength of 177.50 MPa, flexural strength of 68.9 MPa, and impact energy of 7.487 J. Meanwhile, Analysis of Variance (ANOVA) established substantial sensitivity of mechanical properties to processing parameters, with F-values of 21.54, 70.39, and 294.15, respectively. Predictive ML models, predominantly the Random Forest Regressor, revealed high accuracy (R2 up to 0.996), and interactive linear regression effectively modelled flexural strength. SEM analysis explained critical microstructural factors, such as void morphology and fibre–matrix interface quality, that influence mechanical performance. The combined DOE–ANOVA–ML–SEM approach provides a robust, data-driven methodology for the practical prototyping and optimisation of continuous fibre-reinforced AM composites, enabling accelerated design and improved performance prediction of advanced composite materials for practical engineering applications.

Link: https://doi.org/10.1186/s40712-026-00450-9

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Psychosocial Aspects of Breast Cancer: Managing the Emotional and Mental Health of Patients

AUTHOR :

Paul A.A.; Manohar Rao K.; Adusumilli P.K.; Kiran P.K.; Syed J.M.; Trideva Sastri K.; Chalasani S.H.

JOURNAL NAME:

Nano Theragnostics in Breast Cancer: Advances, Challenges, and Future Prospects

DETAILS:

Published on 8 January 2026

ABSTRACT:

Breast cancer, as the most commonly diagnosed cancer among women, has a profound psychological and emotional impact across all stages of the disease trajectory. This chapter explores the psychosocial spectrum of breast cancer care, with an emphasis on the psychological implications of diagnosis, the emotional challenges during treatment, and mental health concerns in the post-treatment phase. It examines the influence of social, interpersonal, cultural, economic, and spiritual factors on mental health outcomes. Evidence-based approaches from psychosocial screening to effective interventions and support strategies are also discussed. Additionally, the role of multidisciplinary teams in delivering holistic, patient-centred care is highlighted. Addressing these dimensions can help improve the overall quality of life and support recovery and resilience in individuals affected by breast cancer.

Link: https://doi.org/10.1007/978-981-95-3682-5_25

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Non-invasive, Ayurveda-based Nadi Pariksha for Chronic Disorder Detection using an Adaptive Boundary Optimization Classifier

AUTHOR :

Fatangare M.; Bhingarkar S.

JOURNAL NAME:

2026 International Conference on Emerging Smart Computing and Informatics, ESCI 2026

DETAILS:

Published on March 2026

ABSTRACT:

Nadi Pariksha is an ancient Ayurvedic diagnostic technique that examines the physiological and pathological status of an individual through the evaluation of the radial pulse at a precise position on the wrist using three fingers. While Nadi Pariksha gives the reviewer great insight when performed by a trained practitioner, it relies heavily on the practitioner's experience; thus, there is a need to develop a more objective, automated method of performing this technique. The present study outlines an automated Nadi Pariksha framework using a tri-sensor pulse acquisition device. It uses a dataset of over 700 subjects. The acquired pulse signals were first processed by applying a moving average filter to remove noise and stabilize the signal baseline. The raw pulse signals were then processed to extract wavelet-domain features. To optimize the classification of the samples, a particle swarm optimization (PSO) is used for feature selection. The primary contribution of this work is the development of the adaptive boundary optimization classifier (ABOC), a new machine learning model that improves inter-class decision boundaries by iteratively adjusting them based on the misclassification of the instances used for training the model. Also, unlike conventional classifiers, the ABOC applies an adaptive correction cycle to stabilize the decision boundaries; this improves the robustness and accuracy of the classifier. The results of the evaluation showed that the performance of the ABOC significantly surpasses that of the standard classifiers, with 92% accuracy on the data set used in the study.

Link: https://doi.org/10.1109/ESCI68015.2026.11493162

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

A Deep Learning based Framework for Actor Recognition and Screen Presence Analysis in Bollywood Films

AUTHOR :

Athghara S.; Atre A.; Bagade S.; Muttepawar G.; Deshpande S.; Apte R.; Bedekar M.

JOURNAL NAME:

SSRG International Journal of Electrical and Electronics Engineering (Vol.-13, Issue-4)

DETAILS:

Published on 30 April 2026

ABSTRACT:

Quantitative and qualitative analysis of actor screen presence is a major aspect of film studies, media analysis, and performance evaluation. Existing approaches largely rely on manual annotation and have insufficient robustness under real-world cinematic conditions. This research proposes Actor Recognition and Screen Presence Analysis (AR-SPA), a deep learning-based framework designed to automate actor identification and screen-time analysis across full-length movies. AR-SPA operates by uniformly sampling frames and implementing a face-detector to localize actors using the You Only Look Once (YOLO) model. A discriminative recognition model is used to identify actors across the frames. This is achieved by experimentation on three different recognition models, namely, Convolutional Neural Network (CNN), CNN-Transformer, and Residual Network-Convolutional Block Attention Model (ResNet-CBAM). Experimental results highlight the tendency of the ResNet-CBAM model to consistently outperform the other conventional baseline models by achieving high Accuracy and F1-score across multiple testing conditions. Hence, this model is integrated into the AR-SPA framework for robust actor recognition. By aggregating these classified actor detections over the film's duration, the framework generates metrics such as total frame counts, proportional screen time, and actor dominance. This enables direct statistical comparison of actor prominence across sequels and long-running franchises. The framework is validated using a curated dataset of fifty films, from twenty movie series spanning across two decades. Through rigorous testing and validation, AR-SPA demonstrates high Accuracy and reliability in the face of challenges such as aging, dramatic lighting, and occlusions. The results of this research suggest that AR-SPA offers a scalable, reproducible tool for film scholars and industry analysts to track character evolution and performance trends over time.

Link: https://doi.org/10.14445/23488379/IJEEE-V13I4P101

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Identification and Categorization of Gemstones through Deep Learning Approach

AUTHOR :

Kanade A.S.; Srivastava D.K.; Tiwari P.K.; Kanade S.P.

JOURNAL NAME:

ESIC 2026 Proceedings - 6th International Conference on Emerging Systems and Intelligent Computing

DETAILS:

Published on February 2025

ABSTRACT:

In this research work, machine learning and convolutional neural network (CNN) techniques are employed for object recognition and classification of gemstones. By using CNN, we can identify patterns in a gemstone to determine its proper classification. The images were cropped using bounding boxes to only retain the necessary areas. Furthermore, CANNY and VGG16 have been used for image recognition. Canny is used to find the coordinates in the image of the gemstone and create a virtual boundary around the image. VGG-16 is used for image classification and recognition. A dataset [2] from Kaggle was used for the completion of this study. Because ADAM method is so effective to handle complex problems with huge amount of data and many parameters, so it is chosen for Optimization. Since it is easy to optimize models that are close to linear, RELU (Rectified Linear Unit) function is chosen as the activation function for CNN's input layers. Canny and Hough line method are used for edge and border detection of the gems. SOFTMAX is utilized for the output layer. Its functions similarly to the sigmoid function and divides each output into equal halves such that the sum of all the outputs produces one. While processing this model, an accuracy of 87 % is attained.

Link: https://doi.org/10.1109/ESIC68176.2026.11495634

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Toxicity Comments Detection and Classification with Deep Learning Models and using various Feature Vectors

AUTHOR :

Pal A.K.; Gupta S.; Tiwari B.; Gour R.; Tiwari V.

JOURNAL NAME:

2025 IEEE 1st International Conference on Recent Trends in Computing and Smart Mobility, RCSM 2025

DETAILS:

Published on December 2025

ABSTRACT:

The proliferation of online interactions has necessitated effective mechanisms for detecting toxic comments to maintain healthy and constructive communication. This study is presenting a comprehensive research on sequential deep learning models for toxicity comment detection using various feature vectors. We explore the efficacy of different deep learning architectures, including LSTM networks, BiLSTM and Gated Recurrent Neural Networks (GRNN). Our approach leverages multiple feature vectors, such as word embeddings, character embeddings, and TF-IDF representations, to enhance the detection accuracy. We also integrate advanced preprocessing techniques, including tokenization, stemming, and lemmatization, to refine the input data. Standard metrics like Precision, recall, F1-score, and accuracy have been used to measure the performance of the models on benchmark datasets. The experimental results are showing that combining sequential deep learning models with diverse feature vectors significantly improving the detection of toxic comments. The GRU model, in particular, shows superior performance, effectively handling the complexities of language and context.

Link: https://doi.org/10.1109/RCSM67767.2025.11507637

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Utilization of Waste Glycerol for the Production of Environment-Friendly Biopolymer Using Halobacterium noricense

AUTHOR :

Kulkarni A.; Kanekar S.; Kore D.; Harkare V.; Desai S.

JOURNAL NAME:

Lecture Notes in Civil Engineering

DETAILS:

Published on 1 May 2026

ABSTRACT:

The production of biodiesel generates significant quantities of waste glycerol. It is a byproduct posing significant environmental challenges. Often disposed of improperly, it can contaminate soil and water sources, contributing to pollution and ecological harm. Utilization of this unused toxic waste glycerol for the production of environment-friendly biomaterial would be highly beneficial. Furthermore, one-time-use plastics persist for decades, breaking down into harmful microplastics that threaten ecosystems worldwide. Bioplastics offer a promising alternative, but their widespread adoption is hindered by high production costs, reliant on costly carbon substrates. This study addresses this dual challenge by repurposing waste glycerol as a cost-effective substrate for bioplastic production. Halobacterium noricense, sourced from rock salt, was cultivated for the synthesis of polyhydroxyalkanoate (PHA) using waste glycerol as a sustainable carbon substrate. Extraction of PHA was achieved through hydrolysis, followed by purification and precipitation using chloroform and methanol, respectively. The findings reveal promising results, with polyhydroxyalkanoate yields of 0.8 g/L, 1.62 g/L, and 3.72 g/L achieved from waste glycerol concentrations of 1%, 2%, and 5%, respectively. This innovative approach offers a sustainable and economically viable alternative to traditional plastics, contributing to environmental remediation and resource efficiency.

Link: https://link.springer.com/chapter/10.1007/978-981-95-1438-0_32

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Dots of Innovation: Automatic Braille Embosser using STM32 and ESP32

AUTHOR :

Honkarpe M.S.; Desai S.S.; Kumar S.A.; Joshi M.

JOURNAL NAME:

2026 International Conference on Emerging Technologies and Future Innovations, ETFI 2026

DETAILS:

Published on February 2026

ABSTRACT:

The system is of an automatic Braille embosser, which is a cost-effective solution, assistive device having main moto to convert digital text into tactile Braille text to provide more accessible text to visually impared indivisuals. Even in this digital modern era Braille materials remain limited due to complexity and high cost of existing solutions. The system is integrating IoT technology, allowing for high reliabiltiy and precision, it also focuses on portability, and efficiency. Use of microcontroller STM32G070RB as the main contro device which will be in charge of motion controle, embossing action, and processing of input data. For Bluetooth communication an ESP32-WROOM module will be used to transmit data from mobile application to the microcontroller directly. Data will be received through UART communication protocol, further the data received will be translated into Braille patterns using an internal lookup algorithm. In the mechanical system there will be use of two stepper motors, NEMA17 stepper motors will be coordinated control with GT-2 pulley belt system to drive an XY motion, while a servomotor actuator is used to emboss Braille dots having consistent spacing and adequate height. The design will make sure to maintain dot height of 0.4 - 0.6mm and spacing between dots will be according to the Braille language standards. Firmware is developed using STM32Cude IDE open-source software using HAL libraries which consist of UART Communication, motor synchronization, and incharge of delay control for precise timming. The system will operate on a 12 - 24v DC supply the proposed system is compact which is demonstrating an accesible approach towards tactile printing by combining real-time motion control systems alongside with wireless connectivity systems. The system is offering accesible, reliable, and portable solution to educational institutes, NGOs, and indivisuals, this system also bridges the gap between didgital text and tactile learning.

Link: https://doi.org/10.1109/ETFI68128.2026.11484868

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Correction to: Investigating the role of rare earth ion as dopant and Co-dopant in Cuo NPs for high frequency applications (Journal of Materials Science_ Materials in Electronics, (2026), 37, 6, (442), 10.1007/s10854-026-16685-3)

AUTHOR :

Khan A.; Kumar T.; Muthukrishnan M.; Thiagamani S.M.K.; Alzahrani K.A.; Ayyar M.; Topare N.; Hashem M.; Abou El-Reash Y.G.; Koheil H.; Keshta B.E.

JOURNAL NAME:

Journal of Materials Science: Materials in Electronics (vol.-37, Issue-18)

DETAILS:

Published on 26 June 2026

ABSTRACT:

The necessity for improved dielectric materials has grown due to the swift advancement of 5G networks and high-frequency communication technologies (mmWave, IoT, and satellite communications). Dielectric materials with high dielectric permittivity, low dielectric loss, and excellent thermal stability are necessary for modern communication devices. To address these issues, this research focuses on creating innovative dielectrics with better permittivity, enhanced thermal stability, and environmentally benign synthesis. Advancing such materials are critical for developing sustainable and energy-efficient technologies in telecommunications, power electronics, and electric cars. In this study, Copper oxide nanoparticles (CuO NPs) were produced in an ecologically acceptable manner, and their dielectric characteristics were thoroughly investigated. Rare earth elements (Samarium and Cesium) were added to improve these qualities by doping and co-doping process. The structural properties of the prepared nanoparticles were investigated using X-ray diffraction (XRD) and Fourier transform infrared spectroscopy (FTIR). Scanning electron microscopy (SEM) and energy-dispersive X-ray spectroscopy (EDX) were used to study their morphology. Additionally, thermogravimetric analysis (TGA) and differential thermal analysis (DTA) were used to determine their thermal stability. Dielectric studies in the 50 Hz—1 MHz range and at 40, 80 and 120 °C found that Sm-Ce co-doped CuO had the maximum dielectric permittivity of 789 at 50 Hz and 120 °C, as well as the lowest dielectric loss of 0.99 (< 1). Low dielectric loss obtained in this present study is one of the major advantages for using CuO as dielectric material, which exhibit high dielectric loss due to its semiconducting nature. Electric modulus investigation revealed more consistent relaxation behavior with distinctive features about 105 Hz, validating its potential for high-frequency applications.

Link: https://doi.org/10.1007/s10854-026-17259-z

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Sense Fit: A Low-Cost Embedded AI Wearable for Real-Time Worker Safety and Fall Detection

AUTHOR :

Kumar J.P.; Pawar S.; Patil S.; Daware S.J.

JOURNAL NAME:

2026 International Conference on Emerging Technologies and Future Innovations, ETFI 2026

DETAILS:

Published on February 2026

ABSTRACT:

Sense Fit is an innovative, low-cost, embedded wearable device engineered to improve worker safety by detecting falls and fatigue in real time. Designed to operate fully offline, it leverages the ESP32 microcontroller integrated with an MPU6050 motion sensor and employs TinyML models deployed on-device to minimize latency and dependency on internet connectivity. Alerts are manifested locally via onboard buzzer signals and, optionally, through wireless SOS notifications using GSM or LoRa communication modules. This study presents SenseFit's comprehensive system architecture, machine learning methodology, and communication strategy, demonstrating a scalable, reliable, and energy-efficient safety solution through preliminary experimental validation suitable for harsh industrial and rural environments where conventional monitoring systems fail.

Link: https://doi.org/10.1109/ETFI68128.2026.11484749

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

A comprehensive exploration of the structure–activity relationships, multitarget strategies, and therapeutic mechanisms of triazole scaffolds in Alzheimer's disease

AUTHOR :

Malvankar A.; Raut M.; Singh S.K.; Singh R.; Mahindroo N.; Bajad N.

JOURNAL NAME:

Future Medicinal Chemistry

DETAILS:

Published on 9 June 2026

ABSTRACT:

The deposition of the Aβ peptide extracellularly as diffused and neuritic plaques and intracellular hyperphosphorylated tau (p-tau) protein as neurofibrillary tangles (NFTs) are the key pathological changes observed in the progression of AD. Despite advances in the neuroscience research, the discovery and development of effective therapeutic agents have become challenging task for AD. The molecules modulating multiple targets involved in the disease attracted much attention as promising tools for the effective therapeutic efficacy. Triazole scaffold has been consistently rewarded as a promising versatile lead molecule with a pivotal position in modern medicinal chemistry. It has shown potent inhibitory activity against different targets involved in the progression of the AD including activity against acetylcholinesterase (AChE), butyrylcholinesterase (BChE), amyloid beta (Aβ) accumulation, tau aggregation, neuroinflammation and oxidative stress. Recent reviews label 1,2,3-triazole as first choice scaffold for designing multifunctional hybrid molecules for AD. A comprehensive literature search was performed using PubMed, Scopus, Web of Science, and Google Scholar databases covering publications from 2000 to 2026. This review critically analyzes the evolution of triazole-based therapeutics from single-target cholinesterase inhibitors to modern multitarget-directed ligands. We systematically evaluate how the structural versatility of the 1,2,3- and 1,2,4-triazole cores facilitates interactions with key AD pathological hallmarks.

Link: https://doi.org/10.1080/17568919.2026.2684615

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

A Multi-Stage BERT-Based Cognitive Framework for Conversational Business Intelligence in SMEs

AUTHOR :

Baviskar D.; Halwai H.; Patekar A.; Kachewar A.

JOURNAL NAME:

2026 IEEE International Conference for Convergence in Computing Technology, I3CTCON 2026

DETAILS:

Published on March 2026

ABSTRACT:

Social media is becoming a more important tool for small and medium-sized businesses (SMBs) to watch competitors, evaluate customer sentiment, and identify new market opportunities. However, it is challenging to convert raw signals into understandable, actionable insights due to the unstructured, fast-moving nature of cross-platform data. A conversational business intelligence layer and a multi-platform trend analytics pipeline were established in earlier work on this project. The multi-stage family of BERT-based models that serve as that system's cognitive foundation is the particular subject of this research. The approach uses Sentiment-BERT for polarity-sensitive refinement, NER-BERT for business-entity extraction, SBERT for semantic retrieval over trend-aware embeddings, and Intent-BERT for query categorization. Within a single pipeline, each model maintains compatibility while addressing a different reasoning layer. We explain how these models are modified for SMB use scenarios, how they work together to facilitate end-to-end conversational intelligence, and how they open up new avenues for real-time decision support, low-resource fine-tuning, and domain adaptability. This paper focuses specifically on the cognitive foundation of that system, presenting a unified multistage architecture built on BERT-based models.

Link:
https://doi.org/10.1109/I3CTCON68242.2026.11507278

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Big Five Personality Traits and Investment Behavior in Stock Market: Moderating Role of Demographic Factors

AUTHOR :

Kumari A.; Kumar S.; Shrimal K.; Goyal R.

JOURNAL NAME:

Review of Pacific Basin Financial Markets and Policies

DETAILS:

Published on May 2026

ABSTRACT:

This study explores the empirical relationship between retail investors' investment behavior and the Big Five personality traits (Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism), with a focus on age and gender as moderators. Using a structured questionnaire and convenience sampling, data were collected from 500 respondents. Results show significant associations between investment behavior and extroversion, openness, and neuroticism. Age moderates the relations between neuroticism and investment behavior, while gender moderates the relationship between agreeableness, extraversion and investment behavior. Financial planners can guide investors to stable stock market behavior by considering their personality traits and demographic factors.

Link: https://doi.org/10.1142/S0219091526500219

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Hybrid scale driven cascade CNN model for dense crowd counting and density estimation

AUTHOR :

Sharma S.; Sharma D.; Mundra A.; Tiwari P.K.; Goyal M.K.

JOURNAL NAME:

Journal of Integrated Science and Technology (vol.-14, Issue-5)

DETAILS:

Published on April 2026

ABSTRACT:

The increasing growth in the population demands an urge for a well adequate & optimized model to manage this mass gathering. The paper presents a novel prototype model for crowd counting using the two CNN models that are SD-CNN and Cascade CNN and outline the complete working and comparison of three most optimal types of CNN models for crowd counting that is SD-CNN, Cascade CNN, and Switch CNN. The paper showcases the prototype model where the Cascade CNN takes input images from the SD-CNN to get an accurate result works for high-level prior and density estimation stage. Performance is compared with various CNN models. An exhaustive insight is provided for crowd analysis using machine learning and deep learning approaches. A comparative analysis is represented for multiple types of CNN and Deep Learning models for crowd analysis tasks and lists various datasets available for crowd analysis. Experimental evaluation demonstrates that SD-CNN and Cascade CNN achieve lower error rates compared to other CNN architectures for dense crowd counting tasks. Specifically, the results show that SD-CNN achieves a Mean Square Error (MSE) of 345.6, while Cascade CNN achieves the lowest Mean Absolute Error (MAE) of 322.8 on dense crowd datasets. Furthermore, CSRNet shows superior performance for crowd density estimation when compared with MCNN and Switch CNN on the ShanghaiTech dataset, achieving an MAE of 68.2 and an MSE of 115. The findings indicate that the proposed hybrid framework can effectively improve crowd counting accuracy while reducing computational complexity.

Link: https://doi.org/10.62110/sciencein.jist.2026.v14.1570

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Studying the interaction between ANS and the FF domain using fluorescence and amide 15N CEST NMR experiments

AUTHOR :

Thapliyal N.; Deepa S.; De D.; Garai K.; Vallurupalli P.

JOURNAL NAME:

Journal of Magnetic Resonance (Vol.-390)

DETAILS:

Published on May 2026

ABSTRACT:

The four-helix bundle FF domain from human HYPA/FBP11 folds via two intermediates I1 and I2. Here we study the interaction between 8-Anilinonaphthalene-1-sulfonic acid (ANS) and the A17G mutant of the FF domain (A17G FF) at equilibrium under conditions (15 °C) in which the major (visible) folded (F) state is in exchange with three sparsely populated (invisible) states, I1, I2 and the unfolded (U) state. Under these (native) conditions, A17G FF enhances ANS fluorescence showing that ANS interacts with A17G FF. To decipher the details of the interaction between ANS and A17G FF, amide 15N CEST experiments (16.4 T) were carried out using A17G FF samples containing varying (0–0.7 mM) amounts of ANS. A four-state analysis of the amide 15N CEST datasets using information from ANS fluorescence, traditional (amide 1HN-15N HSQC) NMR experiments and prior 15N CEST NMR experiments shows that ANS binds only to folding intermediate I1.

Link: https://doi.org/10.1016/j.jmr.2026.108098

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Exploring Biomass: Opportunities and Innovations in Renewable Energy

AUTHOR :

Sharma N.D.; Khamkar K.; Sharma N.V.; Kolhe D.K.

JOURNAL NAME:

Sustainable Energy Systems Planning, Integration and Management

DETAILS:

Published on April 2026

ABSTRACT:

Biomass energy is an important approach for sustainable future development. This abstract explores the various biomass methods used for energy generation, emphasizing their environment values, technological improvements, and economic potential. A biomass energy system converts the organic waste, forestry byproducts, and agricultural wastes into usable energy. This process helps reduce environmental pollution and assists in waste management. Biomass energy sources include diverse types of wood waste, and byproducts from wood processing. In addition to that, there are some other biomass sources, including sugarcane molasses and residues from paper pulp processing. By incorporating these practices into our daily life and policy frameworks, societies can significantly reduce energy consumption and promote a cleaner and sustainable future. The widespread adoption of biomass energy is crucial for achieving long-term environmental and economic benefits, which ensure a robust and sustainable energy source. It sets alternative energy sources with conventional ones to focus on fossil fuel-related challenges, such as greenhouse gas emissions and global warming. This research examines various aspects of biomass energy, including its sources, conversion process, environmental impacts, and economic viability. This paper highlights the renewable energy technologies used to produce electricity and yield heat from naturally replenishing resources. The advancement in technology and policy support has made renewable energy more competitive with fossil fuels, upgrading energy security and promoting rural development in terms of cost and reliability.

Link: https://doi.org/10.2174/9798898814809126010007

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Blockchain Technology for Enhancing Transparency and Security in Financial Management Systems

AUTHOR :

Bini Marin V.; Roy S.; Banerjee S.; Ck L.; Bakshi N.S.; Ghadage A.H.

JOURNAL NAME:

6th International Conference on Recent Trends in Computer Science and Technology, ICRTCST 2026 - Proceedings

DETAILS:

Published on January 2026

ABSTRACT:

Blockchain innovation is revolutionizing distributed networks by enhancing security and transparency. Blockchain has become an innovation that may be used in many fields, especially in financial services, over the past decade. It has been emphasized as an innovation that will make financial transactions easy, efficient, secure, and affordable. This work presents a blockchain system powered by cutting-edge artificial intelligence (AI) methods that will improve transparency and safety across the transaction system. The conceptual methodology used in this research depends on federated learning for Blockchain Inclusion, in which dispersed databases from various blockchain sites add to a worldwide AI system without exchanging unprocessed data specimens. Increasingly better safety standards for fraud and anomaly identification are developed with LSTM automatic encoders. This study suggests Smart Contractual Financial Control for AI algorithms in a distributed setting to achieve this goal. CNNs use the secure worldwide paradigm for examining streaming transactional statistics, generating prompt notifications, and taking appropriate action when fraud is identified. The system is considerably more dependable because of its accurate time. Based on the preliminary results, the suggested model is successful when regional frameworks are aggregated without data leaks, outliers are recognized effectively, algorithms are handled transparently, data confidentiality is maintained at an extremely advanced stage, and illicit transactions are easily identified.

Link:
https://doi.org/10.1109/ICRTCST68392.2026.11545447

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Experimental and Numerical Analysis of Central Solar Billboard Receiver

AUTHOR :

Kulkarni K.G.; Elgandelwar A.M.; Chakule R.

JOURNAL NAME:

Lecture Notes in Mechanical Engineering

DETAILS:

Published on 21 May 2026

ABSTRACT:

Solar power tower comprises heliostats that focus sunlight on the central receiver, which is located at the top. The receiver is generally comprised of heat transfer fluid with molten salt or water-steam. Solar energy is utilized to heat the synthetic oil or molten salt, which can provide the heat/thermal energy at a higher temperature situated in insulated tanks of a concentrating solar power (CSP) power plant. The electricity is then provided with the help of a steam turbine. Due to the load demand, electricity is generated by using solar energy. Based on the effective central receiver, the CSP efficiency is estimated with respect to the receiver operating temperature, velocity limit, heat rejection, thermal losses, and system losses. In this paper, the solar billboard receiver is utilized for transferring the solar energy to the hot storage tank in order to generate electricity. The numerical simulation analysis of the solar billboard receiver in the CSP plant is performed using Computational Fluid Dynamics-CFD simulation.

Link: https://link.springer.com/chapter/10.1007/978-981-95-3698-6_8

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Large Action Models: A Unified Smart Framework for Autonomous Intelligent Systems

AUTHOR :

Patel P.; Patil A.; Parshuramkar H.; Raut U.

JOURNAL NAME:

2026 International Conference on Smart Futuristic Technology, ICSFT 2026

DETAILS:

Published on January 2026

ABSTRACT:

Large Action Models (LAMs) represent the next generation of smart autonomous frameworks, transitioning artificial intelligence from passive content generation to goal-directed action execution in digital and physical environments. This systematic survey provides the first unified taxonomy and architectural framework for LAM-based intelligent systems through rigorous analysis of 50 peer-reviewed papers spanning 2023-2025. We introduce a novel five-dimensional classification framework encompassing action space, planning mechanisms, learning paradigms, deployment contexts, and safety architectures. Our comparative analysis reveals critical performance gaps: current LAMs achieve only 12-20% success rates on complex benchmarks versus 72% human performance, with action trajectory data being 100-1000× more expensive than text data. We provide the first systematic evaluation methodology for LAM surveys, synthesize architectural patterns from commercial systems (Rabbit R1, xLAM, Claude Computer Use) and research prototypes (RT-X, Agent S), and identify three fundamental bottlenecks: data efficiency, sim-to-real transfer (30-50% degradation), and safety verification. Our work establishes LAMs as a distinct paradigm in smart frameworks and intelligent technologies, bridging theory and practice while outlining actionable research directions for next-generation human-centric autonomous systems.

Link: https://doi.org/10.1109/ICSFT66733.2026.11506682

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Convolutional Neural Network for Automated Diagnosis of Mechanical Gear Defects : A High Fidelity Approach to Predictive Maintenance

AUTHOR :

Musale V.; Misal H.; Paygude H.; Salunkhe A.; Jagtap S.; Paymode S.; Dhore A.; Venkatesh N.

JOURNAL NAME:

2026 IEEE International Conference for Convergence in Computing Technology, I3CTCON 2026

DETAILS:

Published on March 2026

ABSTRACT:

The widely used gear mechanisms in industrial power transmission are subjected to wear, crack, and surface damage during long-term operation. The conventional way of fault detection involves either manual inspection or vibration analysis, which is very time-consuming and dependent on expert knowledge. Recent developments in the area of deep learning have significantly enhanced the automation of defect detection in manufacturing and industrial products [1]. This paper presents an image-based gear defect detection system using Convolutional Neural Networks. A CNN model trained to classify six classes, namely gear rough surface, surface wear, crack, missing/broken tooth, pitting, and non-defect, is proposed. The proposed system integrates image acquisition from live camera or file upload, image pre-processing, CNN-based classification, and recommendation of maintenance actions through a GUI. Experiments carried out on a controlled dataset of labeled gear images yield 94.45 percent training accuracy and 98 percent accuracy on the test split. This shows the proof-of-concept system for automated visual inspection, and further generalization can be obtained in a real industrial environment.

Link:
https://doi.org/10.1109/I3CTCON68242.2026.11507950

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Association of Brain-Derived Neurotrophic Factor with Neurite Outgrowth in HT-22 Hippocampal Neurons Stimulated by Medicinal Mushrooms Hericium erinaceus and Lignosus rhinocerotis (Agaricomycetes)

AUTHOR :

Kuang T.-A.; David P.; Kushairi N.; Nallathamby N.; Phan C.-W.; Sinniah A.; Sabaratnam V.; Pandy V.; Naidu M.

JOURNAL NAME:

International Journal of Medicinal Mushrooms (Vol.-28, Issue-6)

DETAILS:

Published on January 2026

ABSTRACT:

Neurite outgrowth, also known as neuritogenesis, is among the crucial factors contributing to the overall neuroplasticity and maintenance of a healthy nervous system. The neurite outgrowth activities of two medicinal mushrooms, i.e. Hericium erinaceus and Lignosus rhinocerotis, have been previously demonstrated in multiple in vitro models showcasing their nerve growth factor (NGF)-promoting activities. In this study, the neuritogenic effects of hot aqueous extracts from H. erinaceus (HE) fruiting bodies and the sclerotium of L. rhinocerotis (LR) were investigated in the HT-22 mouse hippocampal neuronal cell line with potential association to the brain-derived neurotrophic factor (BDNF) expression. Findings show that HE and LR up to 400 µg/mL were non-toxic to HT-22 cells, as measured in the MTT viability assay. In neurite outgrowth assays, HEaq at 25 µg/mL significantly ($P < 0.05$) increased the number of neurite-bearing cells. Meanwhile, LRaq at as low as 6.25 and 12.5 µg/mL remarkably ($P < 0.01$; $P < 0.001$) improved the neurite outgrowth activities. Both HEaq and LRaq significantly ($P < 0.0001$) upregulated the mRNA expressions of BDNF, the neurotrophic factor responsible for hippocampal neuroplasticity. Immunofluorescence studies have further shown the protein expression of BDNF and neurofilament. These findings suggest that the aqueous extracts of HE and LR could play a vital role in enhancing neuroplasticity and maintaining a healthy nervous system, paving the way for their potential application in neurodegenerative disease management and cognitive health.

Link:
https://doi.org/10.1615/IntJMedMushrooms.2026063851

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Secure Interoperable and Patient-Centric Electronic Health Record System Using Hyperledger Fabric Blockchain

AUTHOR :

Zambare S.A.; Mali A.B.; Sawant N.M.; Chandole N.S.; Waghmare M.S.; Mali S.

JOURNAL NAME:

2026 IEEE International Conference on Emerging Computing and Intelligent Technologies, ICoECIT 2026

DETAILS:

Published on January 2026

ABSTRACT:

Today, electronic health records (EHR) systems are an important part of modern healthcare systems. However, many current EHRs have big problems, such as slow, clunky, and sometimes unreliable ways to share patient records because each hospital keeps its own database of patient records. This lack of seamless interoperability can slow down treatment and make it harder to provide healthcare services in general. Also, there are big worries about the security and privacy of patient records in centralized databases. As centralized databases are the primary source of EHRs, they also become frequent targets of hackers, as well as anyone who wants to gain unauthorized access to sensitive patient data without permission. This study suggests using Hyperledger Fabric to manage EHRs in a decentralized way in order to overcome these difficulties. Using Fabric's channels, the suggested solution isolates and separates records between all parties involved, but once permission is granted, it can securely and appropriately share in real-time. Chaincode, also known as smart contracts, will regulate all record sharing, guaranteeing that only authorized users can access or modify a patient's related records.

Link: https://doi.org/10.1109/ICoECIT68303.2026.11498061

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Unveiling the recall power of covert advertising: a study on stealth advertising in Indian reality shows

AUTHOR :

Dua, GG; Vaidya, RD; Bapat, GS

JOURNAL NAME:

International Journal Of Indian Culture And Business Management (Vol.-38, Issue-1)

DETAILS:

Published on 11 June 2026

ABSTRACT:

Television advertising has historically proven to be a cost-effective and successful method for promoting a diverse array of products and services. In recent years, marketers have harnessed the power of integrating their brands within reality programs, amplifying the visibility and resonance of their messages, thereby capitalising on the unique allure of the reality genre. This study scrutinises the effect of message modality, plot congruency, and prominence on recall rate. It also explores the relation between demographic factors and recall of covertly advertised brands. By conducting within-subject studies, the data was collected using a standardised questionnaire and brief video clips from five Indian reality programmes. The results showed that modality and congruity have a significant influence on recall. The study's conclusions will help advertising professionals incorporate their subtly placed advertisements in reality television shows using the most effective strategy.

Link: https://doi.org/10.1504/IJICBM.2026.154068

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

PROTECT: Proactive Recognition of Offensive Texts, Images, Videos, and Memes Through AI

AUTHOR :

Matharu, GK; Shah, D; Joshi, A; Kasar, U; Kale, P

JOURNAL NAME:

Advanced Computational And Communication Paradigms, Icaccp 2025, Vol 2

DETAILS:

Published on 22 February 2026

ABSTRACT:

Social media and other online platforms like websites, blogs, and articles are filled with images, videos, and text. This has created a rich and diverse online environment. Individuals post short, funny content that uses symbols and humor to express ideas and spark debate. But the shareability also gives a way to spread easily harmful content, such as hate speech and stereotypes. Because of this reality, there needs to be proper mechanisms for detecting such content. Natural Language Processing (NLP) helps in analyzing text to find inappropriate language. This study looks at how advanced machine learning algorithms can be used to find offense or hate in images, videos, and text. Video transcripts added to the better understanding of the content. Identifying harmful content goes way beyond just acknowledging images or faces. Many posts use irony, sarcasm or cultural references, which makes detection more challenging. So, it's important to use strategies that understand context and can find patterns and emotions through sentiment analysis. In this study, different word embedding was implemented, which include Bag of Words, Word2Vec, GloVe, FastText, and TF-IDF. After training the model with each method, their results were compared to see which one performed the best.

Link: https://doi.org/10.1007/978-3-032-13544-5_7

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Climate-driven shifts in soil microbiomes: implications for plant resilience in agriculture

AUTHOR :

Bhagat, A; Mishra, M

JOURNAL NAME:

Frontiers In Climate

DETAILS:

Published on 28 May 2026

ABSTRACT:

Climate change is reshaping agricultural ecosystems by altering the composition, diversity, and functionality of soil microbiomes that underpin plant growth and resilience. Temperature variations, carbon dioxide levels, precipitation patterns, and soil physicochemical properties drive significant shifts in rhizosphere, phyllosphere, and endosphere communities, affecting nutrient cycling, carbon dynamics, and plant-microbe interactions. Extreme climate fluctuations might disrupt microbial communications mediated through plant root exudates leading to reduced diversity of beneficial microbes, loss of specialized symbionts and increase in the abundance of opportunistic pathogens. However, these pressures also tend to enhance plant resilience through recruitment of stress-tolerant taxa that act as biological buffers, aiding in plant adaptive mechanisms through the production of osmolytes and antioxidant enzymes, alterations of root architecture and phytohormone modulation to trigger defense responses. This review focuses on how escalating intensity of temperature and unpredictability of precipitation patterns drive significant shifts in plant microbial communities. It synthesizes mechanistic understanding of precipitation and temperature-driven microbial dynamics, their role in shaping plant adaptive responses and critically examines gaps and contradictions in the ongoing research. Finally, it highlights the agricultural implications of microbiome-based interventions through microbiome engineering, genotype-assisted recruitment and multi-omics-AI integration, to strengthen sustainable and climate-smart agriculture.

Link: https://doi.org/10.3389/fclim.2026.1803685

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Cyclone Intensity Prediction Using Piecewise CNN and Multispectral Satellite Imagery: A Deep Learning Approach

AUTHOR :

Patil, SJ; Biradi, B; Baviskar, P; Joshi, S; Patil, M

JOURNAL NAME:

Sixth Congress On Intelligent Systems, Cis 2025, Vol 2

DETAILS:

Published on 22 February 2026

ABSTRACT:

Cyclones are major weather events that often result in widespread destruction and significant loss of life. Being able to evaluate their intensity at the right time is essential for reducing the severity of their impacts. Over the past years, deep learning techniques have been progressively incorporated for analysing large collections of satellite images. Proposed methodology, present a deep learning techniques for determining cyclone intensity utilizing historical records from the National Hurricane Center ' s HURDAT2 archive along with an imagery-centric dataset. A Piecewise Convolutional Neural Network (CNN) act as the foundation for the proposed technique. Satellite images are initially divided into many intensity levels by the framework, after which they are sent to distinct CNN regression models, each of which has been trained for a particular intensity level. Quality of prediction is improved throughout a range of cyclone strengths because to this two-stage system. K-fold cross-validation is used to evaluate the model ' s performance. Six-hourly wind speed readings and all recorded hurricanes in the Atlantic and Pacific basins are included in the collection. Metrics like Mean Absolute Error (MAE) and Root Mean Squared Error (RMSE) are incorporated to measure the approach. The model attains an MAE of 7.67 knots and an RMSE of 10.09 knots, showing that it can estimate cyclone intensity with relatively low error. Overall, the approach gives a practical option for intensity monitoring and shows potential for real-time forecasting or future extension to multimodal meteorological inputs.

Link: https://doi.org/10.1007/978-3-032-18141-1_10

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Exploring the Effectiveness of Hybrid Fiber-Reinforced Geopolymer Concrete

AUTHOR :

Sathe, S; Wadki, V; Shekokar, S; Khungar, H; Biswas, A

JOURNAL NAME:

Journal Of Structural Design And Construction Practice (Vol.-31, Issue-2)

DETAILS:

Published on 26 May 2026

ABSTRACT:

This paper presents an experimental study evaluating the mechanical and durability properties of plain, steel fiber (SF), and polypropylene fiber (PPF) reinforced industrial fly ash (IFA)-based geopolymer concrete (GPC) and compares the results with those of ordinary Portland cement-based conventional concrete (CC). The incorporation of fibers in GPC resulted in a gradual reduction in workability, with slump values decreasing from 130 to 70 mm across GPC mixes. However, significant improvements were observed in mechanical properties. Compressive strength increased from 34 MPa in CC to a maximum of 46 MPa in the hybrid mix (GPC8). Likewise, notable enhancements in split tensile strength (7.90 MPa) and flexural strength (10.10 MPa) were achieved in GPC8, highlighting the synergistic effect of hybrid fibers in improving postcracking behavior. The modulus of elasticity also improved substantially, with GPC8 reaching 50.20 & times;103 MPa compared to 24.60 & times;103 MPa in CC. The GPC specimens demonstrated superior durability compared to the CC specimens. GPC showed 25% lower wear in abrasion tests, which improved to a 60% reduction with the addition of SF and PPF. In acid resistance tests, GPC exhibited less than 2.26% weight loss and a maximum 22.50% reduction in compressive strength after 6 months in 3% H2SO4. Both GPC and CC showed less than 1% weight loss under sulphate attack. Under wet-dry cycles in a marine environment, GPC maintained durability, with mass loss and strength reduction not exceeding 5.26% and 23.83%, respectively. The optimum percentage of SF, PPF, and a combination of hybrid fiber specimens was 0.4% PPF, 1% SF, and 0.4% PPF+1.0% SF, showing improvement in mechanical properties and durability properties over CC of the same grade.

Link: https://doi.org/10.1061/JSDCCC.SCENG-2059

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Novel Anti-Microbial Peptides Design and Screening Against the KatG Using Molecular Docking and MD Simulation

AUTHOR :

Mehta, K; Mujawar, S; Kumar, G; Vyas, A

JOURNAL NAME:

Probiotics And Antimicrobial Proteins

DETAILS:

Published on 19 June 2026

ABSTRACT:

Tuberculosis (TB) continues to be a significant worldwide health issue, with the rise of drug-resistant forms presenting substantial obstacles to successful treatment. The Mycobacterium tuberculosis (Mtb) enzyme catalase-peroxidase G (KatG) is a crucial molecular determinant of resistance, as it is necessary for the activation of isoniazid and for safeguarding the bacteria against oxidative stress. Mutations in KatG are a key mechanism of isoniazid resistance, contributing to the development of multidrug-resistant tuberculosis, hence establishing KatG as a crucial protein target for novel therapeutic approaches. This study focused on KatG to identify novel antimicrobial peptides (AMP) which were designed using rational changes of the host-defence peptide LL-37 to improve their efficacy against M. tuberculosis. A library of 15 antimicrobial peptides was designed using LL-37 modifications and categorized into three classes: Class I, Class II, and Class III. Peptide structures were predicted and docked against KatG resulting in top antimicrobial peptides. Molecular docking identified three top peptides P3 (-235.28 binding score), A5 zeta (-229.42), and A4 eta (-233.81), with strong binding affinity with KatG active site residues. Further, molecular dynamic (MD) simulation was performed for 100 ns on these top three protein-peptide complexes. MD simulation showed distinct stability profiles majorly with P3 showing exceptional conformational stability. Additionally, safety assessment verified no-toxic, non-allergenic, favorable physicochemical and ADME properties. The computationally designed antimicrobial peptides (P3, A5 zeta, and A4 eta) demonstrated strong binding affinity toward KatG. These interactions suggest their potential to interfere with key mycobacterial enzymatic functions and may contribute to strategies aimed at addressing existing drug resistance mechanisms.

Link: https://doi.org/10.1007/s12602-026-11086-8

(WOS)

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

National-scale anomaly detection in inland waters: an explainable multi-model AI framework for environmental governance

AUTHOR :

Bhowmik, PN; Varshney, D; Mishra, L; Anand, P; Aggarwal, M

JOURNAL NAME:

Journal Of Hydroinformatics

DETAILS:

Published on 8 June 2026

ABSTRACT:

Inland water-quality monitoring systems increasingly generate large volumes of environmental data, creating opportunities for advanced analytical methods to identify subtle pollution signals that may not be captured by traditional threshold-based monitoring approaches. This study proposes an interpretable unsupervised machine-learning framework for detecting anomalies in inland water-quality monitoring data (consisting of more than 17,000 observations across 23 states, curated by the Central Pollution Control Board (2021), from which a processed subset was used for model evaluation) using multiple complementary detection models and explainable AI techniques. The framework uses the four detection models, which are Isolation Forest, One-Class Support Vector Machine, Elliptic Envelope, and Autoencoder and is optimised for ecological feature engineering (dissolved oxygen deficit, BOD/DO ratio, coliform load index) to increase the sensitivity to complex pollution stressors. SHAP-based explanations, t-SNE projections and statistical comparisons were utilised to ensure interpretability and strong validation of anomalies. The results show that about 7.88 and 8% of observations were anomalous, with peri-urban tanks in Karnataka and Uttar Pradesh being identified to have hotspots with characteristics of oxygen depletion and microbial contamination, especially during post-monsoon seasons. The ensemble was able to identify all domain-specific threshold violations with the best performance of Isolation Forest and Autoencoder (F1 > 0.70).

Link: https://doi.org/10.2166/hydro.2026.037

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

SaurKshetra: A curated dataset and ML-based classification for solar energy site selection

AUTHOR :

Shivgan, Y; Bhirud, C; Jamgade, A; Kulkarni, A; Patil, R; Kaur, G; Bassir, D; Tejani, GG

JOURNAL NAME:

Data In Brief

DETAILS:

Published on June 2026

ABSTRACT:

The global demand for clean energy is on the rise and the best solar power sites among various regions need to be identified. India has the potential to become an important source for solar energy due to its vast and diverse geographical area, however, site selection based on accurate data is necessary for the effective utilization. The present research work has provided a geospatial dataset of monthly environmental variables-such as global horizontal irradiance, clear-sky irradiance, surface albedo, cloud cover, temperature at 2 m, dew point, and precipitation-acquired at 371 sites in India from January 2013 to December 2022. The data is divided into five regional zones-North, East, West, Central, and South- and is available in XLSX format for ease of mapping and analytical workflows. A weighted scoring method is used for the selected variables to sort the sunniest spots into five categories of suitability ranging from Excellent to Unsuitable. K-means clustering helps in categorizing locations based on their solar power potential, whereas a Random For est model fine-tunes the classification into the designated suitability classes. The spatial maps and rankings generated, thus, provide a detailed summary of the solar energy potential throughout India. Besides, all datasets and classification outputs have been made available for free on Mendeley Data (DOI: *10.17632/hkcyvhvmwp.5*) as a ready-to-use resource for researchers, planners, and policymakers.

Link: https://doi.org/10.1016/j.dib.2026.112906

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Published on June 2026

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