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March-2026

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TITLE:

Synaptic shield: fusion of ResNext–50 and long short-term memory for enhanaced deepfake detection

AUTHOR :

Mishra A.; Chinchmalatpure P.; Sambare G.B.; Singh V.K.; Pawar A.G.; Mirajkar R.P.; Takalkar P.K.; Vayadande K.

JOURNAL NAME:

International Journal of Reconfigurable and Embedded Systems (vol.-15, Issue-1)

DETAILS:

Published on March 2026

ABSTRACT:

Recent developments in deepfakes have created much anxiety about the authenticity of any digital content and thus, calls for implementing detection mechanisms that will work accordingly. This paper uses Synaptic Shield, a innovative deep learning (DL) framework which is customized to detect alterations by deepfakes with high precision levels. It employs both convolution neural networks (CNNs) as well as modules for time feature extractions to test spatial and motion indicators from video data. High-level preprocessing pipelines in combination with confidence scoring mechanism help make Synaptic Shield adaptive toward manipulation techniques such as FaceSwap and DeepFake. The accuracy of our model surpasses other deepfake detection models with a high accuracy of 98.3%. The above results are based on exhaustive experimentation on standard datasets like FaceForensics++, DeepFake detection challenge (DFDC), and Celeb DeepFake (Celeb-DF). Synaptic Shield is shown to be the best with outstanding results that maintain a higher confidence score equivalent to its precision and reliability. Scalability in having the capacity to accommodate various manipulation techniques and levels of video quality indicates robustness in offering an effective method toward ensuring integrity in digital media. The work is an important move forward in addressing the problems created by DeepFake technologies.

Link:
https://www.scopus.com/pages/publications/105032569499?origin=resultslist

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TITLE:

A Comprehensive Investigation on the Dynamic Performance of Anti-Vibration Mounts

AUTHOR :

Hujare P.; Lahurikar A.; Hujare D.; Chavan U.; Pingle B.; Nimbalkar C.

JOURNAL NAME:

Journal of Vibration Engineering and Technologies (Vol.-14, Issue-3)

DETAILS:

Published on 27 February 2026

ABSTRACT:

Anti-Vibration Mounts (AVMs) are critical components for vibration mitigation, optimizing performance, and enhancing the longevity of vibratory systems. Choosing the right AVM is crucial for maintaining system reliability in all operating conditions. This study proposes and validates a robust, cost-efficient Finite Element Analysis (FEA) methodology for accurately estimating the nonlinear static stiffness and the system-level dynamic response (quasi-static dynamic stiffness) of AVMs. The methodology provides a structured approach for evaluating AVM performance during earlystage compressor design, particularly in scenarios where comprehensive supplier performance data is unavailable. Employing a non-linear FEA approach enables efficient selection of suitable Anti-Vibration Mounts (AVMs) without resorting to costly, time-consuming experimental testing. By incorporating a nonlinear hyperelastic material formulation, a more accurate FEA model is developed in commercial software to simulate AVM behavior under various loading conditions. Because the model uses purely hyperelastic material laws, it captures only time-independent stiffness characteristics. Consequently, the predicted dynamic response corresponds to the quasi-static dynamic stiffness, which is useful for preliminary design evaluation but does not account for the material's intrinsic viscoelastic, frequency-dependent stiffening behavior. Thus, the methodology provides valuable guidance for AVM selection in low-frequency vibration isolation applications, establishing estimated operational limits based on quasi-static stiffness. It is found that during system resonance, the effective quasi-static stiffness decreased, with the AVM having Neoprene rubber showing a minimum value of 974.91 N/mm, AVM having natural rubber exhibiting a minimum value of 845.0197 N/mm and the AVM consisting of silicone rubber showing the lowest stiffness of 99.2685 N/mm.

Link: https://link.springer.com/article/10.1007/s42417-026-02348-4

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Explainable Ensemble Learning Framework for Soybean Yield Prediction: A Data-Driven Approach for Agricultural Resilience in India

AUTHOR :

Patil J.; Kinger S.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

Agricultural uncertainty remains a persistent issue in India, particularly in soybean producing states like Maharashtra and Madhya Pradesh, where yield instability has contributed to significant financial distress and rising farmer suicide rates. This study presents a data-driven soybean yield prediction framework that integrates machine learning, geospatial datasets, and meteorological data to support precision agriculture and policy-level interventions. To handle data sparsity and imbalanced yield distributions, we apply Synthetic Minority Over-sampling Technique for Regression with Gaussian Noise (SMOGN), enhancing model performance for low-yield scenarios. A suite of regression models spanning ensemble learners (Extra Trees, Random Forest, XGBoost), distance-based models (KNN), and linear regressors (Lasso, Ridge, SVR) was evaluated using robust cross-validation and hyperparameter optimization. Extra Trees Regressor achieved the best performance (R2=0.81, MAE =150.4), outperforming other models in predictive accuracy and stability. Visual inspection via scatter plots and statistical metrics confirm its superior fit across yield ranges. To enhance trust and transparency, LIME and SHAP were applied for model explainability. These interpretations revealed that soil nutrient levels (Nitrogen, Phosphorus) and climatic factors (temperature range, wind speed) were the most influential features, insights that align with domain knowledge and field practices. By unifying predictive accuracy with model interpretability, the proposed framework demonstrates strong potential for real-world deployment in decision-support systems aimed at alleviating crop uncertainty, optimizing agricultural planning, and mitigating rural economic distress.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11283744

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TITLE:

Analysis and Prediction of Woman's Dress Categories from Fashion Trends

AUTHOR :

Shahapure A.; Basu R.; Siddha R.; Tewary T.; Chatur B.; Gunjal A.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

In the ever-evolving landscape of women's fashion, understanding the nuanced preferences of young working professionals aged 18-25 across different seasons and cities is paramount for the fashion industry's market segmentation and product design strategies. This research project investigates the detection of trends in daily office wear among young women in four different Indian cities. Mumbai, Kolkata, Delhi, and Bangalore, considering seasonal variations in summer, rainy, and winter months. Using machine learning algorithms, including image classification and trend analysis techniques, we collected a comprehensive dataset comprising images of women's daily office attire sourced from diverse online platforms and social media channels. We developed a robust framework that automatically categorizes office wear outfits based on their suitability for specific seasons and city contexts by employing state-of-the-art deep learning models. Our findings reveal intriguing insights into the evolving fashion preferences of young working women in different seasons and cities. While Mumbai prefers lightweight fabrics and breezy silhouettes to combat the sweltering summer heat, Kolkata embraces vibrant colors and ethnic motifs reflecting its cultural heritage. In contrast, Delhi's fashion landscape gravitates towards structured layers and sophisticated ensembles to navigate the chilly winter months. At the same time, Bangalore showcases a fusion of contemporary styles focusing on comfort and versatility. This research underscores the potential of machine learningdriven approaches in deciphering intricate patterns and trends in women's fashion, informing data-driven strategies for the fashion industry's market segmentation, product positioning, and personalized recommendations. As the fashion landscape continues to evolve, our findings serve as a valuable resource for industry stakeholders in navigating the complexities of the Indian office wear market.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11283684

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

A Comprehensive Review of Designing and Synthetic Aspects of Pyrazolopyrimidine Derivatives as Anticancer Agents

AUTHOR :

Sagar P.; Ozarde Y.S.; Vichare V.S.; Mehta P.P.; Gadhave R.V.

JOURNAL NAME:

Mini-Reviews in Medicinal Chemistry

DETAILS:

Published on 7 January 2026

ABSTRACT:

Background Pyrazolopyrimidines are a fascinating class of heterocyclic compounds that have attracted considerable interest for their potential in cancer therapy. Their unique scaffold allows flexible chemical modifications, enabling them to interact with various cancer-related proteins— especially kinases that regulate tumor growth and survival. Objective This review highlights recent advancements in the design, synthesis, and biological evaluation of pyrazolopyrimidine derivatives, emphasizing their role as targeted anticancer agents. Methods We analyzed recent literature (2000–2025) covering synthetic strategies, anticancer targets, in silico studies on anticancer targets and their mechanisms, off-target mechanisms, and patent information. The review also focuses on how these methods guide the optimization of Structure– Activity Relationships (SAR) and improve compound efficacy. Results Numerous pyrazolopyrimidine derivatives demonstrated significant anticancer activity across various cell lines, including breast, liver, colorectal, and haematological malignancies. Mechanistic investigations revealed that these derivatives target key oncogenic pathways, such as CDKs, EGFR (including resistant mutants), mTOR, TOPO II, and HDACs. They exert anticancer effects by inducing apoptosis, arresting cells at S or M phases, and downregulating proliferation markers. Several studies also report favourable selectivity for cancer cells, improved bioavailability, and metabolic stability, supporting their drug-like properties. Conclusion Pyrazolopyrimidines represent a versatile and promising class with strong in vivo efficacy, selectivity, and a favorable toxicity profile. Their ability to engage multiple targets and overcome resistance highlights their potential for integration in oncology. However, further systematic in vivo and clinical studies are essential to translate their potential into therapeutic success.

Link:
http://dx.doi.org/10.2174/0113895575417710251128043828

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Security and reliability of 6G and IoT networks

AUTHOR :

Jadhav V.K.

JOURNAL NAME:

Handbook on Integrating Smart Technologies for Sustainable Development(Book Chapter)

DETAILS:

Published on 2026

ABSTRACT:

The advent of sixth generation (6G) and the proliferation of Internet of Things (IoT) networks are poised to redefine the landscape of communication, security, and technology integration. This chapter provides a comprehensive exploration of 6G networks, focusing on their architectures, use cases, and technological underpinnings. The comparison of 6G with its predecessor, 5G, highlights the leap in capabilities enabled by technologies such as artificial intelligence (AI) and blockchain (Hewa et al 2020). Security remains a cornerstone of 6G networks, addressing escalating cybersecurity challenges through advanced encryption techniques, robust network security protocols, and AI-driven solutions. The chapter delves into the integration of AI in security, showcasing its effectiveness in intrusion detection and predictive analytics for IoT reliability. Blockchain emerges as a key enabler of network integrity, facilitating smart contracts and secure transactions within the 6G ecosystem. Reliability, critical for uninterrupted network operations, is explored through concepts like fault tolerance and network availability. The interplay between reliability and security is dissected to present a balanced approach for future networks. Emerging technologies such as quantum computing are examined for their potential to revolutionize network capabilities and ensure secure communication in 6G systems. The role of network slicing, edge computing is discussed in the context of privacy and compliance with global standards. Privacy laws and data protection techniques are analyzed to safeguard user information in increasingly interconnected environments. The chapter concludes with a forward-looking vision of 6G networks, outlining future security paradigms and the potential of AI and blockchain to enhance both security and reliability.

Link:
https://www.scopus.com/pages/publications/105032861555

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

3D Printing of Solid Dosage Forms

AUTHOR :

Kuchekar A.; Wagh P.; Karnik H.; Gawade A.

JOURNAL NAME:

Precision 3D Printing in Pharmaceutical Sciences: A Transformative Shift in Drug Manufacturing and Delivery Systems

DETAILS:

Published on 7 November 2025

ABSTRACT:

Three-dimensional (3D) printing is transforming the pharmaceutical landscape, particularly in the design of solid dosage forms (SODFs) as advanced drug delivery. This technology offers significant advantages over traditional manufacturing methods, allowing for the development of patient-specific dosage forms with complex geometries and controlled drug release characteristics. The FDA's approval of Spritam ® , the first 3D-printed tablet, marked a significant milestone and increased research and development in this area. Traditional platforms lack the flexibility needed for personalized medicine, but 3D printing can rapidly prototype various dosage forms without expensive equipment. This adaptability is very important for tailoring individualized drug doses and release profiles to meet specific patient needs. 3D printing technology offers a promising approach to creating solid dosage forms in nanomedicine that feature improved functionality and tailored characteristics for individual patients. Current research in this area has significant potential to transform drug delivery systems and enhance treatment outcomes across various medical conditions. As scientists delve deeper into the applications of 3D printing in pharmaceuticals, the prospects for personalized medicine and precise drug delivery are becoming more attainable.

Link: https://doi.org/10.1002/9781394337576.ch4

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TITLE:

Remediation of Real Pharmaceutical Wastewater Using a Novel Hybrid Technology at Optimized pH for Maximum Efficacy

AUTHOR :

Joshi M.; Jaspal D.

JOURNAL NAME:

Clean - Soil, Air, Water (Vol.-54, Issue-3)

DETAILS:

Published on 2 March 2026

ABSTRACT:

Pharmaceutical wastewater comprises of a plethora of raw and finished pharmaceuticals and personal care products (PPCPs). The most alarming issue with pharmaceutical wastewater is the recalcitrant and emerging nature of the substances present in it. An amalgamation of conventional wastewater treatment techniques with that of a novel advanced technique seems to be a promising alternative for the remediation of pharmaceutical wastewater containing emerging contaminants. The method presented in the manuscript consists of a series of treatment units comprising neutralization, coarse and fine filtration, photocatalysis, biological treatment, and supernatant separation (1-PCAB). These trials gave a high reduction efficiency of chemical oxygen demand (COD 71%), and removal of nitrates (100%) at neutral pH. The changes in concentration of chlorides, total dissolved solids, nitrites, and final pH have also been studied. The method gave a scarce removal at an acidic pH, and maximum removal was obtained at neutral pH. The same process was studied at twice the duration, keeping other similar operating conditions, and has been mentioned as 2-PCAB. The fate of the pharmaceutical compounds at the end of 2-PCAB has been meticulously examined and critically evaluated in the study.

Link: https://doi.org/10.1002/clen.70148

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TITLE:

Pattern recognition in computer vision using discrete structures and deep learning

AUTHOR :

Ashtagi R.; Kaulage A.; Pai A.; Bidwe R.V.; Rajput V.; Madagouda B.

JOURNAL NAME:

Journal of Discrete Mathematical Sciences and Cryptography (Vol.-29, Issue-2)

DETAILS:

Published on 4 February 2026

ABSTRACT:

This work looks into ways to use deep learning and discrete mathematical structures together to make computer vision pattern recognition better. The suggested mixed models combine vector metric spaces, orthogonal sets, and discrete representations to make them better at finding features, being stable, and being easy to grasp. The technology uses novel data preparation tools and cutting-edge deep neural architectures that are based on discrete math's to record intricate visual patterns. An in-depth architectural design and processing flow are shown, along with custom loss functions and optimization techniques that are used in training methods. It was tested and found that this way works better and needs fewer computers power than others.

Link: https://doi.org/10.47974/JDMSC-2511

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Temporal Crop Stress Analysis on Multi-Spectral Vegetation Indices using Contrastive Learning and Explainable Ensemble Models

AUTHOR :

James N.M.; Kansara H.; Agrawal R.

JOURNAL NAME:

2025 5th Asian Conference on Innovation in Technology, ASIANCON 2025

DETAILS:

Published on 2025

ABSTRACT:

In the view of rapidly escalating agricultural risks across the globe, crop stress analysis has become essential to ensure crop health and food reliability, making adoption of optimization methods necessary. Most of the existing solutions rely on a single vegetation index limiting their ability to determine crop stress efficiently. This paper presents a robust deep learning framework that utilizes multi-spectral vegetation indices and contrastive learning with explainable AI for spatiotemporal crop stress analysis using time-series data from the Sentinel-2 satellite. Five vegetation indices - NDVI, EVI, MSI, NDWI and SAVI were extracted from multi-band satellite images to create composite images. A 3D convolutional encoder trained using SimCLR learns representations from spatial patches extracted from the images over six months with a contrastive loss of ~0.31. Isolation Forest was utilized for unsupervised label generation.The best performance for classification was achieved using a stacking ensemble classifier of SVM and LightGBM, with Logistic Regression. The model achieved 95.17 % classification accuracy. Patch-level predictions were made on data using the classifier and a rule-based method was used to generate monthly stress summaries across the region. To enable interpretability, SHAP was used to identify the most influential features for each month's overall predictions, while Grad-CAM heatmaps was used to provide a visual overview of regions that impacted the generation of embeddings. The integrated framework shows reliable performance in regional and patch-level predictions making it suitable for agricultural monitoring used by governments, agronomists, enabling yield risk assessment and efficient resource allocation for better crop yield.

Link:
https://www.scopus.com/pages/publications/105031405567?origin=resultslist

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Advanced Face Reconstruction and Obstruction Removal using Deep Learning

AUTHOR :

Parikh V.; Khadke N.; Mahabdi O.; Patel A.; Kulkarni S.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

Facial occlusions and extreme head poses significant obstacles to digital identity verification, surveillance, and biometric authentication. Conventional facial recognition systems frequently malfunction when the face is photographed from challenging angles or when certain facial features are hidden. This project presents a deep learning framework that successfully handles occlusions and pose variations to reconstruct facial images to get around these restrictions. Instead of requiring manually labelled, occlusion-free images, the system uses self-supervised learning to dynamically generate training data. The robustness and dependability of facial recognition technologies in practical situations are greatly increased by combining Generative Adversarial Networks (GANs) with 3D face modelling, which restores missing textures and preserves structural integrity. This framework has revolutionary potential in the medical field, particularly in reconstructing the faces of burn victims and people with facial trauma, in addition to security and identification applications. In addition to helping with prosthetics design and surgical planning, these reconstructions can give patients their confidence and sense of self back. Thus, the study not only improves computer vision capabilities but also makes a significant contribution to humanitarian and medical endeavours.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11283864

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Evaluation of Yield Quality and Grape Disease Prediction Using Machine Learning and Climatic Data

AUTHOR :

Sinha S.V.; Patil B.M.

JOURNAL NAME:

Journal of Phytopathology (Vol.-174, Issue-2)

DETAILS:

Published on 15 March 2026

ABSTRACT:

Grape disease is one of the most common diseases that impacts grapevines, affecting both the yields of the plants and the quality of the fruits that are harvested. Currently, fungicide treatments are often used throughout the season to combat the disease. In terms of public health and the environment, fewer treatments are necessary. This issue could be solved by identifying vineyards that are more likely to suffer severe attacks in the spring and treating them only with fungicidal treatments. Computers, categorization, bioinformatics, marketing, healthcare, gaming and industry are just a few of the many areas that have made use of machine learning in the past several years. These technologies are used to identify high-quality grapes for export after they have been photographed and pre-processed. Accurate illness detection and disease preventive management methods are critical for increasing quality and productivity. This proposed study aims to effectively predict the quality of grape yield and perceive illnesses such as powdery mildew and downy mildew. Initially, sensors located on farms are used to gather climate data. Then, the input data is pre-processed using min-max normalization and a one-hot encoding method to remove the unwanted data. Four distinct machine learning classifiers are then employed on the pre-processed input: K Nearest Neighbours (KNN), Logistic Regression (LR), Multinomial Naive Bayes (MNB) and Bernoulli Naive Bayes (BNB). A variety of performance measures are used to assess the performance of the proposed model. In terms of disease prediction, the KNN classifier outperforms with 82% accuracy on plots 2 and 3. Additionally, plots 2 and 3 have a yield prediction accuracy of 98%. The results obtained are more efficient than other existing models.

Link: https://doi.org/10.1111/jph.70263

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TITLE:

A Hybrid Approach to Fake Job Detection Using NLP and Machine Learning

AUTHOR :

Patil K.; Shetty A.; Rajagopal A.; Sonawani S.

JOURNAL NAME:

2025 IEEE 5th International Conference on ICT in Business Industry and Government, ICTBIG 2025

DETAILS:

Published on 13 December 2025

ABSTRACT:

The job market now faces both benefits and challenges as a result of the quick digitization of hiring. In addition to legitimate job openings, there has been a notable rise in fraudulent job advertisements, which trick job searchers with false job descriptions, phony employers, and demands for upfront payments. In order to detect possibly fake postings, this project suggests a machine learning-based Fake Job Detection System that examines job descriptions, company metadata, and linguistic trends. We train NLP models (DistilBERT) enhanced with heuristic keyword detection on benchmark datasets including the Fake Job Postings Dataset and the Employment Scam Aegean Dataset (EMSCAD) in order to calculate a scam likelihood score. In order to increase transparency, we identify questionable aspects in each job posting using explainable AI (XAI) techniques like SHAP/LIME. Additionally, for peer validation, we integrate community verification by connecting users to external debates (such those on Quora, Glassdoor, and Reddit). Additionally, for extensive job analysis, the system allows bulk CSV/Excel uploads, generating color-coded reports for jobs that are safe, suspicious, and fraudulent. This method gives job searchers more power to make knowledgeable career decisions and increases trust in online hiring.

Link: https://doi.org/10.1109/ICTBIG68706.2025.11323989

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Advancements and Applications of 3D Bioprinting in Pharmaceutical Research

AUTHOR :

Deshpande A.; Borkar S.S.; Bhatt K.; Pachkor K.S.; Baheti J.; Polshetttiwar S.

JOURNAL NAME:

Precision 3D Printing in Pharmaceutical Sciences: A Transformative Shift in Drug Manufacturing and Delivery Systems

DETAILS:

Published on 7 November 2025

ABSTRACT:

Biology and 3D printing innovation have revealed novel approaches to organ construction and tissue regeneration. However, it's still challenging to design appropriate bioinks and tissue constructions. The structural resolution needs to be improved. Reducing the fabrication time is one way to conserve cell viability. Advances in 3D bioprinting (3DBP) methods are the primary challenge for novel bioinks.

This review underscores the importance of both conventional and innovative biomaterials in the context of 3DBP technology. Applications of 3DBP that are most pertinent and helpful were considered, such as tissue regeneration and cancer research. The most significant works are presented, and particular attention is paid to the advantages and disadvantages of 3DBP methods to create a new method that is faster than the current one by comparing it with 3D data. An introduction to the many fabrication methods is given by outlining and contrasting them, including laser-based, extrusion-based bioprinting (EBBP), and inkjet-based bioprinting (IBBP).

The merits and difficulties of each technique are discussed, along with the state of the research at this time. Every approach targets a particular kind of tissue. Utilizing 3DBP has made it possible to create intricate dose forms and tailor treatments. 3DBP has been examined recently as a potential method for developing topical formulations and wound dressings.

Furthermore, research is needed to maintain bioprinting technology and a variety of tools for fabrication in the context of 3D printing. This review highlights existing advances in the use of 3D printing for the development of various new pharmaceutical and biomedical products for topical skin application, including standard dressings and products for delivering active ingredients to the skin. This review's primary objective is to examine current biomaterials and 3DBP methods to compare them.

Link: https://doi.org/10.1002/9781394337576.ch3

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TITLE:

Skin Cancer Detection Using Deep Learning Models and Grad-CAM XAI

AUTHOR :

Shewale V.; Tiple B.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on 15 December 2025

ABSTRACT:

Since skin cancer is one of the most prevalent and deadly types of the disease, millions of individuals worldwide are diagnosed with it each year as a result of excessive exposure to sunshine and UV radiation. The most prevalent kind of skin cancer observed is “Melanoma”. This study suggests a deep learning-based method for detecting skin cancer by improving data quality through the use of Generative Adversarial Networks (GANs) and Data Augmentation. In this case, we are using DCGAN to create synthetic images, which increases model resilience, reduces overfitting, and is quick. The U-NET model, which guarantees the Rate of Interest of Lesion for localization, it then used to segment the pre-processed dataset. Using a Custom CNN and the Xception model, we conduct comparison analysis for classification in order to assess generalization and prediction accuracy. Furthermore, we use the XAI method known as Gradient-weighted Class Activation Mapping (Grad-CAM) to improve model transparency and trustworthiness by offering visual interpretability. When applied to 5000 images from the ISIC 2020 dataset, the suggested methodology produced good results on classification models, such as Custom CNN and Xception, with an accuracy of 98.43%, demonstrating the model's efficiency.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11284284

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Probability of collision estimation – A comparative review of physics-based, machine learning, and hybrid methods for a safer space environment

AUTHOR :

Mazire P.; Pardeshi P.; Solanki M.T.

JOURNAL NAME:

Acta Astronautica (Vol.-245)

DETAILS:

Published on February 2026

ABSTRACT:

The rapid growth of space debris poses a significant threat to the long-term sustainability of space operations. Potential collisions are mitigated through Risk Reduction Maneuvers (RRMs), whose effectiveness depends critically on the accurate estimation of collision risk, commonly expressed as the Probability of Collision (Pc). Numerous analytical, data-driven, and hybrid approaches have been developed to quantify this risk, yet their relative strengths, limitations, and operational applicability remain fragmented across the literature. This review provides a comprehensive comparative assessment of physics-based, machine learning–based, and hybrid Pc estimation methods, with emphasis on their underlying assumptions, computational efficiency, interpretability, and suitability for real-world conjunction assessment. Particular attention is given to recent operational developments, uncertainty modeling limitations, and the role of automation in maneuver decision-making. By synthesizing current methodologies and identifying persistent research gaps, this work clarifies the conditions under which emerging data-driven approaches can meaningfully augment established analytical frameworks. The review highlights the need for improved uncertainty characterization, reduced missed-detection rates, and rigorous validation of hybrid systems to support reliable, large-scale space traffic management. These findings provide practical guidance for the development of robust next-generation collision risk assessment tools.

Link: https://doi.org/10.1016/j.actaastro.2026.02.056

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

A meta-analysis for medical health records

AUTHOR :

Nayak S.; Nayak M.; Mantri S.

JOURNAL NAME:

Transformative Technologies: Revolutionizing Healthcare Through Computing and Communication

DETAILS:

Published on February 2026

ABSTRACT:

Decision-making related to public health relies heavily on concrete evidence for resource allocations, policymaking guidelines, and medical intervention. Statistical methodology like meta-analysis forms a powerful tool to generate actionable insights from heterogeneous dataset related to public health. Electronic Medical Records (EMRs), including the clinical data, medication history, test results from laboratories, and medical history of patients, are all managed and preserved by EMRs. An EMR is primarily used to track patient care, establish objectives, document treatment, and assess the outcomes of that care. Private Health Information (PHI) from the patient is included in these medical records, which might reveal the patient's identity. Thus, in order to prevent the disclosure of PHI, it is necessary that PHI phrases be disguised and protected before being made available to the general public. A synergetic integration of EMRs into a meta-analytic framework with Big Data and other complementary methodologies has been explored in this chapter with more focus on de-identification (de-ID) methods. The key challenges were data variability issues, subgroup analysis, Big Data integration, and Artificial Intelligence (AI), which insisted systematic reviews. De-identifying medical records safeguards patient privacy by deleting identifiable information. The manual and automatic de-ID methods and tools are also discussed. The chapter also covers the drawbacks and difficulties of using AI to the de-ID process. Eclectic applications of de-ID of EMRs are discussed. We propose a thorough review of the prior art in de-ID methods for EMRs.

Link: https://doi.org/10.1201/9781003587491-10

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Automated Drive Mode Switching & Recommendation Algorithm (AMSA): A Modern Approach to Enhance Electric Vehicle Energy Efficiency and User Experience

AUTHOR :

Pise S.N.; Yeolekar S.; Lokhande N.; Khan F.

JOURNAL NAME:

Journal of Electrical Engineering and Technology

DETAILS:

Published on 2 March 2026

ABSTRACT:

In the arc of automotive evolution, the journey from rigid, single-mode electric drivetrains to today's multi-mode systems, technology advances not merely in isolation, but in response to human behavior, limitations, and the continuous need for efficiency. While these multi-mode architectures promise improved energy conservation and optimized power delivery, their effectiveness hinges, paradoxically, on consistent human input and input prone to inconsistency. This research explores a counterpoint to that variability: a dynamically responsive Vehicle Control Unit (VCU) algorithm engineered to assume the role of intelligent intermediary between driver intent and optimal powertrain performance. Rather than depending on manual mode selection, the algorithm autonomously navigates through drive modes, leveraging real-time inputs such as terrain conditions, power demand, and vehicular load. The resulting system continuously adjusts its behavior to align with ideal energy usage patterns. Drawing on high-fidelity simulation, the study benchmarks battery usage while balancing the overall time to complete a trip, thus enhancing the user experience. These outcomes suggest a pathway toward smarter electric mobility where the vehicle makes critical judgments about power consumption. Concludingly, this work lays groundwork for the next generation EV control systems: adaptive, perceptive, and deeply attuned to the complex dance of motion, energy, and human intention.

Link: https://doi.org/10.1007/s42835-026-02582-6

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Satellite image classification using deep learning model-ResNet

AUTHOR :

Kosamkar P.; Kulkarni V.; Shaikh A.; Agarwal G.; Balotia I.

JOURNAL NAME:

International Journal of Data Mining, Modelling and Management (Vol.-18, Issue-1)

DETAILS:

Published on 23 February 2026

ABSTRACT:

Data mining framework and artificial intelligence (AI) have played a key part in all decision-making scenarios. Due to the significant expenses associated with creating training and testing datasets, we need to deal with a number of issues, object recognition, classification, and semantic segmentation in images of low spatial resolution. In this paper we first reviewed the machine learning and deep learning-based model for satellite health monitoring systems. We built the deep learning model - for satellite image classification. The dataset used is Satellite Image Classification Dataset-RSI-CB256. Two variants, ResNet-12 and ResNet-18 were tested on the dataset. The ResNet-18 showed over 0.94 accuracy for 5 number of epochs and the ResNet-12 showed 0.92 accuracy for training over 10 number of epochs. The result shows that the choice of employing the ResNet CNN architecture for Satellite Image Classification is certainly better than employing other available models such as FCNN, RCNN (with F-RCNN).

Link: https://doi.org/10.1504/IJDMMM.2026.151838

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Integration of AR/VR with AI for Experiential Learning in Science Subjects

AUTHOR :

Mahamuni A.J.; Suryawanshi S.; Tonpe S.S.; Kale P.
.

JOURNAL NAME:

2025 IEEE 5th International Conference on ICT in Business Industry and Government, ICTBIG 2025

DETAILS:

Published on 13 December 2026

ABSTRACT:

The combination of Augmented Reality (AR) and Virtual Reality (VR) with Artificial Intelligence (AI) is transforming experiential learning and, in particular, science education. This paper provides an extensive review of the current state of knowledge with respect to AI enhanced AR/VR platforms improving the delivery and uptake of complex science concepts by providing a personalized, immersive and interactive learning environment. This model differs from conventional education, where students needed to depend on fixed textbooks and remembering what they saw. In this model, students watch, observe and interact with AI-assisted simulations of a science phenomenon in real-time, such as with cell processes, chemical reactions, or physical laws. AI algorithms have been utilized for adaptive content delivery, learning analytics, and learning-performance prediction. As a result, differential instruction was accomplished having been individualized to the learner's particular pace and understanding. Additionally, the integrated mechanisms of immersive visualization and cognitive modeling yielded a deeper, impact-learning and long-term retention of concepts. The study included qualitative and quantitative measurements in secondary and undergraduate science classrooms, and the researchers noted many measurable outcomes on conceptual clarity, learner motivation, and academic performance. The study also included challenges to implementation such as access to hardware, teacher training, and curricular context. Future research considered here supports the envisaged largescale deployment of AR/VR-AI systems in education ecosystems to support inquiry-based learning and to support students' 21st Century scientific literacy.

Link: https://doi.org/10.1109/ICTBIG68706.2025.11323857

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Brain-Computer Interfaces for Motor Activity and Rehabilitation

AUTHOR :

Sebait S.; Rane R.; Sathe N.; Khadkatkar A.; Kalle Chidrupee M.; Hunchalkar A.S.A.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

The EEG based BCI systems have applications in aiding the recovery of hand motor functions through decoding motor imagery (MI) and motor execution (ME) signals. Other areas under consideration include stroke and spinal cord injury (SCI) which fall under the category of neuromotor disorders. Incorporating Brain-Computer Interface technology has proven helpful for motor rehabilitation. The study brough about new possibilities with this research which focused on exploring movement related cortical potentials and event related desynchronization over the mu(8−13 Hz) and beta (14−30 Hz) bands. Adopting techniques to classify hand movements, we implement machine learning methods including Support Vector Machines (SVM), Linear Discriminant Analysis (LDA), K-Nearest Neighbours (KNN), and Random Forests (RF) on the gathered EEG signals. The design of the experiment makes use of EEG datasets which are publicly accessible. These datasets undergo preprocessing in the form of analyzing independent components (ICA), band pass filtering with frequency limits of 0.3−50 Hz, and other feature extraction methods aimed at improving accuracy for classification to optimize the results. The intent behind the study has been to enhance the capability of real-time EEG signal interpretation for BCI operated robotic hands, thus contributing to the development of individualized systems for neurorehabilitation.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11284081

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Advancing Deep-fake Detection: A Hybrid CNN-Gradient Boosting Classifier Approach

AUTHOR :

Kokare A.; Mishra A.; Tiwari B.; Dhananjay B.

JOURNAL NAME:

2025 International Conference on Next Generation of Green Information and Emerging Technologies, GIET 2025

DETAILS:

Published on August 2025

ABSTRACT:

Discerning the veritable from the counterfeit in our digital milieu has become an exceedingly formidable enterprise, particularly in light of the meteoric rise of deepfake technology. In this treatise, we proffer an innovative synthesis of a Convolutional Neural Network (CNN) and a Gradient Boosting Classifier—a robust gradient boosting paradigm—to fortify our defenses against such deceptive artifices. To commence, our proposed methodology inaugurates with the design of a bespoke CNN architecture, meticulously engineered for the singular purpose of deepfake detection. This architecture is replete with a succession of convolutional and pooling layers, adroitly configured to extricate and distill salient features from the input images. Subjected to extensive training on a comprehensive and variegated dataset encompassing myriad forms of spurious imagery, our CNN is assiduously guided by the binary cross-entropy loss function, thereby cultivating a discerning sensitivity to the minutest discrepancies between genuine and manipulated content. Subsequently, the refined feature representations-—extracted from the trained CNN—are bequeathed as inputs to our Gradient Boosting Classifier. This classifier, drawing upon its iterative learning prowess, is tasked with the meticulous differentiation between authentic and counterfeit visuals, harnessing its progressively acquired acumen to render judicious verdicts. Collectively, our research endeavors to advance the frontiers of deepfake detection technology, articulating a novel and promising confluence of CNNs and Gradient Boosting techniques. In doing so, we endeavor to shield the integrity of digital content from the pernicious machinations of modern manipulation.

Link: https://doi.org/10.1109/GIET65294.2025.11234850

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Characterization Challenges, Strategies, and Standards for Thin-Walled Structures

AUTHOR :

Wankhede S.; Choudhari S.; Pesode P.; Mugale M.

JOURNAL NAME:

Additive Manufacturing of Thin-Walled Structures

DETAILS:

Published on February 2026

ABSTRACT:

Thin-walled structures, characterized by a wall thickness usually less than 10% of their other dimensions, are common in civil, automotive, and aerospace engineering because of their high strength-to-weight ratios—frequently more than 200 kN·m/kg. Yet, their tendency to buckle under critical loads (e.g., loads as low as 50% of theoretical strength due to imperfections), large deformations, and sensitivity to geometric or material irregularities pose major characterization challenges. This chapter discusses these challenges, specifically with an emphasis on geometric nonlinearity, issues of being able to consistently measure anisotropic material properties, and the effect of manufacturing inaccuracies like residual stress or thickness variability up to ±10%. We discuss sophisticated approaches to surmounting these problems, including finite element modeling, digital image correlation, and acoustic emission testing, reinforced by standard deviation and statistical reliability measures. In addition, we critically examine prevailing test standards (ASTM, ISO, etc.), recognize shortcomings in accounting for nonlinear and imperfection-sensitive behavior, and suggest avenues for methodological enhancement. The chapter highlights the necessity of multiscale, multidisciplinary approaches—integrating experimental, numerical, and non-destructive methods—to drive thin-walled structural design and procure secure, reliable characterization across a wide range of applications.

Link:
https://www.scopus.com/pages/publications/105032646011

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Smart Farming in Developing Economies: Its Economic Impacts and Policy Challenges for Farmers

AUTHOR :

Gupta V.P.; Goel R.; Patel U.; Kaushik Y.

JOURNAL NAME:

Harnessing AI to Reshape the Future of Agriculture

DETAILS:

Published on 14 February 2026

ABSTRACT:

Emerging digital technologies such as AI, precision agriculture, and the IoT are powering smart farming that has the potential to transform agricultural production in developing countries. The chapter mainly discusses how embracing smart farming matters in developing countries from an economic and policy perspective. It has been proven that smart farming can help farmers make more profit and secure food supply by raising the amount of crops they grow, making better use of resources, and lowering production expenses. The main obstacles to using mobile technology more broadly are subpar infrastructure, very many knowing how to use technology, high start-up costs, and vague legislation. The article recommends using subsidies, running extension services through digital media, and increasing rural access to broadband as ways to help close the technology gap. It concludes that using smart farming, underdeveloped countries may be able to grow their agriculture, but success will only come if governments, the private sector, and global bodies come together to fix serious and institutional problems.

Link: https://doi.org/10.1007/978-3-032-12118-9_30

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

When Abusive Supervision Leads to Knowledge Sabotage: Psychological Distress as a Mediator and Resilience as a Moderator

AUTHOR :

Thakur P.; Srivastava S.; Gaurav K.

JOURNAL NAME:

Knowledge and Process Management

DETAILS:

Published on 1 March 2026

ABSTRACT:

This study explains the adverse effect of abusive supervision on knowledge sabotage in the hospitality industry in terms of psychological distress as an intermediary variable and resilience as a moderating variable. Purposive sampling was used to collect data from 287 employees in 26 hospitality organizations in Northern India. Partial least squares structural equation modeling (PLS-SEM) was used to analyze the data. The results show that abusive supervision strongly influences knowledge sabotage and psychological distress mediates this relationship. Furthermore, resilience moderates the connection between abusive supervision and knowledge sabotage such that higher resilience reduces negative effects. The findings show that supportive leadership, resilience-building interventions, and stress-reduction interventions are relevant in encouraging positive working environments and knowledge sharing in hospitality organizations. The study is a unique contribution to the literature because it explores how resilience and psychological distress influence knowledge sabotage development in the Indian hospitality industry.

Link: https://doi.org/10.1002/kpm.70042

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

From Detection to Defense: A Review of Cyber Threat Intelligence Integration in Cloud Systems

AUTHOR :

Sononi M.; Raut U.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

The exponential growth of cloud computing has introduced both unprecedented scalability and a broader attack surface, necessitating more intelligent and proactive cybersecurity strategies. This review explores the evolving landscape of Cyber Threat Intelligence (CTI) and its critical role in enhancing cloud security. Emphasizing the transition from passive threat detection to adaptive defense, the paper analyzes existing CTI frameworks, threat-sharing models, and integration approaches in cloud-based architectures. It highlights key technologies such as hypervisor-based monitoring, virtual machine introspection, and AI-powered data pipelines for real threat detection. By synthesizing findings from recent literature, the review identifies current gap such as lack of open-source CTI platforms and challenges in data privacy - and provides recommendations for building resilient, collaborative, and scalable cloud defense mechanisms. This comprehensive examination serves as a guide for researchers and security practitioners seeking to leverage CTI for robust cloud infrastructure protection. By synthesizing current research and practical implementations, this review provides actionable insights into how CTI can enhance cloud resilience, facilitate faster incident response, and strengthen the overall security posture of modern digital ecosystems.

Link:
https://www.scopus.com/pages/publications/105031880823?origin=resultslist

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

A Machine Learning Framework for Predicting Solutions to Nonlinear Differential Equations

AUTHOR :

Nirmale V.K.; Devarajan K.; Sharmila C.R.; Bhuvaneswari A.K.; Taj S.M.; Nandini G.

JOURNAL NAME:

2025 IEEE 5th International Conference on ICT in Business Industry and Government, ICTBIG 2025

DETAILS:

Published on December 2025

ABSTRACT:

Efficiently and reliably solving nonlinear differential equations continues to be a core barrier in science and engineering, since conventional analytical and numerical techniques can often be costly in computation time, become nonconvergent under severe conditions, or are difficult to adapt to a novel problem. This work proposes a machine learning framework that proposes approximate solutions by learning the underlying functional relationships directly from observational data. First, the work frames nonlinear dynamics in a larger mathematical framework and systematically considers the implicit limitations of classical methods, such as direct and iterative finite difference schemes, finite element methods, and transcendent Runge-Kutta methods. Second, it considers recent advancements in data-driven modeling approaches with a focus on fully-connected neural networks (FNN), support vector regression (SVR), and physics-informed (PINN) methods, all which are promising approaches to recovering the behavior of nonlinear systems. The last section integrates a deep multi-layer neural network with case-specific loss functions that capture the structure of the underlying differential equations and ensures that the learned representation is consistent with conservation and balance concepts. Finally, benchmark evaluations with synthetic and traditional datasets show that the new architecture outperforms the predictive accuracy and computation times of existing classical solvers and machine learning models. Ultimately, the framework offers robust performance across a broader range of nonlinear scenarios-including chaotic trajectories and cases with discontinuous coefficients. These findings demonstrate the power of hybrid approaches with AI and mathematical methods to tackle difficult scientific challenges. They represent a strong and early start to exploring deeper thoughts in scientific machine learning and symbolic regression, specific to systems characterized by nonlinear differential equations.

Link: https://doi.org/10.1109/ICTBIG68706.2025.11323778

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Fusion of CT and MRI Images Using VGG-19 With Preprocessing and Edge Enhancement

AUTHOR :

Soniminde N.V.; Kaushal A.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

In the medical domain, MRI (Magnetic Resonance Imaging) and CT (Computed Tomography) reveal information about the structure and soft tissues of the brain which is helpful for tumor and disease detection. However, direct analysis of these may not be able to reveal all the information and hence fusion of these 2 modalities is done for revealing more information. This paper proposes a model for preprocessing of a pair of CT and MRI images, fusion of the images using pretrained VGG-19 and post processing of the fused image. Edge and contour features are enhanced using this model for high structural details. Apart from the medical domain, image fusion is also applied to fields like remote sensing, multifocal images and more.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11284075

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

A review of ergonomics and technological advancements in safety boots for the construction industry

AUTHOR :

Raj T.K.J.; Alam M.S.; Jadhav G.S.

JOURNAL NAME:

Work (Vol.-83, Issue-3)

DETAILS:

Published on October 2025

ABSTRACT:

BackgroundOne of the riskiest industries in the world is the construction industry, where employees are subjected to accidents. To reduce these risks, personal protective equipment (PPE) is introduced. Many technical advancements are happening around the globe. However, such advancements are lacking in the construction industry and PPE kits.ObjectiveThis study reviews how product design affects the design of safety boots used in the construction sector.MethodsA systematic literature review was conducted using SCOPUS, Google Scholar, PubMed, and ScienceDirect databases, focusing on peer-reviewed journal articles published in English over the last ten years (2014-2024). Articles were selected based on a detailed screening process, including evaluations of titles, abstracts, and full texts, to ensure relevance to the study. Following the PRISMA approach, 30 papers were identified using keywords such as "safety boots," "construction industry," "ergonomics," "IoT," and "AI." These selected studies were analyzed to identify key research questions, findings, and gaps within the field.ResultsResearch has indicated that factors that influence the boot wear design in the construction industry are materials, pressure point, shaft height, shaft weight, boot weight, sole height, foot arch, toe box, ergonomics, foot morphology, technological advancement, etc, all these factors can, directly and indirectly, affect the function, durability, and comfort of the boots. An ergonomically advanced boot can decrease pain, musculoskeletal disorders, and wounds. Artificial intelligence can be directly used in the design process for refinement, prototyping, and analysis. Data analysis, communications, and coordination can be increased by using advanced smart boots. In short, incorporating ergonomics, technologies, and AI can improve the user experience and worker safety.ConclusionBy better understanding the relationship between product design, material, ergonomics, technology and AI, the design of safety boots can promise more comfort and safety. Many factors like toe box, sole height, foot arch, shaft height, weight can directly affect the function of a boot.

Link: https://doi.org/10.1177/10519815251386441

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Design of a Wearable Device for Real-Time Carbohydrate Intake Monitoring Using Machine Learning

AUTHOR :

Magdum A.; Harpude P.; Nehete P.; Erande A.; Wahane Y.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

Metabolic disorders such as diabetes and obesity are rising due to poor dietary habits and glycemic fluctuations. Traditional methods like manual tracking or CGMs are often invasive, costly, or impractical for general use. This paper proposes a non-invasive, machine learning-based system that predicts daily carbohydrate intake using biometric and lifestyle data from existing wearable devices. Key features like BMI, BMR, TDEE, glucose level, and activity are fed into ensemble models (XGBoost, Random Forest, and LSTM), trained using public datasets and simulated user data. The model achieved strong accuracy (R2=0.87, RMSE =3.92), offering a lightweight, mobile-friendly alternative to CGMs for personalized nutrition and preventive health monitoring.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11284121

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Modeling and Analysis of Geopolitical Risk Impacts on Global Supply Chain Networks Using Network Science

AUTHOR :

Kakade K.; Kale S.; Brahmane J.; Chitranshi J.; Shinde S.; Kediya S.

JOURNAL NAME:

Proceedings of the International Conference on Electrical, Electronics, and Computer Science with Advance Power Technologies - A Future Trends, ICE2CPT 2025

DETAILS:

Published on October 2025

ABSTRACT:

International risk have developed to be a key influence on the operation of the supply chain as it becomes increasingly interconnected. Companies wishing to be more robust and reduce the consequences of disturbances must understand how these risks influence worldwide supply chain systems. Network science helps this effort to provide a whole paradigm for viewing how global supply chain networks are impacted by international concerns. The study combines concepts from network theory, geopolitical risk assessment, and supply chain management to provide a novel approach for determining how susceptible supply lines are to shocks brought on by geopolitics. The model examines many risk elements that might disrupt the movement of commodities, services, and information including political unrest, trade policy changes, and foreign wars. It accomplishes this by presenting the supply chain as a complex web of interconnected nodes and edges. The proposed approach determines how much these hazards influence the supply chain's performance such as its resilience, efficiency, and costeffectiveness by means of network science techniques. Degree and between centrality among centrality measurements help to identify the most crucial supply lines and sites possibly impacted by a collapse. The study also makes use of simulation models to examine how various worldwide circumstances may impact the supply chain and generate chain reactions raising the overall risk.

Link:
https://doi.org/10.1109/ICE2CPT66440.2025.11340429

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Anti-Money Laundering Customer Processes with the Blockchain and K-Nearest Neighbor

AUTHOR :

Samuel F.G.Y.; Shankar T.N.

JOURNAL NAME:

4th International Conference on Automation, Computing and Renewable Systems, ICACRS 2025 - Proceedings

DETAILS:

Published on December 2025

ABSTRACT:

This paper proposes improvements to anti-money laundering practices and the use of blockchain to prevent financial crimes in the banking industry, as well as anti-money laundering measures for government financial organisations. The investigation of the ledger chain is an immutable process, but it must be auditable by sharing information with the government financial organizations. This work proposes an advanced anti-money laundering technique for identifying users' suspicious activities. Often, KYC-based anti-money laundering procedures are expensive, inefficient, and prone to fraud. These complications make it more difficult for financial organizations to identify illegal activities as money laundering. Such a problem can be overcome by enhancing the security and openness of the payment system with government financial institutions through proper classification, which can be achieved using a machine learning algorithm such as K-nearest neighbors, as proposed in this paper.

Link: https://doi.org/10.1109/ICACRS67045.2025.11324140

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

AI-Powered Personalized Fashion Recommendation with Virtual Try-On

AUTHOR :

Deshmukh A.K.; Pai A.

JOURNAL NAME:

Proceedings of IEEE International Conference for Women in Innovation, Technology and Entrepreneurship, ICWITE 2025

DETAILS:

Published on 22 September 2025

ABSTRACT:

This paper presents an integrated AI-powered fashion recommendation system combining Human Identification, Text-to-Image Retrieval, and Virtual Try-On technologies to improve personalization in e-commerce. The system leverages deep learning models-CNNs for biometric verification, CLIP for semantic similarity, and GANs for image generation-trained on datasets including Kaggle fashion images and ethnic wear metadata. The Human Identification module achieved 95% accuracy, supporting secure and tailored access. The recommendation engine, using CLIP embeddings and Stable Diffusion, achieved a Mean Average Precision (mAP) of 83%, leading to a 40% increase in user engagement and 85 % satisfaction. The Virtual TryOn component, incorporating pose estimation and 3D overlays, reached 90% fit accuracy and reduced return rates by 30%. This modular architecture supports real-time performance and high user interactivity. The combined system significantly enhances user trust, satisfaction, and purchase confidence in fashion e-commerce platforms.

Link: https://doi.org/10.1109/ICWITE64848.2025.11307152

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Smart Manufacturing in the Era of Industry 4.0: Role of Digital Twins and Advanced Analytics

AUTHOR :

Ghorpade-Aher J.; Annachhatre A.; Aher A.; Kapgate R.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on 8 November August 2025

ABSTRACT:

Industry 4.0 has evolved due to needs for datadriven decision-making and higher efficiency in manufacturing processes. Digital Twins (DT) have made it possible to mimic the traditional machines. DT has enabled intelligent manufacturing processes that enables real-time monitoring for predictive analysis. A paradigm shift from traditional manual processes to advanced data-driven approaches make the transformations possible using analytics framework. Smart manufacturing includes integration of Internet of Things (IoT) devices with advanced analytics. Implementation of virtual batteries that mimic physical batteries, with digital twins plays a vital role in various interdisciplinary sectors. To enable predictive maintenance, optimization of battery performance, extension of battery lifespan, and enhancement of system reliability, digital twins have adopted a hybrid approach. The proposed hybrid solution depicts the amalgamation of real-time data collection, advanced modeling techniques, and Artificial Intelligence (AI) with advanced analytics.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11284129

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Monte Carlo–Based Sensitivity Analysis Of Forced Convection Heat Transfer In Metal Foam-Coated Tube Banks

AUTHOR :

Dhavale A.A.; Lele M.M.

JOURNAL NAME:

Special Topics and Reviews in Porous Media (Vol.-17, Issue-1)

DETAILS:

Published on 26 August 2025

ABSTRACT:

Industrial heat exchangers, such as pre-coolers, require compact designs capable of delivering high thermal performance with minimal pressure loss. However, achieving this balance is challenging, especially when incorporating porous structures like metal foams that enhance heat transfer but introduce additional flow resistance. This study addresses the need for an optimized design by numerically and probabilistically analyzing forced convection in aluminum metal foam-coated tube banks under varying operating conditions. Using commercial computational fluid dynamics tools, the effects of metal foam thicknesses (0.75, 2, and 3.25 mm), porosities (0.90-0.95), and free-stream velocities (5-25 m/s) were evaluated on key performance indicators, i.e., Nusselt number, pressure drop, and outlet temperature. The Darcy-Forchheimer-Brinkman model and local thermal equilibrium energy model were used to capture flow and heat transfer within the porous domain. A Monte Carlo simulation framework, integrated with Sobol sensitivity analysis, quantified the influence of design parameters on thermal-hydraulic performance. Quantitatively, the metal foam-C configuration (2-mm thickness, 95% porosity) enhanced heat transfer by 30% with only a 15% increase in pressure drop compared to a bare tube, offering the best overall performance. Thicker foams (metal foam-A and metal foam-B, 3.25 mm) improved Nusselt number sensitivity by up to 50% but also increased pressure drop sensitivity by 35%- 40%, demonstrating the trade-off between enhancement and resistance. Foam thickness and porosity were identified as dominant factors influencing performance variability. The novelty of this study lies in its probabilistic sensitivity framework for heat exchanger optimization, a departure from conventional deterministic studies. The integration of Monte Carlo and Sobol analysis enables a robust, uncertainty-aware approach to metal foam selection and thermal design. These insights contribute to the development of energy-efficient heat exchangers optimized for performance and reliability under real-world variability.

Link: https://doi.org/10.1615/SpecialTopicsRevPorousMedia.2025058513

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Analysis of fractional quadratic incommensurate jerk system

AUTHOR :

Deshpande R.; Deshpande A.; Singh A.

JOURNAL NAME:

Mechanics Research Communications (Vol.-154)

DETAILS:

Published on March 2026

ABSTRACT:

A fractional jerk system, composed of three fractional differential equations with quadratic nonlinearity, inherently arises in various scientific and engineering fields such as mechanics, electronics, biology, and economics. Extending the jerk system to the fractional order domain allows the modeling of memory and hereditary effects, providing a more realistic framework than classical integer-order models. This fractional quadratic jerk system offers an ideal balance between mathematical simplicity and dynamical complexity, enabling the study of bifurcations, stability transitions, and chaos. In this work, both commensurate and incommensurate forms of the system are analyzed, with precise determination of the critical parameter values for Hopf bifurcation across different fractional orders . Due to the subcritical nature of the bifurcation, the system evolves into chaos, with playing a crucial role in governing the dynamics. The critical fractional order , below which chaos disappears, is also identified. Bifurcation diagrams and Largest Lyapunov Exponent (LLE) analyses reveal that chaos occurs for in the commensurate case with and for in the incommensurate case with , findings further supported by phase portrait analyses confirming the system's complex behavior.

Link: https://doi.org/10.1016/j.mechrescom.2026.104675

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Internet of Things (IoT) and Smart Systems: Innovations in Agriculture, Energy, and Urban Infrastructure

AUTHOR :

Pramod Jain S.A.; Apune S.; Nagare A.

.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

The Internet of Things (IoT) and smart systems have revolutionized various sectors, including agriculture, energy, and urban infrastructure. This review paper explores the latest innovations and applications of IoT in these domains. In agriculture, IoT enables precision farming, smart irrigation, and hydroponics. In energy, IoT facilitates smart grids, solar power trading, and efficient energy management. In urban infrastructure, IoT supports structural health monitoring, smart water systems, and indoor positioning. This paper also discusses the challenges and future directions for IoT adoption, highlighting open research problems and emerging trends. The review synthesizes insights from recent literature, providing a comprehensive understanding of IoT's transformative potential.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11283994

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Machine Learning-Fused Hybrid Image Encryption Framework Using Hardware-Optimized AES Algorithm

AUTHOR :

D S.; S R M.; P D.

JOURNAL NAME:

Journal of Signal Processing Systems (vol.-98, Issue-1)

DETAILS:

Published on 17 March 2026

ABSTRACT:

Image encryption protects sensitive information against malicious attacks in various applications, including the Internet of Things (IoT). However, lower computational complexity compromises the security in image encryption. Computationally intensive encryption algorithms make the system unreliable for real-time scenarios. This research work fuses machine learning and encryption algorithm. In the proposed work, blocks are constructed from an image, and for each block, features such as entropy, energy, contrast, and homogeneity are utilized to train the classifier to classify the block as sparse, intermediate, or dense. Sparse block containing less information and is encrypted with Gray codes, whereas, the intermediate and dense blocks holding more information are encrypted using advanced encryption standard (AES) to reduce processing time. In addition, the hardware-optimized proposed hybrid image encryption framework further decreases the computational time required for image encryption. The proposed AES hardware implementation enhances both throughput and area efficiency through composite field arithmetic (CFA) in, facilitating a combined encryption and decryption architecture. Optimized arithmetic operations reduce hardware utilization. The pipelined key expansion and SubByte architecture enhance the computation time. The proposed design is implemented on Virtex-6 XC6VLX240T for AES-128 and utilizes less hardware than existing techniques while achieving 5.14 Gbps throughput. The proposed hybrid image encryption framework encrypts a 512× 512 grayscale image with rich in information within 22.35ms with optimal security.

Link: https://doi.org/10.1007/s11265-026-01992-z

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Asteroid Mining: Mine the Right Asteroid

AUTHOR :

Bhagwat G.; Mishra A.; Tiwari B.; Kokare A.

JOURNAL NAME:

2025 International Conference on Next Generation of Green Information and Emerging Technologies, GIET 2025

DETAILS:

Published on August 2025

ABSTRACT:

One of the promising frontiers of space exploration is asteroid mining. Asteroid mining can be the sustainable solution of resource scarcity on Earth and can be potential for vast reserves of valuable resources. Nevertheless, the success of asteroid mining venture depends on an important decision of selecting the right asteroid for extraction. This paper explores all the considerations involved in the process of identifying suitable asteroids for mining. The criteria for asteroid selection span a range of factors, including their proximity to Earth, composition, size and accessibility. Taking from recent advancements in space technology and scientific research, we examine the challenges and prospects that await in the quest of mining the right asteroid. This paper highlights the importance of tactical asteroid selection as an essential step for unlocking the vast potential of asteroid mining. In the end, the selection of the right asteroid carries the potential to revolutionize the course of space exploration and the way we harness extraterrestrial resources.

Link: https://doi.org/10.1109/GIET65294.2025.11234871

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

From Signs to Speech: An End-to-End Conversational Platform for Deaf and Mute Individuals Using GRU and LLM Integration

AUTHOR :

Chauhan A.; Kayamkhani A.; Gujar A.; Gade M.; Kumawat M.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

Deaf and mute individuals are often disadvantaged in professional interview settings due to limited verbal communication, despite possessing relevant qualifications. This paper presents an AI-driven system designed to facilitate seamless bidirectional communication through real-time sign language recognition and speech synthesis. A custom dataset of ten technical signs, formulated through surveys in special education institutions were recorded using Mediapipe and OpenCV. A three-layer Gated Recurrent Unit (GRU) model achieved 97% training accuracy and 94% test accuracy, outperforming LSTM and BiGRU architectures. Dropout regularization was applied to mitigate overfitting. A locally hosted Ollama LLM model was employed to enhance grammatical accuracy of sign-to-text-to-voice outputs. The interface, developed using Streamlit, supports user interaction, while Firebase manages backend communication. Precision and recall values of 93 % and 92 % respectively demonstrate the system's reliability. This work proposes a deployable, inclusive solution aimed at improving accessibility and opportunity for deaf-mute individuals in professional environments.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11284273

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Assessment of Crinum Solapurense Leaf Extract's Analgesic and Anti-Inflammatory Properties in Mice

AUTHOR :

Dhange A.; Gajeli G.B.; Ghurghure S.M.; Bobade C.D.; Kalshetti P.D.

JOURNAL NAME:

International Journal of Drug Delivery Technology (Vol.-16, Issue-1)

DETAILS:

Published on December 2025

ABSTRACT:

Crinum Solapurense, also referred to as "Sudershana," belongs to the Amaryllidaceae family. Currently current medications for the treatment of pain, fever, and inflammation-like disorders have a lot of negative side effects; therefore, safer medications with few or no side effects are needed. This was accomplished by screening Crinum Solapurense (Amaryllidaceae) leaves for pharmacological qualities, particularly analgesic ones, utilizing the Paw edema test method with mice and test hotplate method. When compared to the common medication, Pentazocin and Ibuprofen, the ethanolic extract of Crinum Solapurense leaves had shown substantial analgesic and anti-inflammatory action. The analgesic and anti-inflammatory properties of many medicinal plants are typically attributed to tannins, flavonoids, alkaloids, and saponins; for this reason, phytoconstituents derived from plant leaves are also being investigated. These findings might help to the activities the plant Crinum Solapurense, which is distributed in the Solapur district, is used to treat pain and related conditions

Link: https://ijddt.com/abstract/16/IJDDT,Vol16,Issue1,Article29.html

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Lightweight ResNet-18 Based Brain Tumor Classification on MRI with Mixed Precision and Augmentation

AUTHOR :

Kulaye C.S.; Kumar S.; Rani R.

JOURNAL NAME:

2025 5th Asian Conference on Innovation in Technology, ASIANCON 2025

DETAILS:

Published on August 2025

ABSTRACT:

In medical imaging, brain tumor identification is a crucial task that has a big influence on early diagnosis and treatment results. A common component of traditional diagnostic techniques is the manual interpretation of CT or MRI scans, which is laborious and prone to human error. Using a refined ResNet-18 convolutional neural network, this study provides a deep learning-based method for automated brain tumor classification in this paper. To enhance generalization and performance, the study used sophisticated training techniques such as label smoothing, cosine annealing learning rate scheduling, mixed precision training, and significant data augmentation, all of which capitalize on transfer learning from ImageNet. A carefully selected collection of brain tumor pictures is used to train and assess the proposed model, which yielded a top accuracy of 98.12%. The model's robustness is further demonstrated by statistical analysis that includes a confusion matrix, classification report, precision-recall curve, and inference time assessment. This study demonstrates that even very lightweight designs, such as ResNet-18, may produce high diagnostic accuracy when properly tuned, making them appropriate for use in clinical settings with limited resources.

Link:
https://doi.org/10.1109/ASIANCON66527.2025.11281169

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Real Time Analysis and Recognition of Facial Expressions

AUTHOR :

Komati R.; Shamkuwar S.; Satfale V.

JOURNAL NAME:

2025 International Conference on Sustainable Technologies for Humanity and Smart World, HSWTech 2025

DETAILS:

Published on September 2025

ABSTRACT:

It is found that many people find it difficult to maintain correct facial expressions in important situations like presentation, interviews, and during social interactions. To overcome this some people, practice in front of mirror but it may not be effective as our brains may not catch subtle expression. This paper aims to address this problem by using AI system to analyze the facial expressions in real time and provide feedback in different situations for correctness of the facial expression. It uses TensorFlow to track and evaluate key emotions shown by the user and it gives the feedback about suitability based on the situations. By using facial expression analysis, the AI system provides practical insights to enhance non-verbal communication skills. This innovative and real time approach enables users to make a lasting positive impression in both social and professional life. By paying attention to facial expressions, one can enhance his or her awareness of non-verbal cues which facilitate easier interactions and deeper connections

Link:
https://doi.org/10.1109/HSWTech64936.2025.11277426

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

AI Techniques in Electric Vehicle Charging Optimization

AUTHOR :

Khamkar K.A.; Kannepally S.; Swapna V.; Mahalakshmi G.; Bhavanam S.N.; Jalli R.K.

JOURNAL NAME:

Proceedings - 2025 International Conference on Recent Innovation in Science Engineering and Technology, ICRISET 2025

DETAILS:

Published on August 2025

ABSTRACT:

Electric vehicles (EVs) have arisen as a feasible option in contrast to conventional transportation;however improving charging framework stays a basic test because of fluctuating interest and asset constraints. This examination investigates the utilization of man-made reasoning (AI intelligence) procedures to improve EV charging advancement. The philosophy starts with categorical variable encoding to preprocess different information sources, empowering consistent incorporation of vehicle types, station areas, and transient examples. To guarantee model exactness and proficiency, correlation analysis is utilized for highlight determination, recognizing key boundaries impacting charging conduct, like condition of charge (SoC), energy cost, and charging length. A Feedforward Nural Network (FNN) is produced for grouping errands, anticipating ideal charging timetables and pinnacle load situations. The proposed approach shows further developed expectation exactness and productive asset usage in EV charging stations. This research highlights the capability of AI intelligence in propelling EV framework, preparing for feasible energy the executives and shrewd transportation frameworks.

Link: https://doi.org/10.1109/ICRISET64803.2025.11253812

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Design and Implementation of a Photonic-Based Electronic Warfare System

AUTHOR :

Khanna D.; De S.; Bazil Raj A.A.; Chaudhari B.S.

JOURNAL NAME:

Journal of Optics and Photonics Research (Vol.-2, Issue-4)

DETAILS:

Published on 5 August 2024

ABSTRACT:

Nowadays, the radiofrequency (RF) photonics become an inevitable candidate to address several military-related potential applications including electronic warfare (EW), photonic signal processing (PSP), photonic-based RF transportation, and photonic communications. As part of this emerging technology development/requirement, we designed a photonic-based EW system (PEWS) in the optisystem environment (later implemented using optoelectronic components) to extract various radar waveforms such as continuous wave (CW), pulsed wave, and frequency/phase-modulated wave. All these radar waveforms are transmitted and captured by the proposed/implemented PEW system and then processed to construct the radar signatures from its electromagnetic (EM) spectrum/signals. The key parameters of various waveforms generated and processed in our research work are varied, over the time, during the performance validation tests. The values of key parameters of the waveforms, RF CW signal frequencies, pulse repetition time, pulse widths, Barker code phase modulations, Frank code poly-phase modulations, sweep frequencies, and RF power levels are 100 Hz through 8 GHz, 10 ms through 2 µs, 750 ns through 2 ns, 0o/80o, 0o/90o/180o/270o, and −84 dBm through 30 dBm, respectively. The details of PEWS design approaches, their implementation methodologies, and different performance validation experimental results are reported and analyzed. The limitations and possible immediate research contributions/requirements are also listed.

Link: https://doi.org/10.47852/bonviewJOPR42022303

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Enhanced Prediction of Chronic Kidney Disease using XGBoost Machine Learning Model

AUTHOR :

Khande R.; Singh N.; Naik S.; Bodke S.; Gaikwad A.; Metkewar P.S.; Bashir R.; Rather A.A.

JOURNAL NAME:

International Journal of Statistics in Medical Research (Vol.-15)

DETAILS:

Published on 18 March 2026

ABSTRACT:

Chronic kidney disease (CKD) might progress to end stage renal disease; moreover, cardiovascular dangers are dire. Machine learning used in for more speed and accurate diagnosis of CKD. The CKD prediction model proposed in this paper was developed using the XGBoost algorithm, which is quite effective in classification problems. Other clinical parameters such as blood urea, serum creatinine and white blood cell count are some of the 24 indices identified from among the 400 patient records in the dataset. Feature selection using SelectKBest was relevant, and hyperparameter tuning was done by RandomizedSearchCV Both quantitative and categorical data were preprocessed. Altogether, 75% of data used for training, while 25% of data used for testing. The XGBoost model had a better result with 96.88 % recall, 100% precision, and 98% accuracy. However, the proposed approach has disadvantages; namely, a small sample cross-section and possibly an imbalanced class. Further, the dataset will be increased, the methods of dealing with class imbalance will be applied using SMOTE algorithm, and the effectiveness of the proposed model will be tested in real clinical practice. This work also highlight how crucial it is to employ and enhance machine learning, especially XGBoost to detect early stage of CKD, proper treatment, low mortality rate, and increased survival rate among patients.

Link: https://doi.org/10.6000/1929-6029.2026.15.10

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

A Privacy-Preserving and Efficient Blockchain Framework for Smart Cities

AUTHOR :

Mahajan P.; Chavhan N.; Palave S.; Wable P.; Pawale R.; Satpute S.S.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

The shift of city infrastructure to smart cities by means of digital transformation heralds better quality of life, good governance, and efficient use of resources. But with this change comes the most significant problems of data security, privacy, and system effectiveness. This paper presents an end-to-end framework using blockchain technology that can address these issues. By combining Ethereum smart contracts, Sepolia testnet, off-chain storage using IPFS, and privacy-preserving techniques, we present a solution that grows decentralization with performance. Comparative evaluation against traditional and centralized blockchain approaches is more efficient in privacy, openness, and operation efficiency. This system paves the way for secure, scalable smart city solutions with privacy at its core.

Link:
https://www.scopus.com/pages/publications/105031889571?origin=resultslist

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Malware Detection Using Machine Learning: A Neural Network-Based Approach

AUTHOR :

Shinde S.R.; Pujeri U.

JOURNAL NAME:

2025 3rd International Conference on Industry 4.0 Technology, I4Tech 2025

DETAILS:

Published on September 2025

ABSTRACT:

This work introduces a deep learning model for malware identification, using features derived from the dynamic network behavior of executables. The dataset comprises 78 numerical features related to network flow, captured during the execution of Windows .exe files in an isolated sandbox setup. A feedforward deep neural network was trained using a cyclic learning-rate schedule, achieving strong detection performance. On a held-out test set, we observed an overall accuracy of 96.12%, with per-class precision, recall, and F1-scores above 89% (malicious class) and 95% (benign class). The confusion matrix (Figure below) shows low false positives (23) and false negatives (171) out of 5000 samples. We compare these results to recent state- of-the- art studies: for example, Prior work by Saxe and Berlin [1] achieved a 95% detection rate with a 0.1% false positive rate on a large-scale binary dataset, while DeepMAL (Marín et al. [2]) obtained comparable accuracy by analyzing raw malware network traffic. Our model's performance is competitive with these benchmarks. We include plots of the training loss/accuracy curves and learning-rate schedule, detail the model architecture and training procedure, and discuss future improvements such as incorporating additional dynamic features and more complex architectures (e.g., CNN/LSTM).

.Link: https://doi.org/10.1109/I4Tech64670.2025.11277839

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Enhancing Drowsiness Detection: An Ensemble Machine Learning Approach to Eeg-Based Sleep Classification

AUTHOR :

Mandekar S.N.; Jagtap S.; Waghodekar P.; Patil A.; Javale D.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

Using EEG brainwave data, this study examines how well ensemble machine learning methods define sleep. Using a dataset of 3,735 EEG recordings, we evaluate bagging, boosting, and stacking techniques against conventional machine learning models. Our findings have implications for sleepiness detection systems in automotive and industrial safety applications since they show that ensemble approaches-in particular, Random Forest and XGBoost-perform better at differentiating between awake and sleep states.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11284178

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Dynamic Traffic Signal Control for Intelligent Cross-Junction Traffic Management

AUTHOR :

Bist U.S.; Das N.; Acharya S.; Kumawat M.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

Urban traffic congestion during periods of high vehicle flow causes vehicles to remain immobile at traffic signals for extended periods of time, leading to increased fuel usage and emissions when compared to free-flow conditions. Traditional fixed-time signal control systems cannot adapt to changing traffic volumes throughout the day and become increasingly inefficient over time at intersections. This paper presents an intelligent real-time adaptive traffic management system that integrates the YOLOv8n deep learning architecture with Siemens S7-1200 PLC to allow adaptive signal control. The framework analyzes streaming visual data to identify and enumerate vehicles while relaying real-time traffic density information to the PLC to modify signal timings. Simulation results in a laboratory setting determined that the YOLOv8n connection details obtained 75.76% accuracy and an mAP@0.5 of 0.692 with a custom trained model in comparison to the YOLOv8n's model (mAP@0.5 of 0.120). Real-world experimental validation was performed, with successful realtime communication from YOLOv8n to PLC with a responsive signal priority based on traffic density. The modular, costeffective ecosystem provides flexibility to deploy scalable solutions to modern urban traffic management systems.

Link: https://doi.org/10.1109/ICCUBEA65967.2025.11284236

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Intranasal delivery of biotherapeutics utilizing nanocarriers: Advancements in surface engineering, clinical progress and the incorporation of artificial intelligence

AUTHOR :

Vasandia A.V.; More M.; Bhatt P.; Baheti A.; Pawar A.; Tagalpallewar A.

.

JOURNAL NAME:

Journal of Drug Delivery Science and Technology (vol.-119)

DETAILS:

Published on 2026

ABSTRACT:

Intranasal, or nose-to-brain, delivery is a promising non-invasive method to circumvent the blood-brain barrier (BBB) and deliver biotherapeutic agents directly into the brain. Advances in nanotechnology have shown great promise to improve the solubility, stability, targeting efficiency, and nasal mucosal transport of drugs. This review primarily focuses on nose-to-brain delivery of biotherapeutics using different nanocarrier systems, such as lipid-based nanocarriers, nanoemulsions, polymeric nanoparticles (NPs), and extracellular vesicles. Surface modification methodologies to improve the mucoadhesive capability, cellular interaction, and site-specific delivery are discussed. Translational hurdles to clinical application and major obstacles like enzymatic degradation, mucociliary clearance, small surface area of the nasal cavity, or limited dosing volume are discussed. This review also discusses the growing interest in using artificial intelligence (AI) and machine learning (ML) to design, optimize, and personalize intranasal nanocarrier systems. Through predictive modeling, formulation optimization, patient stratification, and pharmacokinetic simulations, AI paves the way toward a new era of precise and personalized neurotherapeutics. This review aims to bridge the interdisciplinary gaps between nanomedicine, neuropharmacology, and computational intelligence, offering insights for both fundamental research and clinical translation. Future directions, including smart nanocarriers, AI-guided therapy customization, and regulatory considerations, are also addressed.

Link:
https://www.scopus.com/pages/publications/105031481586

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Intelligent Number Plate Recognition System Using Deep Learning and Real-Time Web Interface

AUTHOR :

Lad V.; Wagh A.; Shewale V.; Poojary P.

JOURNAL NAME:

2025 International Conference on Intelligent and Secure Engineering Solutions, CISES 2025

DETAILS:

Published on August 2025

ABSTRACT:

This study introduces an end-to-end Automatic Number Plate Recognition (ANPR) system which combines a full-stack web application for real-time vehicle identification alongside deep learning for image processing. The proposed model uses WPOD-NET to locate license plates in a variety of lighting and angle parameters. Character segmentation is done on the detected plate using contour-based methods. Custom Convolutional Neural Networks (CNNs) that have been trained to recognize letters and numbers are used to help with classification. Python is used to create the deep learning pipeline, which is integrated with web frameworks. MySQL is used to store user data and license plates, Node.js is used for the backend server, and React.js is used for the frontend. The system facilitates dynamic workflows in which, upon successful license plate detection, the number is loaded into the database, if the license plate exists, the user information is displayed on the front end, otherwise, a registration form is triggered. Real-time plate recognition, data retrieval, and responsive user interface have been turned achievable by this design. Results show high accuracy in both detection and recognition of license plate.

Link: https://doi.org/10.1109/CISES66934.2025.11264935

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Adaptive Intrusion Detection Using Prototypical Networks and Statistical Outlier Detection

AUTHOR :

Kinger S.; Rupa D.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

In recent years, network security has become an increasingly critical concern due to the rapid emergence of new and sophisticated cyberattacks. Traditional Intrusion Detection Systems (IDS), which rely heavily on large-scale labeled datasets and predefined attack signatures, often fail to detect novel or zero-day attacks. This highlights the need for a more adaptive and intelligent detection approach that goes beyond conventional classification. To mitigate these issues, we propose an enhanced IDS framework that integrates Prototypical Network-based Meta-learning with Mahalanobis Distance-based Outlier Detection. Unlike traditional IDS models, our approach uniquely combines episodic meta-learning with statistical outlier detection, enabling accurate classification with minimal labeled data and robust detection of previously unseen attacks. The proposed system employs episodic training within a few-shot learning paradigm to classify known attacks—achieving 83.96 % classification accuracy under a 5-way 5-shot setting, with over 90 % accuracy in 3-way 10 -shot scenarios—and simultaneously uses Mahalanobis distance with a 99.9% chi-square threshold to flag anomalous traffic that deviates from learned class distributions. In zero-day evaluation, the model identified 100 % of 206,344 previously unseen attack samples without generating false positives. This hybrid model not only ensures high accuracy for known threats but also provides strong generalization to detect and adapt to new attack patterns dynamically. As new attack types are discovered, their representations can be added to the prototypical network without retraining the entire model, allowing for efficient and continual adaptation. This makes our framework highly scalable and resilient in evolving cybersecurity landscapes.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11284066

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Elucidating the molecular targets in Alzheimer's disease: Advances and therapeutic implications

AUTHOR :

Soni U.; Pujari R.

JOURNAL NAME:

Progress in Neuro-Psychopharmacology and Biological Psychiatry (Vol.-146)

DETAILS:

Published on March 2026

ABSTRACT:

Alzheimer's disease (AD), the most prevalent form of dementia, is intrinsically linked to the biological processes of ageing, which serve as its greatest risk factor. As global life expectancy rises, age-associated neurodegenerative disorders like AD impose an escalating burden on public health systems and economies. Ageing is accompanied by a complex interplay of cellular and molecular alterations, including oxidative stress, mitochondrial dysfunction, impaired proteostasis, chronic neuroinflammation, and epigenetic drift, all of which converge to disrupt neuronal integrity and function. In AD, these ageing-related mechanisms accelerate pathological hallmarks such as amyloid-β plaque deposition, tau hyperphosphorylation, synaptic loss, and neurodegeneration. Recent advances in molecular neuroscience have unveiled a spectrum of novel targets involved in the pathogenesis of AD, ranging from secretases and tau kinases to microglial receptors and mitochondrial bioenergetic regulators. This review elucidates the therapeutic strategies aimed at modulating these targets, including the use of small-molecule inhibitors, monoclonal antibodies, gene therapies, and epigenetic modifiers. Additionally, the impact of blood-brain barrier integrity on neuronal energy metabolism and its correlation with AD pathology is examined. The findings underscore the importance of interdisciplinary approaches in AD research, highlighting future directions and challenges in developing effective treatments. By advancing our understanding of the molecular nexus of AD, this work aims to contribute to the ongoing efforts to mitigate the effects of this debilitating condition and improve patient outcomes.

Link: https://doi.org/10.1016/j.pnpbp.2026.111660

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

SMEs and Sustainability via Green Orientation: Fostering Resilience in Industry 5.0

AUTHOR :

Saha S.; Shrivastava U.

JOURNAL NAME:

Vulnerability and the Future of Small Business in Industry 5.0: New Perspectives on Research, Practice and Resilience

DETAILS:

Published on 2 January 2026

ABSTRACT:

This chapter investigates the pivotal role of small and medium enterprises (SMEs) in driving sustainability within the burgeoning Industry 5.0 paradigm. Recognizing their significance as economic pillars and major contributors to resource consumption, the chapter underscores the imperative for SMEs to adopt green practices for a resilient future. By exploring the concept of green orientation, the chapter elucidates how SMEs can enhance environmental, economic, and social sustainability by integrating environmental considerations into their core business strategies. It addresses the challenges SMEs face in implementing green practices, such as limited resources and knowledge gaps, while highlighting the opportunities presented by Industry 5.0. The chapter further examines the systemic benefits that can arise from collaborative networks of sustainable SMEs, leveraging emerging technologies to address industrial ecology, enterprise resilience, and global supply chain sustainability. It analyzes how technologies like the Internet of Things, Big Data analytics, and cloud computing can empower SMEs to overcome barriers and accelerate their green transformation. Moreover, the chapter explores the crucial role of policy measures in supporting SMEs' transition to sustainability, emphasizing the need for an enabling environment that addresses the complex interplay between economic, environmental, and social factors. Through a comprehensive review of empirical evidence and theoretical perspectives, the chapter provides a holistic understanding of the opportunities and challenges faced by SMEs in their pursuit of sustainability via green orientation. The insights presented will be invaluable for policymakers, business leaders, and academics seeking to foster the resilience of small businesses in the context of the rapidly evolving Industry 5.0 landscape. Finally, the chapter argues that by embracing green orientation as a core business value and harnessing the transformative potential of Industry 5.0, SMEs can enhance their competitiveness, contribute to a more sustainable future, and thrive in the face of evolving global challenges.

Link: https://doi.org/10.1007/978-3-031-98431-0_12

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Strategic AI Integration in Hybrid Workforce Management: Frameworks and Best Practices

AUTHOR :

Dharangutti Y.M.; Chaudhari M.; Rawat P.; Behare N.; Mahajan R.D.

JOURNAL NAME:

AI- Enabled Workforce Management for Hybrid Workplaces

DETAILS:

Published on January 2026

ABSTRACT:

The post-pandemic era's hybrid workforce culture is its defining trait and needs a strategic workforce management practice rebalancing. The section addresses shifting remote team management dynamics and examines AI (Artificial Intelligence) facilitating agility, inclusivity and data-driven decision-making in hybrid work arrangements. Based on a workforce expectation diagnosis, technological reliance and organizational redesign, it offers a nuanced understanding of the transformational role of AI. The section contributes to academic analysis by placing AI integration in the context of greater socio-technical change and highlighting its significance for future-proof resilience, collaboration and inclusive employee involvement.

Link: https://doi.org/10.4018/979-8-3373-5871-0.ch004

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

DNA Computing: A Sustainable Alternative for Solving NP Problems

AUTHOR :

Iyer H.; Patil D.R.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

Modern computers face limitations as Moore's law slows, with transistor scaling nearing physical limits: quantum effects, heat dissipation, and fabrication costs constrain performance. DNA computing offers an alternative, harnessing the massive parallelism and storage density of DNA to tackle graphtheoretic problems such as Hamiltonian paths, cliques, and vertex coloring. This review synthesizes DNA-based methods, using hybridization and enzymatic processes to solve NP-hard problems in polynomial biochemical steps. Although effective for small graphs ($n<20$), scalability, error rates ($\epsilon \approx 10-3$), and resource demands hinder a wider use. Future integration with nanotechnology may overcome these challenges, redefining computational boundaries beyond the constraints of silicon. This work hence compares DNA computers with conventional approaches and explores the sustainable nature of DNA computing.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11284287

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Targeting vascular endothelial growth factor and its receptors in non-small cell lung cancer for improved treatment strategies

AUTHOR :

Nanaware R.B.; Chabukswar A.R.; Waghmare P.S.; Jagdale S.C.

JOURNAL NAME:

Journal of Receptors and Signal Transduction

DETAILS:

Published on 12 March 2026

ABSTRACT:

Non-small cell lung cancer (NSCLC) is responsible for about 85% of all lung cancers and is a major contributor to cancer deaths worldwide. Angiogenesis, mainly mediated by vascular endothelial growth factor (VEGF) and its receptors (VEGFRs), is a key factor involved in the progression and metastasis of NSCLCs and the development of drug resistance. Anti-angiogenic therapy, for instance, with monoclonal antibodies like bevacizumab and ramucirumab, as well as multi-targeted tyrosine kinase inhibitors (TKIs) like nintedanib and anlotinib has been shown to improve the management of NSCLC. Despite the improvement in the management, patients develop resistance through mechanisms such as hypoxia signaling, alternative angiogenic factor activation, vascular structure remodeling, and a suppressive tumor microenvironment (TME). Recent studies have revealed the use of a combination of anti-angiogenic therapy and immune checkpoint blockade to normalize the tumor vasculature, thus enhancing treatment efficacy. Angiogenesis-associated biomarkers, despite extensive research, have not been seen to have a clinical impact in the management and treatment of NSCLC because of the heterogeneous characteristics and the dynamic regulation of the cascade. This review summarizes current VEGF/VEGFR-targeted therapies in NSCLC, mechanisms of resistance, and future directions toward biomarker-guided therapeutic optimization.

Link: https://doi.org/10.1080/10799893.2026.2639309

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Surfactant-modified carbon fiber–epoxy composites: Interfacial control of mechanical performance

AUTHOR :

Salunkhe A.B.; Ghadge R.R.; Kumar P.

JOURNAL NAME:

Journal of Composite Materials

DETAILS:

Published on 13 March 2026

ABSTRACT:

Interfacial load-transfer inefficiency between carbon fibers and epoxy matrices limits the mechanical reliability of carbon fiber–reinforced polymer composites. This study treats Triton X-100 surfactant concentration as a controlled interfacial design variable and evaluates its effect on the mechanical behavior of short carbon fiber–epoxy composites. Fibers were surface-modified at 1, 2, and 3 wt.% Triton X-100 and incorporated into compression-molded epoxy composites at ~40% fiber volume fraction. Tensile and compressive properties were measured per ASTM D3039 and D695; wettability, surfactant uptake, void fraction, and fracture morphology were characterized by contact angle goniometry, gravimetric analysis, Archimedes densitometry (ASTM D792), and scanning electron microscopy. The 1 wt.% composite exhibited tensile strength of 116.00 MPa (~40.3% above untreated: 82.67 MPa) and a comparable compressive strength gain, while elastic modulus remained constant at ~2.0 GPa across all conditions. Gravimetric analysis confirmed monolayer adsorption at 1 wt.% and excess deposition at 2 wt.%, consistent with the observed mechanical optimum. SEM revealed reduced fiber pull-out (64 ± 9 μm to 22 ± 4 μm) and suppressed debonding in the optimally treated composite. Controlled surfactant treatment provides a scalable, non-destructive route to enhance interfacial efficiency and mechanical performance in short carbon fiber–epoxy systems.

Link: https://doi.org/10.1177/00219983261432464

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

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

AUTHOR :

Matharu G.K.; Shah D.; Joshi A.; Kasar U.; Kale P.

JOURNAL NAME:

Lecture Notes in Networks and Systems (Vol.-1760 LNNS)

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://link.springer.com/chapter/10.1007/978-3-032-13544-5_7

Since 1983

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Earthquake Prediction: K-Nearest Neighbors vs Random Forest

AUTHOR :

Bhagwat G.; Mishra A.; Tiwari B.; Kokare A.

JOURNAL NAME:

2025 International Conference on Next Generation of Green Information and Emerging Technologies, GIET 2025

DETAILS:

Published on August 2025

ABSTRACT:

Forecasting earthquakes remains a daunting task due to the intricate and capricious characteristics of seismic occurrences. This paper explores the efficacy of ML algorithms in predicting earthquakes, focusing on two popular models: K-Nearest Neighbours (KNN), Random Forest. The primary objective is to identify the most appropriate algorithm for earthquake prediction based on a comparative analysis of their performance. Regression models are used to measure each algorithm's prediction power using important metrics including R-square score, Mean Squared Error (MSE), and Mean Absolute Error (MAE). These measurements offer understanding regarding the correctness, exactness, and dependability of the models in grasping the fundamental patterns within seismic data. The findings reveal that while earthquake prediction remains inherently challenging, Random Forest shows superior performance compared to KNN showcasing its power to righty capture the intricate interaction within the seismic data and make accurate predictions.

Link: https://doi.org/10.1109/GIET65294.2025.11234846

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Semantic Segmentation Using Open3D for LiDAR-Camera Based Scene Understanding

AUTHOR :

Vagga A.; Dixit B.

JOURNAL NAME:

2025 IEEE 5th International Conference on ICT in Business Industry and Government, ICTBIG 2025

DETAILS:

Published on December 2025

ABSTRACT:

Semantic segmentation plays a key role for real-time scene understanding in autonomous vehicles or self-driving cars, especially when navigating complex or adverse environments. This paper presents a holistic approach to semantic segmentation of urban driving scenes using camera and LiDAR data, with a focus on sensor fusion and deep learning techniques. The research utilizes the Audi A2D2, Waymo, nuScence, Kitti, Dense, A*3D dataset and Open3D for point cloud visualization and processing. We also present a detailed methodology for data preprocessing, model implementation, visualization, and accuracy evaluation using Jaccard Index, Intersection over Union (IoU) or and Dice Coefficient. Our experiments show that LiDAR and camera data fusion significantly improves segmentation accuracy in diverse driving conditions.

Link: https://doi.org/10.1109/ICTBIG68706.2025.11323638

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

AI Powered Text to Video Generation

AUTHOR :

Dere A.; Dixit B.

JOURNAL NAME:

Lecture Notes in Networks and Systems (Vol.- 1748 LNNS)

DETAILS:

Published on 21 January 2026

ABSTRACT:

The world of AI is has gone through tremendous advancements in over last decade. AI journey started from Algorithmic Intelligence and Linguistic Intelligence, and is moving towards Imaginative intelligence. This generative AI's historical journey is focused on generating realistic texts and images through the means of early models like autoencoders and variational autoencoders (VAEs). From creating simple and coherent images from basic textual descriptions using Generative Adversarial Networks (GANs) and models like DALL-E in text to image generation, the AI leaped towards generating coherent frames which aligned for improving video quality, length, and the ability to generate more complex scenes in video with natural transitions in the field of text to video generation. The T2V models made use of models such as diffusion model, transformer model and the latest and the best one which is diffusion transformer model (DiT model). This paper basically gives us the overview of text to image and text to video generation models and their advancement in the field of generative AI.

Link: https://doi.org/10.1007/978-3-032-12990-1_31

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Transforming Precision Agriculture through Deep Learning: CNN Encoder-Decoders and a Hybrid YOLOv8-SAM Solution for Advanced Grape Cluster Segmentation

AUTHOR :

Gyale S.; Singh U.; Tekavade Y.; Jadhav P.

JOURNAL NAME:

2025 International Conference on Sustainable Technologies for Humanity and Smart World, HSWTech 2025

DETAILS:

Published on September 2025

ABSTRACT:

Accurate grape cluster segmentation is crucial for developing automated vineyard harvesting systems and precision agriculture applications. This paper presents a novel hybrid approach combining YOLOv8 object detection with Meta's Segment Anything Model (SAM) for multi-cluster grape segmentation, alongside comprehensive evaluation of CNN encoder-decoder architectures for single-cluster scenarios. Using the GrapesNet dataset containing over 11,000 diverse vineyard images, we trained and evaluated various segmentation models including U-Net variants with pre-trained encoders, SegNet architectures, and fully convolutional networks (FCNs). The MobileNetV2-UNet achieved superior single-cluster segmentation with mIoU of 0.906 and Dice coefficient of 0.984, demonstrating computational efficiency suitable for resource-constrained agricultural environments. For multi-cluster scenarios involving overlapping grape clusters, our hybrid YOLOv8-SAM approach demonstrated exceptional performance with mIoU of 0.943 and Dice coefficient of 0.970, significantly outperforming traditional CNN-based methods by 4.1% in IoU scores. The hybrid methodology addresses key challenges in agricultural computer vision including variable lighting conditions, cluster occlusion, and complex vineyard backgrounds. Comprehensive ablation studies validate the contribution of each component, while computational analysis demonstrates practical deployment feasibility. The primary contribution lies in demonstrating that foundation models like SAM, when combined with robust object detection, can effectively handle complex agricultural scenes with overlapping grape clusters, advancing automated harvesting and real-time yield estimation technologies for precision viticulture applications.

Link:
https://doi.org/10.1109/HSWTech64936.2025.11278142

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Thermal Failure Mitigation in Two Wheeler EV MCU Discharge MOSFETs: A Control-Oriented Strategy with Real-World Validation

AUTHOR :

Deshmukh S.; Lokhande N.; Yeolekar S.

JOURNAL NAME:

2025 3rd International Conference on Industry 4.0 Technology, I4Tech 2025

DETAILS:

Published on September 2025

ABSTRACT:

In electric two-wheelers, ensuring the thermal reliability of Motor Control Units (MCUs) is critical, especially under high-load conditions. The MCU regulates power transfer from the battery to the motor through discharge MOSFETs, which are vulnerable to thermal stress during motor stall events. One such real-world failure was observed during a gradient test on a 16° incline—exceeding the vehicle's rated 13° gradability—where 100% throttle input was applied from rest. Due to inadequate torque, the motor stalled, resulting in continuous current (~60 A) conduction through the discharge MOSFETs despite no rotor motion. The absence of back electromotive force (EMF) and sustained I2R losses led to a rapid rise in junction temperature, culminating in thermal failure and vehicle immobilization. Using field data logs capturing throttle input, current, temperature, and motor response, the failure sequence was reconstructed and used to develop a detailed MATLAB/Simulink model of the drivetrain, power electronics, and thermal system. To mitigate such failures, a Stall-Aware Current Limiting (SACL) strategy was designed. It includes stall detection logic based on wheel speed and torque-current mismatch, a timing mechanism to avoid false triggers, and exponential current derating to suppress thermal accumulation. A thermal override threshold at 85°C was implemented to clamp current aggressively and allow cooldown under worst-case conditions. Simulation results demonstrated strong correlation with real failure data and, more importantly, validation against post-fix field data confirmed a 30% reduction in thermal rise and complete prevention of MOSFET burnout. The proposed strategy requires no additional hardware and is suitable for integration into existing MCU firmware, making it ideal for constrained EV platforms. This work bridges real-world diagnostics and control-based fault mitigation, offering a scalable solution to enhance power stage durability in compact electric vehicles.

Link: https://doi.org/10.1109/I4Tech64670.2025.11277483

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Investigating the role of rare earth ion as dopant and Co-dopant in Cuo NPs for high frequency applications

AUTHOR :

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

JOURNAL NAME:

Journal of Materials Science: Materials in Electronics (Vol.-37, Issue-6)

DETAILS:

Published on 26 February 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/s10854-026-16685-3

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

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

AUTHOR :

Patil S.J.; Biradi B.; Baviskar P.; Joshi S.; Patil M.

JOURNAL NAME:

Lecture Notes in Networks and Systems (1829 LNNS)

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:

Examining AI-Driven Success Factors in Cloud Marketplaces and Their Impact on Cloud Adoption by Business Organisations

AUTHOR :

Tamboli A.M.; Saha S.
.

JOURNAL NAME:

2025 International Conference on Sustainable Technologies for Humanity and Smart World, HSWTech 2025

DETAILS:

Published on September 2025

ABSTRACT:

Cloud computing is increasingly pivotal for digital transformation and businesses are adopting to Cloud computing by transitioning from on-premises IT infrastructure to cloud-based ecosystems. Cloud marketplaces (CMP) play a critical role in accelerating digital transformation. Using a mixed-method approach, including expert interviews, a literature review, and statistical analysis, the research highlights how CMPs enhance cost efficiency, automation, and reseller customization. This study contributes to the evolving discourse on CMPs by providing data-driven insights into Cloud services procurement and service delivery. The outcome of the study provides actionable insights for Cloud Service Providers (CSPs), Channel Partners (CPs), and enterprises including Micro, Small and Medium Enterprises (MSMEs), enabling them to refine marketplace strategies, drive adoption, and maintain a competitive edge in an evolving digital economy. The findings will inform strategies for improving CMPs, with a specific focus on AI-driven management decisions, AI-driven pricing models, White labelled CMP, technological agnosticism and capability of CMP to manage workload optimization tools, and the role of CP in enhancing customer experience.

Link:
https://doi.org/10.1109/HSWTech64936.2025.11278138

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Evolution of Transformers in Speech Recognition

AUTHOR :

Adamjee S.; Kinger S.; Bobde S.; Patil J.; Singh H.

JOURNAL NAME:

2025 5th Asian Conference on Innovation in Technology, ASIANCON 2025

DETAILS:

Published on August 2025

ABSTRACT:

By outperforming conventional Recurrent Neural Networks (RNNs) and Convolutional Neural Networks (CNNs) in terms of accuracy and efficiency, Transformer-based architectures have completely transformed Automatic Speech Recognition (ASR). Standard Transformer models, however, suffer from latency problems, memory limitations, and computational bottlenecks. The Conformer, Transformer-XL, Transformer Transducer (T-T), Multi-Channel Transformers, and Diagonal State Space (DSS) Augmented Transformers are some of the major architectural advancements in transformer-based ASR that are examined in this paper. This paper examines how these changes solve ASR issues while improving performance, scalability, and efficiency, and making real-time ASR more feasible. This paper also outlines future research directions in low-latency, energy-efficient ASR models and discusses open problems in hardware optimization, multimodal ASR, and self-supervised learning.

Link:
https://doi.org/10.1109/ASIANCON66527.2025.11281193

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Data-Driven Optimization of Green Logistics and Circular Supply Chain Practices

AUTHOR :

Kakade K.; Sharma N.; Brahmane J.; Shinde S.; Kale S.; Kediya S.

JOURNAL NAME:

2025 International Conference on Sustainable Technologies for Humanity and Smart World, HSWTech 2025

DETAILS:

Published on September 2025

ABSTRACT:

The increasing need of sustainability within logistic and supply chain management across the globe contributes to research on green logistics and rotating supply chain approaches. The strategies aim to minimise environmental impact and also maximise resource use. Forecasting analytics, real-time data, and optimisation tools allow businesses to make informed decisions regarding shipping routes, inventory management, packaging, and waste minimisation. The combination of big data analytics and sensors and Internet of things (IoT) devices has revolutionized the management and monitoring of logistics operations. These technologies allow one to continually obtain and analyze information. This assists us to know how long the supply chain is expected to stay and how efficient the transportation system is. Machine learning models such as regression analysis, classification algorithms and optimisation techniques are used to predict demand, identify optimal delivery routes and minimise fuel consumption, all of which minimise the carbon footprint of the transportation activity. Circular supply chains also improve data-driven approaches, aiming to minimize waste through return, reuse, and re-creation of the objects.

Link:

https://doi.org/10.1109/HSWTech64936.2025.11278147

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Green energy storage: Bridging sustainability and smart industries

AUTHOR :

Mirajkar R.; Shinde G.; Rathi S.; Meshram V.; Chandre P.; Chavhan P.

JOURNAL NAME:

Transforming Industries, Empowering Societies: A Comprehensive Examination of Industry 5.0 and Society 5.0

DETAILS:

Published on January 2026

ABSTRACT:

The intensifying move toward sustainable development has placed green energy storage technologies at the center of industrial and social transformation. As the globe is moving toward cleaner energy sources, effective energy storage systems have emerged as key players in guaranteeing energy reliability and maximizing resource use. This chapter examines the central role of green energy storage in harmonizing the objectives of Industry 5.0 and Society 5.0—frameworks that prioritize sustainable, smart, and human-oriented advancement. Industry 5.0 advocates for smart manufacturing systems that are robust and eco-friendly, whereas Society 5.0 visualizes a smart society where renewable energy is smoothly blended into daily life. With its emphasis on technological developments and applications of battery energy storage systems, this chapter closes the gap between sustainability objectives and intelligent industrial practice. It showcases how new energy storage technologies are facilitators of clean energy adoption, digitalization, and achieving a more sustainable and intelligent future.

Link: https://doi.org/10.1016/B978-0-443-32878-7.00007-9

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Efficient transformer architecture for sarcasm detection: a study on compression and performance

AUTHOR :

Dubey P.; Mishra A.; Singh A.; Murtuza; Chanchlani A.; Dubey P.

JOURNAL NAME:

Bulletin of Electrical Engineering and Informatics (Vol.-15, Issue-1)

DETAILS:

Published on February 2026

ABSTRACT:

This sarcasm detection is a crucial subtask in natural language processing (NLP) particularly for sentiment analysis and conversational AI. Its complexity lies in interpreting context, tone, and intent beyond literal meanings. Traditional models often struggle to capture such nuances, especially in informal and diverse language settings. Moreover, existing approaches lack computational efficiency and fail to adapt well across different domains. This study evaluates three benchmark datasets—News Headlines, Mustard, and Reddit (SARC)—representing structured, scripted, and conversational sarcasm, respectively. Each dataset poses unique linguistic and contextual challenges. The proposed methodology integrates transformer-based models (RoBERTa and DistilBERT) with context summarization using BART and metadata embedding. A comparative analysis is conducted on both linguistic accuracy and computational efficiency. The novelty lies in aligning sarcasm detection performance with architectural optimization for real-time deployment. Evaluation is conducted using accuracy, F1-score, Jaccard coefficient, precision, and recall. Results show that RoBERTa delivers peak performance, while DistilBERT achieves a 1.74× speedup with competitive results, making it suitable for scalable and efficient sarcasm detection.

Link: https://doi.org/10.11591/eei.v15i1.11102

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

An Intelligent Audio Recognition Model for Gunshot and Forest Animal Sound Classification

AUTHOR :

John M.P.; Borhade A.S.; Sunam S.; Vijayan S.; Rodrigues C.M.; Sonawani S.

JOURNAL NAME:

2025 IEEE 5th International Conference on ICT in Business Industry and Government, ICTBIG 2025

DETAILS:

Published on December 2025

ABSTRACT:

Autonomous environmental monitoring systems commonly face the issue of scaling unsuccessfully because seldom available audio datasets are diverse and well-annotated. To provide for this issue, this work presents an amalgamated deep learning framework with the dual-functionality of sound classification - detecting both gunshot occurrences and forest animal species - out of audio inputs. The method under consideration integrates transfer learning with the VGG16 model with an SVM classifier that acts on Mel-spectrogram features of sound signals. This approach makes it feasible for the model to attain the maximum metric with just a fairly modest domain-specific dataset, at the same time minimizing computational burdens in comparison with training directly. The system adheres to a consolidated pipeline that initially identifies gunshots and subsequently identifies animal noises with the output of the latter serving to give the former the necessary emphasis. The resulting package provides an effective, scale-successful, and resource- efficient solution for the purpose of real-time acoustic surveil- lance. The suggested framework shows robust performance and potential applications in the field of biodiversity studies, poaching surveillance systems, and ecological safeguard mechanisms.

Link: https://doi.org/10.1109/ICTBIG68706.2025.11323656

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Auto-Scaling of Cloud Applications Using Machine Learning

AUTHOR :

Srivastava D.; Mehta D.; Tiwari P.K.; Gandhi V.C.
.

JOURNAL NAME:

2025 International Conference on Next Generation of Green Information and Emerging Technologies, GIET 2025

DETAILS:

Published on August 2025

ABSTRACT:

This research work presents a machine learning (ML) based approach for auto-scaling in cloud computing environments, utilizing both k-Nearest Neighbors (KNN) and Neural Networks (NN). Proposed approach aims to optimize resource allocation dynamically in response to fluctuating demand, ensuring efficient utilization while minimizing costs. In this research work the auto-scaling of cloud computing is explored by implementing the machine learning algorithm like k-Nearest Neighbors (KNN) and Neural Networks (NN). Proposed approach is implementation of optimization of resource allocation in execution mode to fulfil the demand ensuring the efficient utilization at minimum cost. The integrated forecasts derived from the dual models are employed to dynamically regulate the allocation of resources (CPU, memory, storage) in real-time. The proposed mechanism is structured to function in two distinct modes, a proactive mode that predicts forthcoming requirements leveraging past data and a responsive mode that promptly assigns resources when faced with abrupt spikes in demand. To validate proposed strategy via extensive simulations and real-world case studies, demonstrating that our ML-driven auto-scaling strategy outper-forms traditional threshold-based strategies in phrases of cost affectivity and aid utilization. In addition, the work is an evaluation of the device's typical performance underneath diverse workloads and configurations, highlighting its adaptability and scalability.

Link: https://doi.org/10.1109/GIET65294.2025.11234879

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Responsible Tourism in India: In Conversations with Jayesh Paranjape, Founder, Western Routes

AUTHOR :

Saha S.; Joshi S.

JOURNAL NAME:

Sustainable Tourism: Entrepreneurial Cases and Narratives (Volume 3)

DETAILS:

Published on November 2025

ABSTRACT:

Sustainable Tourism: Entrepreneurial Cases and Narratives offers a powerful look into the experiences of entrepreneurs at the forefront of sustainable tourism. Through an engaging collection of case studies, the book highlights innovative business models that are transforming tourism in rural and urban settings alike. Readers will explore how tourism entrepreneurs are addressing environmental challenges, promoting local economies, and creating sustainable livelihoods in diverse regions around the world. It brings to life the stories of entrepreneurs who are shaping the future of tourism through innovative and sustainable practices. This book explores diverse case studies that showcase the challenges and triumphs of building tourism ventures rooted in environmental stewardship and community development. From rural entrepreneurship to cutting-edge tourism models, these narratives offer practical insights for those seeking to drive change while preserving cultural and natural resources. With a special focus on rural entrepreneurship and sustainable tourism innovations, this book presents a wealth of knowledge for anyone interested in the intersection of tourism, sustainability, and entrepreneurship. Through compelling narratives, it provides actionable insights into building successful, responsible tourism ventures that benefit both people and the planet.

Link: https://doi.org/10.1108/978-1-83708-058-820251009

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Enhancing IoT Device Security Using Zeroknowledge Proofs: A Privacy-Preserving Authentication Approach

AUTHOR :

Kothawade R.C.; Mourya A.; Musale V.; Kumbhar S.; Amune A.; Rao M.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

The exponential growth of IoT devices has created unprecedented security challenges, particularly in device authentication where traditional methods expose sensitive credentials and lack scalability. This paper presents a comprehensive authentication framework integrating ZeroKnowledge Proofs (ZKPs) with Physical Unclonable Functions (PUFs) to achieve privacy preserving device authentication. Our framework employs zk- SNARKs for efficient proof generation and verification while leveraging PUF-derived hardware-rooted identities for unclonable device fingerprints. Experimental evaluation demonstrates 20 % energy reduction compared to RSA-2048, 19ms verification time, and 100% success rate across varying environmental conditions. The framework supports over 10,000 devices per verifier node while maintaining strong security against replay attacks, device impersonation, and physical tampering.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11283660

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Photocatalytic CO2 Reduction on Phthalocyanine Platform

AUTHOR :

Ketkar R.N.; Pisal A.; Sadhukhan N.

JOURNAL NAME:

Chemistry - An Asian Journal (Vol.-21, Issue-5)

DETAILS:

Published on 11 March 2026

ABSTRACT:

Inspired by natural photosynthesis, researchers are currently focused on light as a renewable energy source for designing Z-schemes for CO2 valorization. Porphyrin present in the chlorophyll plays a crucial role in natural light harvesting during photosynthesis for CO2 fixation. An analogue of porphyrin, Metallo phthalocyanine was utilized to fabricate a Z-scheme for CO2 reduction. Metallo phthalocyanines acted as a promising photocatalyst and an efficient photosensitizer owing to their absorption in the NIR-I region, ability to generate ROS upon light illumination, and easy property modulation by changing the central metal atom or peripheral/nonperipheral substitution with electron donor or acceptor groups. In the research of CO2 valorization, an application of phthalocyanines as a photocatalyst or a photosensitizer to create a heterojunction integrating with a suitable semiconductor is continuously rising. Primarily, phthalocyanine-based heterojunctions were designed based on metal oxides, C3N4, GO semiconductors or COFs typically suitable for CO2 to CO transformation. However, a fewer approach for CO2 reduction to make a variety of value-added products such as CH4, CH3OH, HCOOH, C2H5OH, and CH3COOH was also reported. In this article, the role of phthalocyanine, both as a photocatalyst and a photosensitizer, in the designing of an efficient Z-scheme for CO2 valorization were critically reviewed.

Link:

https://doi.org/10.1002/asia.70679

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Novel Two-Stage GNN Approach For VLSI Floorplanning With ISPD-Inflated Data

AUTHOR :

Vaidya H.H.; Deshmukh V.

JOURNAL NAME:

2025 5th Asian Conference on Innovation in Technology, ASIANCON 2025

DETAILS:

Published on August 2025

ABSTRACT:

Physical design Floorplanning is a critical phase in VLSI, where joint optimization of design objectives such as Half-Perimeter Wirelength (HPWL), aspect ratio, displacement, and overflow is taken care of. This paper presents optimization of a critical phase of physical design of VLSI floorplanning, using key metrices such as Loss, Half-Perimeter Wire Length (HPWL), Aspect ratio, Displacement and Overflow using Two - stage Graph Neural Network (GNN) Model. In this approach the model learns placement trends directly by analyzing ISPD 2005 Aptec1 Inflated benchmark dataset. The results from Stage 1 and Stage 2 are evaluated to highlight the performance and convergence of the algorithm. The discussion on current limitations such as congestion handling and outline future integration paths with legalization and detailed placement tools is also mentioned.

Link:
https://doi.org/10.1109/ASIANCON66527.2025.11281078

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Comparison of Deep Learning Models with and without Image Annotations on Dragon Fruit

AUTHOR :

Kosamkar P.; Bachchan S.; Arora S.

JOURNAL NAME:

2025 IEEE International Conference on Electronics, Computing and Communication Technologies, CONECCT 2025

DETAILS:

Published on July 2025

ABSTRACT:

To explore and study the integration of deep learning algorithms with image annotation and without image annotation into the field of farming, we have used three deep learning algorithms - VGG16, ResNet50 and YOLOv5.VGG16 is applied on unannotated images while YOLOv5 is applied on annotated images. ResNet50 is applied on both annotated and unannotated images to compare how the performance of the model changes when annotations are added to the images. For this purpose, we have taken the dataset from Roboflow consisting of 3461 dragon fruit images. We extracted an unannotated dragon fruit image dataset from Roboflow platform and added annotations to it. Among the deep learning models on annotated images, ResNet50 obtained the highest accuracy of 97.30% while YOLOv5 achieved an accuracy of 95.40%. On the other hand on unannotated images VGG 16 obtained the highest accuracy of 91.10% leaving behind ResNet50 with the accuracy of 63.13%. Deep learning algorithms with image annotation and without image annotation into the field of farming experiment only done for dragon fruit images. In agriculture domain image annotation is used for various tasks like crop detection, crop health monitoring, and livestock management etc. Image annotation is the image labeling technique. This technique is more specific to recognize the different objects to machines using artificial Intelligence algorithms. Computer vision based AI systems are trained with annotated images which help the agriculture field be more productive and proficient in various tasks.

Link:
https://doi.org/10.1109/CONECCT65861.2025.11306817

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Simulation-Based Study of Advanced Battery Thermal Management for Enhanced Performance, Durability, and Grid Integration

AUTHOR :

Deshmukh S.; Lokhande N.; Yeolekar S.

JOURNAL NAME:

2025 3rd International Conference on Industry 4.0 Technology, I4Tech 2025

DETAILS:

Published on Seprtmber 2025

ABSTRACT:

Effective thermal regulation is a critical enabler for enhancing the performance, safety, and longevity of battery-based energy storage systems, particularly in electric vehicles (EVs), renewable energy grids, and hybrid power networks. This study presents a simulation-based investigation into an advanced Battery Thermal Management System (BTMS) designed to optimize temperature control, power flow, and grid interaction under dynamic operating conditions. The system is modelled using MATLAB/Simulink and integrates key modules for power regulation, State-of-Charge (SOC) control, photovoltaic (PV) energy supplementation, and dynamic thermal response. The proposed BTMS architecture is evaluated under variable load and irradiance profiles to simulate real-world operating scenarios. Results indicate that the thermal control mechanisms maintain cell temperatures within an optimal range of 30°C-40°C under peak load conditions, preventing thermal runaway. SOC fluctuation is limited to ±5%, ensuring consistent charge-discharge behavior and cycle efficiency. Additionally, grid-connected operation demonstrates improved real and reactive power stability, with PV integration reducing grid dependency by up to 22% during high irradiance periods. This research contributes a novel perspective by combining renewable energy forecasting with thermal stress mitigation strategies in a unified control architecture. The findings emphasize the importance of predictive thermal management and hybrid energy coordination in future-ready battery systems, supporting both energy sustainability and operational reliability in distributed smart grids.

Link: https://doi.org/10.1109/I4Tech64670.2025.11277831

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Fundamentals of metal oxide: Doping mechanism and strategies

AUTHOR :

Koli P.B.; Ahire S.A.; Adole V.A.; Shinde S.G.; Ingale R.S.; Kadam V.V.

JOURNAL NAME:

Doping of Metal Oxides: From Fundamentals to Applications

DETAILS:

Published on January 2026

ABSTRACT:

The present chapter deals with the general introduction of metal oxides, and the various inherent chemical and physical properties of various metal oxides are explored in the present literature. This chapter also elaborates the various basic types of metal oxides based on nature and composition. The main categories and useful categorization of metal oxides are elaborated herewith. The foremost applications of metal oxides in various fields of science, engineering, and technology are explored. Most importantly, the two basic doping strategies such as in situ and ex situ methods and mechanism are also discussed and presented in detail. The various doping strategies and materials that are used as a dopant and effects of dopants through transition metal oxides and inner transition metal oxides have been summarized in this chapter. In addition, the forthcoming challenges and most important applications such as flexible nanocomposite materials, Wearable sensors, Air quality index and water quality index, Mussel-Inspired chemistry, Hydrogen Fuel, and Biodiesel production, organic conversions are explored herewith. The content explored over this chapter will be useful to explore the basic and fundamental characteristics and applications of metal oxides.

Link: https://doi.org/10.1016/B978-0-443-29271-2.00009-X

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Image Compression Using Deep Learning and SLIC Algorithm with Extended Survey and Comparative Analysis

AUTHOR :

Surana P.; Talele H.; Vispute S.; Talele P.; Jadhav A.; Khade Y.; Salve V.; Walzade A.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

This paper proposal a new content-aware image compression method that improves the efficiency and quality of compression. Our method combines the most current machine learning algorithms and traditional compression to get the best efficacy. We present two models (Improved Importance Net and Lightweight Importance Net) used to employ adaptive content-aware encoding. The algorithm is first run on the image to analyse content in the image, from here the algorithm can modify parameters to find the best trade-off between image quality and file size. Both models help achieve better compression outcomes, however, the final implementation used the Lightweight Importance Net to minimize compute costs and accelerate processing without sacrificing visual quality. We also outlined some recent research in terms of content-aware compression of images, including content-aware compression with convolutional neural networks and attention based systems. Additionally, we compared our model against segmentation based techniques such as SLIC (Simple Linear Iterative Clustering) to evaluate the performance of our model. SLIC method is useful for breaking down images into superpixels which allows for region-area compression related to the superpixels, however, it does not learn and adapt on its own in the same way that our model does, especially in complex and textural scenes. We demonstrated through further experimentation that our algorithm consistently outperformed traditional compression algorithms not just in terms of compression ratio, but also perceptually the image quality.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11283724

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

From Brainwaves to Emotions: A Weighted Feature Fusion Approach to EEG-Based Affective Computing

AUTHOR :

Gaur Y.; Chunawale A.

JOURNAL NAME:

2025 International Conference on Sustainable Technologies for Humanity and Smart World, HSWTech 2025

DETAILS:

Published on September 2025

ABSTRACT:

The use of EEG signals for identifying human emotions has become increasingly popular, especially for applications in emotion-aware computing, psychological health evaluation, and interactive technology systems. Our research outlines a unique framework for recognizing emotions, relying on EEG recordings obtained via the Emotiv headset. The proposed method involves comprehensive extraction of features from time, frequency, and time–frequency domain representations of EEG signals, each capturing distinct temporal and spectral characteristics associated with emotional states. To effectively combine these heterogeneous features, a weighted fusion strategy is employed, where the fusion weights are systematically optimized using grid search to maximize classification performance. The fused feature vector is then input to various machine learning classifiers to predict emotional categories. XG Boost gave the highest accuracy of 84.68%. Experimental results on the self-curated EEG dataset demonstrate the viability and adaptability of our approach, offering promising results for emotion-aware applications based on low-cost EEG acquisition systems.

Link:
https://doi.org/10.1109/HSWTech64936.2025.11278144

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

A Vision-Based Real-Time Hand Gesture Controlled System for Human Computer Interaction

AUTHOR :

Musale V.; Wani P.; Parchure A.; Chaudhare S.; Jadhav A.; Amune A.

JOURNAL NAME:

2025 IEEE 5th International Conference on ICT in Business Industry and Government, ICTBIG 2025

DETAILS:

Published on December 2025

ABSTRACT:

Human-machine interaction (HMI) is increasingly moving towards natural user interfaces that allow for intuitive control of digital devices. However, the widespread adoption of gesture-based systems is often hindered by the limitations of traditional input methods and the shortcomings of existing gesture recognition technologies. Many solutions struggle with accuracy, require expensive specialized hardware, or lack the functional depth to serve as a true replacement for a keyboard and mouse. This paper presents a robust, Python-based "Hand Gesture Controlled Computer System" designed to bridge this gap. Our framework provides a comprehensive solution for hands-free computer control by integrating multiple modalities. The methodology leverages the Mediapipe framework to infer 21 high-fidelity 3D hand landmarks from a standard webcam feed, enabling precise gesture detection. These gestures are then classified using machine learning algorithms to perform a wide range of tasks. Our system's novelty lies in its ability to contextually switch between system-specific commands (e.g., launching applications) and application-specific commands (e.g., formatting text in a document). Furthermore, it integrates a virtual mouse with advanced features and a speech-to-text engine for hands-free typing. This multi-modal approach, combining gesture recognition and voice commands, creates an accessible, efficient, and powerful alternative to traditional HCI. The proposed system demonstrates the feasibility of a complete, low-cost replacement for keyboard and mouse, enhancing user experience and accessibility, particularly for users with physical disabilities. We present a system architecture, methodology, and a parameter-based analysis of our results, which validate the system's effectiveness and real-time performance.

Link: https://doi.org/10.1109/ICTBIG68706.2025.11323832

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

AI, Machine Learning, and Deep Learning in Indian Healthcare: Intellectual Property Trends and Insights (2010–2025)

AUTHOR :

Keer K.; Bokhare A.

JOURNAL NAME:

Journal of Intellectual Property Rights (Vol.-31, Issue-2)

DETAILS:

Published on 23 February 2026

ABSTRACT:

The research offers data-driven insights into the intellectual property landscape of AI-powered healthcare innovation in India between 2010 and 2025, with a focus on advancements employing artificial intelligence (AI), machine learning (ML), and deep learning (DL). The analysis uses curated data from Scopus to investigate trends in patent filings, identify leading applications and inventors, and highlight recent technology sectors such as medical imaging, diagnostics, and predictive analytics. This research provides actionable insights into the structure of AI-healthcare innovation in India and offers a foundation for policymakers, investors, and researchers to navigate the evolving intellectual property landscape.

Link:
https://www.scopus.com/pages/publications/105031605935

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Rural–urban digital divide in India: a decomposition analysis

AUTHOR :

Biradar J.; Deo S.; Kaur S.

JOURNAL NAME:

Journal of Social and Economic Development

DETAILS:

Published on 27 February 2026

ABSTRACT:

Digital skills are an essential component influencing the development of individuals, and the ability to utilize information and communication technology has been the need of the hour in this digital era. The widening digital gap has been highlighted in the literature. However, it mainly relates to basic digital skills acquired by the individuals. Hence, the present goes beyond it and captures intermediate and advanced digital skills with the help of the unit-level data of the National Sample Survey 78th round (2020–21). The authors assess the level of readiness of the Indian youth and adults with respect to the digital skills acquired by them. Though past literature emphasizes the Indian rural–urban digital divide, the current study sheds light on the factors that have been significantly causing this divide with the help of Fairlie's decomposition analysis technique. The findings demonstrate a significant association between the place of habitation and digital skills in India. The digital skills have been significantly pro-urban as acquiring those in rural areas has been a challenge due to a lack of education and poor infrastructural availability, like internet connectivity (especially broadband service) and mobile phones. The other factors determining the capability to develop digital skills were gender, age, and social group. Hence, the policy implications that follow from the study are improving access to education and broadband/wireless services to effectively reduce the rural–urban digital disparities. These initiatives will complement the efforts made by the Indian government in achieving the SDGs, viz. quality education (SDG 4); gender equality (SDG 5); and reduced inequalities (SDG 10).

Link: https://doi.org/10.1007/s40847-026-00500-0

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Machine Learning Approaches to Predictive Risk Management in Digital Ecosystems

AUTHOR :

Kanwer B.; Shah J.A.; Sontakke K.; Pardeshi S.M.; Pathak A.; Shavkatov N.

JOURNAL NAME:

Resilient Privacy-Preserving Mechanisms for Digital Identity Management

DETAILS:

Published on February 2026

ABSTRACT:

Digital ecosystems are becoming more and more governed by continuous connectivity, high data velocity and tightly coupled services where risk spreads at a faster pace as compared to traditional enterprise risk management processes. With these kinds of environments, disruptions in operation, cyber attacks, failures of compliance and financial instability are not often present in isolation, revealing the constraints of risk management practices that are reactive and fragmented. The fundamental weakness of current AI-based risk management methods is that they are domain specific and model based in their optimization that is in most cases unable to accommodate cross-domain relations, temporal volatility, and decision level relevancy. This paper hypothesizes a combined machine learning-predicted risk management system which considers risk as a system-level phenomenon. The framework combines the heterogeneous risk signals, adaptive domain weighting and combines predictive output to a composite risk index intended to be used to make continuous and governance responsive decisions.

Link: https://doi.org/10.4018/979-8-3373-7292-1.ch002

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Transforming Healthcare: Sustainable and Inclusive Outcomes through AI and Deep Learning

AUTHOR :

Gokhale P.; Pande M.

JOURNAL NAME:

2025 International Conference on Sustainable Technologies for Humanity and Smart World, HSWTech 2025

DETAILS:

Published on September 2025

ABSTRACT:

India's healthcare system is struggling with fundamental challenges such as insufficient infrastructure, high out-of-pocket costs, and limited access for the rural population. The quality of healthcare is adversely affected by these barriers. Deep Learning (DL) is a technology capable of addressing these systemic gaps. DL can handle complex medical data. DL-based architectures, including Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs), which have been successfully applied. FDA-cleared DL systems have demonstrated performance comparable to that of expert doctors. Large Language Models (LLMs) can help bridge the expertise gap between specialists and general practitioners.More affordable, accurate, and accessible healthcare can be achieved through the integration of DL-powered systems. Screening tools, early diagnosis, and AI-driven decision support are some of the tools that can be used. These interventions can help reduce the urban–rural divide in healthcare delivery. This composition explores how AI technologies can transform healthcare in India, focusing on applications across diagnostics, decision support, and patient care. This paper uses performance metrics to analyze efficiency. ROC curves, and comparative accuracy plots are included in the visual results to demonstrate improvements in clinical decision-making. However, there are critical challenges in data availability, interpretability, and regulation. A roadmap for the sustainable integration of AI in Indian healthcare is proposed, which includes edge–cloud hybrid inference systems, explainable AI models, and public–private partnerships. The aim of this work is to demonstrate how Artificial Intelligence and Deep Learning can be leveraged to deliver sustainable, affordable, and equitable healthcare outcomes.

Link:
https://doi.org/10.1109/HSWTech64936.2025.11277427

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

AI Innovations and their Impact on Personality Rights: A Critical Review of India's Intellectual Property Framework

AUTHOR :

Yadav V.S.; Dhere A.; Ghose A.

JOURNAL NAME:

Journal of Intellectual Property Rights (Vol.-31, Issue-2)

DETAILS:

Published on 23 February 2026

ABSTRACT:

From self-driven cars to healthcare, today's era is dominated by AI-driven technology. This technology has entered every realm of day-to-day life and has become a vital part of the modern lifestyle. Undoubtedly, AI has made groundbreaking changes in improving lifestyles; however, several instances of misuse of and bias in AI technology have raised serious ethical and legal concerns. Today's advances in AI have the potential to create a digital human replica (also referred to as AI renditions) within a few hours. This paper employs a qualitative investigative method to delve into the issue of AI's use resulting in a breach of individuals' personality rights. The conceptual analysis of personality rights and the literary survey on AI's potential to damage personal reputation are the basis for several recommendations elaborated in the results section.

Link:
https://www.scopus.com/pages/publications/105031627966

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

BFRP Turbine System with Six-Direction Control and Self-Adapting AI

AUTHOR :

Jain S.; Kudtarkar H.; Gutte V.S.; Kulkarni M.B.

JOURNAL NAME:

2025 IEEE 5th International Conference on ICT in Business Industry and Government, ICTBIG 2025

DETAILS:

Published on December 2025

ABSTRACT:

This paper introduces a theoretical design for a small-scale wind turbine that makes use of advanced materials, IoT-based monitoring, and artificial intelligence based on ANN algorithm. The paper also mentions the potential of Basalt fibre in wind energy sector. Taking sustainability into account, the turbine blades are designed using Basalt Fibre Reinforced Polymer (BFRP) over conventional Glass Fibre and Carbon Fibre. To improve adaptability, the system uses artificial neural networks (ANN) as a type of morphological intelligence that allows the turbine to learn from changing wind and load conditions. Data from IoT sensors, including wind speed, stress on the blades, vibration, and power generation, is collected and processed both locally and in the cloud. This enables functions such as predictive maintenance and dynamic adjustment of loads. A stabilization system with six degrees of freedom (6-DoF) is also suggested to help the turbine remain efficient even in turbulent wind. Taken together, the combination of material innovation, AI-based adaptability, and IoT sensing highlights a new direction for smallscale wind turbine design.

Link: https://doi.org/10.1109/ICTBIG68706.2025.11323839

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Copyright Strikes and Digital Dissent: The Case of ANI, YouTube, and the Suppression of Freedom of Speech and Expression in India

AUTHOR :

Ghose A.; Ali S.M.A.; Pallav P.

JOURNAL NAME:

Youth Civic Engagement and Political Participation in Digital Spaces

DETAILS:

Published on February 2025

ABSTRACT:

It is now commonplace for individuals all over the world to incorporate the internet and several other types of information and communication technology into their way of life. It has the potential to enhance the capacity of society to engage in open discussion and debate. No state can rightfully claim to be a democracy if this freedom is unfairly or criminally withheld. In this chapter, we will explore the theoretical inquiry, pertinent legislation, constitutional requirements, and pertinent court declarations in order to understand how ANI's institutionalised processes for copyright infringement litigation have affected Indian YouTubers.

Link: https://doi.org/10.4018/979-8-3373-5581-8.ch012

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

AI-Powered Art Critique: Aesthetic and Emotional Feature Extraction and Classification

AUTHOR :

Deshmukh S.; Hande Y.; Keskar P.; Kunbi R.; Shaikh R.; Somaiya T.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

This project explores the intersection of artificial intelligence and visual art by developing an AI-driven framework for both aesthetic analysis and emotional interpretation of artworks. At its core, a convolutional neural network (CNN) classifies paintings into artistic styles such as Realism, Impressionism, and Romanticism based on visual patterns. The system also employs image processing techniques to extract color palettes and texture features, which are linked to an artist's expression. These visual features are mapped to emotional descriptors like joy, melancholy, and serenity. By combining stylistic recognition with emotional analysis, the system provides a personalized art critique. This interdisciplinary approach advances computational aesthetics, showcasing AI's potential to interpret the emotional depth of art, offering new tools for artists, curators, and art enthusiasts.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11283937

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Towards Ethical AI: Bias Detection and Mitigation in AI Models for Recruitment Systems and Criminal Justice Systems

AUTHOR :

Ghorpade-Aher J.; Patil A.; Ghorpade S.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

Present Digital ERA is an age of Artificial Intelligence (AI) that has influenced the sensitive real-time domains such as recruitment processes and criminal justice. The decision-making potential with intelligent machines implements various techniques those aim to induce efficacy in the subject oriented procedures. The challenges faced depicted the inheritance of the biases embedded in preliminary available data which has affected to unfair treatment of marginalized assemblies. The presented state-of-art research study examines up-to-date approaches for identifying and dropping such biases within AI-powered hiring and legal systems. We addressed the problems and investigated feasible solutions at algorithmic, data-processing, and policy levels. The proposed findings focus on technical strategies as well as the broader ethical concerns. Through a detailed analysis of tools like fairness metrics, adversarial debiasing, and explainable AI (XAI), we have proposed a comprehensive Hybrid framework that seeks to support fairness without affecting overall accuracy performance. The study thoughtfully explores bias in complex, multimodal AI settings, especially in recruitment. It underlines the growing need for transparent oversight and ethical policies to ensure AI technologies stay responsible and fair.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11283812

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Internet of Things and precision medicine: tailoring treatments to individual patients

AUTHOR :

Vinchurkar K.; Polshettiwar S.; Dargude S.

JOURNAL NAME:

Connected Diagnoses: IoT, Healthcare, and Digital Forensics

DETAILS:

Published on 2026

ABSTRACT:

The integration of the Internet of Things (IoT) in health care has significantly advanced precision medicine (PM) by enabling continuous monitoring of patient health metrics through wearable sensors, smart implants, and connected health devices. These technologies generate real-time data on patient vitals, lifestyle, and environmental factors, which, when analyzed using advanced algorithms and artificial intelligence, facilitate more accurate diagnoses and personalized treatment plans. Furthermore, the use of 3D printing (3DP) technologies, such as fused deposition modeling, allows for the creation of customized medical devices and pharmaceuticals, enhancing patient-specific care. This chapter explores the synergy between IoT and 3DP in PM, presenting case studies and current research to illustrate their practical applications, benefits, challenges, and ethical considerations, ultimately highlighting the transformative potential of these technologies in improving health care outcomes and efficiency.

Link: https://doi.org/10.1016/B978-0-443-38299-4.00012-6

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Educating Future Designers: Integrating Design Thinking in Curriculum

AUTHOR :

Saxena M.; Patole J.; Patil A.A.

JOURNAL NAME:

Design Thinking Applications and Challenges for Modern Business

DETAILS:

Published on February 2026

ABSTRACT:

Integration of Design thinking (DT) approach in curriculum has the potential to ignite a paradigm shift in the management education by offering learners with enhanced and immersive learning opportunities. This chapter explores the history and evolution of DT, integration of DT tools & techniques in management education with the help of multiple pedagogies. These pedagogies aim to expand the intellectual horizons and develop crucial skill sets among the future workforce. Additionally, an attempt is made to address the challenges, administrative considerations and future trends for DT adoption in higher education. Overall, the discussion contributes to ongoing efforts to enhance the skills of the future workforce which includes skills to innovate, collaborate, and solve complex challenges through empathy-driven and human-centered methodologies. The article blends theoretical concepts with real -time case examples, empowering management students to emerge as innovation leaders within their organizations.

Link: https://doi.org/10.4018/979-8-3373-3038-9.ch010

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Enhancing Dermatological Diagnosis with Few-Shot Learning

AUTHOR :

Patil K.; Patil D.; Rajagopal A.; Nair R.; Patel M.A.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

Automated skin disease classification poses significant challenges due to limited labeled dermatological data and class imbalance. This study proposes a deep learning-based system that leverages Few-Shot Learning (FSL) to enhance multiskin disease detection, focusing on Vitiligo, Seborrheic Keratosis, and Eczema. Utilizing a 3 -way N -shot learning approach, we assess the performance of VGG19, ResNet50, and DenseNet121 under 5 -shot, 7 -shot, and 10 -shot settings. Experimental results indicate that DenseNet121 achieves the highest accuracy of 96.66% and an F1-score of 0.97 in the 10-shot configuration, demonstrating its superior generalization. ResNet50 shows robust performance in the 5 -shot setting (93.33% accuracy, 0.92 F1score) but drops to 83.33% accuracy and 0.85 F1-score in the 10 -shot scenario, suggesting sensitivity to data volume. VGG19 lags behind, with a peak accuracy of 73.66% and an F1-score of 0.75. Incorporating attention mechanisms after each pretrained model further improves classification accuracy and F1-scores, demonstrating the effectiveness of FSL combined with transfer learning in dermatological applications, making it a viable AIassisted diagnostic tool for low-resource clinical settings.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11284208

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

A Comprehensive Review of Deepfake Audio Detection Techniques: Advances, Challenges and Future Directions

AUTHOR :

Musale V.; Chiddarwar P.; Pahade A.; Rai P.; Jaiswal R.; Powar V.

JOURNAL NAME:

2025 IEEE 5th International Conference on ICT in Business Industry and Government, ICTBIG 2025

DETAILS:

Published on December 2025

ABSTRACT:

The exponential growth of deepfake audio generated by artificial intelligence presents unprecedented security challenges across multiple domains, ranging from personal identity security to national intelligence. This review paper reviews recent developments in deepfake audio detection methods, with a focus on real-time detection systems. We discuss the shift from classical signal processing techniques to deep learning solutions, noting the advent of hybrid detection frameworks, which exploit complementary strengths of both areas. By conducting an in-depth performance analysis of several detection systems, we provide a comparative assessment of accuracy rates, computational time, and real-world usability in different deployment contexts. From our research, it is apparent that integrated designs that synchronize convolutional neural networks with dedicated signal processing methods hold the current best detection framework with accuracy rates higher than 94 % and processing times below 150 ms. Yet, key challenges remain, such as the quick development of deepfake technology, adversarial attacks on detection algorithms, and limitations in cross-cultural generalizability. We outline a research agenda to meet these challenges with adaptive learning systems, multimodal fusion, explainable AI paradigms, and edge-specialized architectures. This review consolidates existing understanding of audio deepfake detection and offers researchers and practitioners a complete basis for designing next-generation forensic tools to counter more advanced audio manipulation technologies.

Link: https://doi.org/10.1109/ICTBIG68706.2025.11323737

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Pioneering DNA-Based Systems: Novel Encoding and Security for Computing and Storage

AUTHOR :

Bopalkar A.; Iyer H.; Mantri S.; Bedekar M.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

DNA is a molecular structure that consists of a number of nucleotides, including adenine (A), thymine (T), cytosine (C), and guanine (G). DNA's quaternary encoding scheme maps binary data to the nucleic acid bases adenine, thiamine, guanine and cytosine. We explore the current progress in the cryptographic domain, while keeping the applications of DNA in mind. In this study, we present a systematic methodology for translating binary data into DNA sequences and subsequently reconstructing the original information. Additionally, an innovative cryptographic algorithm is developed to protect DNA-stored data, ensuring privacy, security, and data integrity during storage and retrieval. This work highlights DNA as a sustainable, efficient, and secure paradigm for the future of data storage and computation.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11284266

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Digital Governance, Security, and Privacy Rights in India: Exploring Evolving Political Theory and Recent Legislative Developments

AUTHOR :

Ghose A.; Agashe N.; Ali S.M.A.

JOURNAL NAME:

Championing Civil Rights in the Digital Era

DETAILS:

Published on 2026

ABSTRACT:

In the contemporary era, technological progress has led to a heightened emphasis not only on distinguishing between private and public spheres but also on identifying elements that may inadvertently enter the public domain but nonetheless contribute to privacy concerns. This study aims to examine the complex interplay between privacy rights and dignity in the context of widespread technological progress. This article explores the notion of human dignity, which is presented as a major subject that emphasizes the importance of people and their right to autonomy and respect. The study assesses the intricate interplay between privacy, governance, and societal values by drawing from philosophical viewpoints, legal frameworks, and case studies. This study highlights the pressing need for strong norms and ethical standards to safeguard privacy and promote democratic principles in the digital era, as it seeks to comprehend India's stance on privacy rights and concerns related to mass surveillance programs.

Link: https://www.igi-global.com/chapter/digital-governance-security-and-privacy-rights-in-india/400299

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Leveraging IoT and Big Data Analytics for Sustainable Urban Mobility: Enhancing Marketing Strategies for Electric Vehicles

AUTHOR :

Shetty A.D.; Sheraz M.W.; Mohammed Babiker N.B.; Abdalla Aadam A.I.; Zaware N.; Gaurav K.

JOURNAL NAME:

2025 7th International Conference on Information Systems and Computer Networks, ISCON 2025

DETAILS:

Published on September 2025

ABSTRACT:

As a more affordable and environmentally friendly option to traditional automobiles, electric vehicles, or EVs, are growing in popularity. But the transportation industry also faces additional difficulties as a result of electric vehicle (EV) adoption, particularly with regard to the provision of sufficient and dependable charging infrastructure. Through their own networks or alliances with other stakeholders, EV charging operators are the organisations that offer charging services to EV owners. Since they make electricity available and accessible to EVs, e-charging operators are essential to the EV ecosystem. Smart charging that supports renewable energy targets, overcomes infrastructure constraints, and advances sustainable mobility by enhancing user experience, reducing costs, and increasing confidence in electric vehicles becomes a feasible option through the use of IoT, AI, and big data analytics. This study aims to create a better Generative Adversarial Network model to create a synthetic electric vehicle data set. That will then be fed into ensemble machine learning algorithms that will predict the energy needed to charge electric vehicles. For synthetically created data for a few urban cities in Odisha, India, the upgraded Temporal Charge Generative adversarial network model yields Skewness and Kurtosis values of − 0.045 and − 0.170, respectively. These values are extremely similar to the city's fourwheeler electric vehicle charging data.

Link: https://doi.org/10.1109/ISCON65210.2025.11341030

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

AI Integration in Agriculture Tools, Software, and Frameworks for Sustainable Farming

AUTHOR :

Khan A.; Patil C.H.; Vibhute A.D.; Mali S.

JOURNAL NAME:

Generative AI for Remote Sensing of the Environment: Algorithms and Applications

DETAILS:

Published on February 2026

ABSTRACT:

Agriculture is essential to maintaining the world economy and providing adequate nourishment for a population that is expanding quickly. Resource exhaustion, climate change, soil deterioration, resource depletion, and inefficiency in conventional farming methods are some of the major issues facing modern agriculture. Research gaps still exist in combining these technologies for deploying flexible systems across various agro-climatic zones, and real-time decision-making, despite the advancements. Through comprehensive analysis, this study addresses the gaps in current automated systems in agriculture, including the use of drones and automated systems for weed removal, crop monitoring, and disease detection. The current AI applications are critically evaluated, emphasizing their accuracy, affordability, and enhanced productivity efficiency to improve yield outcomes. This study performs in-depth research by exploring the various ways that High Performance Computing (HPC) and intelligent vision could influence agricultural processes through multiple applications such as precision farming, crop yield prediction, land-use mapping, and soil health evaluation. These techniques can incorporate expert systems for improved decision support. In the future, the development of flexible artificial intelligence models for diverse agricultural environments can be implemented as a real-time expert system for small- and medium-sized farmers. Also, the system can be integrated with cloud computing, IoT, and DL, which are combined in scalable frameworks to improve agricultural automation.

Link: https://doi.org/10.1201/9781003616207-14

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Deepfake Video Detection Using a Combined CNN-LSTM Approach

AUTHOR :

Chakurkar P.; Yadav V.; Padhye U.; Sonawane K.; Chandole T.

JOURNAL NAME:

2025 International Conference on Sustainability, Innovation and Technology, ICSIT 2025

DETAILS:

Published on August 2025

ABSTRACT:

The proliferation of highly realistic deepfake videos presents a significant threat to information integrity and personal security, making the development of robust automated detection methods essential. This paper proposes and evaluates a hybrid deep learning architecture for deepfake video detection that effectively analyzes both spatial and temporal artifacts. Our methodology employs a pre-trained ResNeXt-50 Convolutional Neural Network (CNN) to extract discriminative features from individual video frames, which are then processed by a Long Short-Term Memory (LSTM) network to model temporal in-consistencies across the sequence. The model was trained and validated on a balanced subset of 1200 videos derived from the DeepFake Detection Challenge (DFDC) dataset. Implemented in PyTorch, the proposed system achieved a peak validation accuracy of 83.33 % and an Area Under the ROC Curve (AUC) of 90.34 %. Performance was comprehensively evaluated using standard classification metrics, including Precision, Recall, and F1-Score. The results validate the efficacy of combining spatial and temporal analysis for deepfake detection and establish a solid baseline for a practical detection system. A user interface was also developed to demonstrate the model's application on new videos.

Link: https://doi.org/10.1109/ICSIT65336.2025.11294356

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Transition of Persons With Intellectual and Developmental Disabilities From School to Work: Evidence- Based Practices

AUTHOR :

Ahmad W.; Shokeen R.; Raj R.; Nazli; Ramkumar B.V.; Singh R.R.; Mohammad S.

JOURNAL NAME:

Vocational Rehabilitation for Students with Developmental Disabilities: Transition from Education to Employment

DETAILS:

Published on September 2025

ABSTRACT:

The discussion about the employment of Persons with Intellectual and Developmental Disabilities (PwIDDs) has been a fairly recent development. Employment of Research conducted around the world has shown that when PwIDDs receive tailored support such as job coaching, skills training, and workplace accommodations their chances of securing and maintaining competitive employment increase significantly. However, the challenge remains in not only placing these individuals into jobs but also fostering environments where they can thrive and grow economically over time. This chapter explores supported employment as a vital pathway toward achieving greater economic self-sufficiency for PwIDDs Rather than being viewed as the ultimate solution, supported employment serves as a transitional framework, enabling individuals to gain access to real work environments. The primary objective should be to offer sufficient support that facilitates their advancement toward financial independence and sustained job retention, ultimately empowering them to thrive in the competitive workforce.

Link: https://doi.org/10.4018/979-8-3693-9541-7.ch003

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Effect of Surface Roughness Over a Blended Wing Body in the Subsonic and Transonic Regime

AUTHOR :

Arya A.N.; Sarwar M.D.G.; Bellary S.A.I.; Tamboli S.; Hasnain S.M.M.; Sahoo D.

JOURNAL NAME:

International Journal of Aeronautical and Space Sciences

DETAILS:

Published on 17 March 2026

ABSTRACT:

This study simulated the aerodynamics of a blended wing body (BWB) at transonic and subsonic speeds. Lift, drag, and stall characteristics are observed in different kinds of aerodynamic conditions. The objective is to look into how surface roughness affects stall behavior and overall aerodynamic efficiency. Furthermore, the study extends its focus to assess the effect of surface roughness on aerodynamic performance. For three separate roughnesses, the flow properties surrounding the blended wing body are evaluated. The results show that the coefficients of lift and drag fluctuate in the subsonic region, but the stall angle remains unchanged. Flow characteristics demonstrate asymmetry in the airflow over the baseline model, which shifts toward symmetry with roughness. This change in flow characteristics is additionally seen in the transonic range, where variations in stall angle are prominent at roughness parameter 3. It is concluded that the addition of surface roughness causes noticeable changes in the characteristics of a blended wing body aircraft.

Link: https://doi.org/10.1007/s42405-026-01164-0

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Decentralized Access Control and Continuous Monitoring in Healthcare Facilities: A Privacy-Preserving Framework Integrating Zero-Knowledge Proofs, Biometric Authentication, and Blockchain Technology

AUTHOR :

Kumbhar S.; Mourya A.; Musale V.; Satpute S.; Idhate S.; Amune A.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

Securing sensitive physical and digital areas, such as equipment rooms, medical records storage, and intensive care units (ICUs), is crucial in modern health care environments. Traditional ways of access control that depend on static authorization and centrally maintained databases are becoming more vulnerable to insider threats, identity spoofing, and data breaches. To enhance privacy, transparency and realtime threat detection in healthcare infrastructure, paper suggests a conceptual architecture for a secure, decentralized access control system that integrates blockchain technology, biometric authentication, and Zero-Knowledge Proofs (ZKPs). Recognition of fingerprints serves as the system's main authentication technique, and feature vectors are safely stored on a decentralized blockchain and cryptographically committed using Pedersen commitments. A zk-SNARK is generated during access requests to verify the accuracy of the user's biometric input without disclosing the real biometric data. Smart contracts validate access decisions, allowing for unaltered event logging and automated policy enforcement. The system combines entry-point security with Edge AI-based continuous monitoring, which tracks people's movements within the secure area using motion sensors and CCTV. The individual's continued authorization during their presence is guaranteed by periodic behavioral verification conducted by ZKPs. Anomalies that are discovered are immediately reported and stored on the blockchain for forensic examination. The approach suggested combines behavioral confirmation with physical identity verification to provide a strong multifactor authentication (MFA) framework. Although conceptual in nature, the architecture provides a scalable and privacypreserving model for next-generation healthcare access control systems because it is based on blockchain and cryptography technologies that have been proven to work.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11284047

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Predicting Pedestrian Fall Risk Through Deep Feature Fusion of Pavement Surface Imagery and Weather Streams

AUTHOR :

Chakurkar P.; Vora D.

JOURNAL NAME:

International Journal of Pavement Research and Technology

DETAILS:

Published on 8 March 2026

ABSTRACT:

Pavement surface conditions and weather changes significantly impact pedestrian safety in urban environments. Current pavement research primarily focuses on vehicle-centric safety indices and single-modality assessments. This study contributes new knowledge by introducing the Pedestrian Slipperiness Index (PSI). This multimodal human-centric metric integrates road surface imagery and real-time weather streams to quantify pedestrian fall risk. An ensembled convolution neural network (CNN) model combining ResNet18, EfficientNet-B0, and MobileNetV2 classifier is trained on Road Surface Classification Dataset (RSCD) dataset to predict a real-time pavement surface from 16 pavement surface classes (e.g., Wet Asphalt Severe, Dry Concrete Smooth), achieving 90% test accuracy and a macro F1-score of 88%. The image-based PSI (psi_image) for the predicted pavement surface class was effectively fused with the real-time weather-based PSI (psi_weather) using a Multi-Layer Perceptron (MLP) regressor. This regressor was trained on the Cartesian product of image and weather features, resulting in an impressive R^2 value of 0.999. The proposed multimodal solution combines Artificial Intelligence (AI)-based surface condition analysis and weather-based risk modeling to provide context-aware, real-time pedestrian safety, which enriches pavement research. This work offers a scalable method for proactive pavement maintenance and urban safety planning by changing the paradigm from vehicle-oriented indices to pedestrian-centric risk estimation.

Link: https://doi.org/10.1007/s42947-026-00735-4

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

A Novel High Voltage Gain DC-DC Boost Converter

AUTHOR :

Karangale V.; Ingale M.; Jadhav N.B.

JOURNAL NAME:

2025 International Conference on Sustainable Technologies for Humanity and Smart World, HSWTech 2025

DETAILS:

Published on September 2025

ABSTRACT:

DC - DC converters play a vital role in the functioning of renewable energy systems, microgrids and electric vehicles. The quest for converters that delivers high gain with the reliable performance in this domain is no history. Majorly there are three DC-DC converters classified based on their gain with respect to input as boost converter, buck converter and buck-boost converter. This work focuses on novel DC-DC high gain boost converter topology which can boost input voltage with a gain of about 11.76 at 70% duty cycle. The circuit is simulated in MATLAB and performance is analysed considering duty cycle, settling time and peak voltage as the parameters for verification of novelty. The comparative analysis is carried out with the existing standard DC-DC boost converter topology. While boosting the input DC voltage of 150 V by the gain of 5 for a 2000W system, the duty cycle required was reduced by 63.29%, settling time being reduced by 50%, peak voltage being reduced by 49.8% than that of the standard DC-DC boost converter topology, which ultimately results in reduction of component stress.

Link:
https://doi.org/10.1109/HSWTech64936.2025.11278141

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Optimizing Heat Transfer In Metal Foam-Coated Heat Exchangers Using Genetic Algorithms and Artificial Neural Network

AUTHOR :

Dhavale A.A.; Lele M.M.

JOURNAL NAME:

AIP Conference Proceedings (Vol.-1385, Issue-1)

DETAILS:

Published on January 2026

ABSTRACT:

This study numerically investigates the thermal and hydraulic performance of a heat exchanger used as a condenser with bare tubes and metal foam-wrapped tubes of copper and aluminum of varying thicknesses. The research addresses the gap in optimizing foam-based heat exchangers, particularly the effects of foam thickness, material properties (aluminum and copper), and metal foam properties on heat transfer and pressure drop. Using the Darcy-Forchheimer-Brinkman momentum model and the local thermal equilibrium energy model, simulations were conducted for foam thicknesses of 0.75, 2, and 3.25 mm at fluid inlet velocities ranging from 5 to 25 m/s. The effects of foam thickness and free stream velocity on heat transfer and pressure drop characteristics were analyzed, and compared to bare tubes of the same configuration. The novelty of the study lies in the optimization of thermal performance by enhancing heat transfer while minimizing pressure drop, achieved through simulations conducted using Ansys FLUENT. To reach this goal, the Non-dominated Sorting Genetic Algorithm (NSGA-II) is employed in MATLAB, with an artificial neural network (ANN) serving as an interpolation tool to generate additional data from existing datasets. The optimization process produces a Pareto front, which represents the optimal balance between heat transfer and pressure drop, providing crucial insights for enhancing the efficiency of foam-wrapped heat exchangers. The results demonstrate a 6.48 times increase in heat transfer for copper foam at high velocities compared to non-porous channels. Additionally, the optimization process reveals that a 2 mm thickness of copper foam provides the best balance of enhanced heat transfer and minimized pressure drop. These findings offer critical insights into improving the efficiency of foam-wrapped heat exchangers and provide a practical guide for achieving a balance between performance and energy consumption in thermal management systems.

Link: https://doi.org/10.1063/5.0316278

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Optimisation-driven model for breast cancer classification model using histopathological image

AUTHOR :

Bhingarkar S.

JOURNAL NAME:

International Journal of Industrial and Systems Engineering (vol.-51, Issue-3)

DETAILS:

Published on 19 November 2025

ABSTRACT:

This paper provides a novel optimised deep model for classifying breast cancer. The simulation of IoT is the first step carried out, where the nodes collect the breast cancer histopathological image of patients. The routing is established with child circle inspired drawing optimisation (CCIDO). The fitness function is considered for choosing the best route using energy, trust distance, and delay. Then, the multi-grade breast cancer is executed at the base station. Here, a median filter is utilised for abandoning the noise. Unified extraction of features is provided for acquiring the features. The classification of breast cancer is done with the LeNet and trained using CCIDO. The assessment was performed to reveal the importance of the proposed model. The CCIDO-LeNet outperformed with the highest accuracy of 94.9%, NPV of 93.4%, PPV of 93.3%, TNR of 93.9% and TPR of 94.8%. In future, other datasets can be engaged to validate model flexibility.

Link: https://doi.org/10.1504/IJISE.2025.149969

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Challenges and Opportunities in Polyphenol Synthesis

AUTHOR :

Sadar S.; Barde A.M.; Tiwari V.; Tiwari A.; Polshettiwar S.

JOURNAL NAME:

Exploring the Synthesis, Ethnopharmacology, and Therapeutic Applications of Bioactive Polyphenols

DETAILS:

Published on January 2026

ABSTRACT:

Polyphenols, a diverse group of plant-derived compounds, are renowned for their health benefits, including antioxidant, anti-inflammatory, and anticancer properties. However, synthesizing polyphenols involves several challenges and opportunities crucial for their application in various fields. Challenges in polyphenol synthesis . The intricate chemical structures of polyphenols, featuring multiple hydroxyl groups and aromatic rings, make their synthesis complex. Precise control over reaction conditions is necessary to achieve the desired products. Polyphenols exhibit low bioavailability due to poor solubility, instability in the gastrointestinal tract, and rapid metabolism, limiting their effectiveness when consumed. Scaling up synthesis from laboratory to industrial scale presents significant hurdles, requiring economically viable and environmentally sustainable processes. Moreover, navigating the regulatory landscape for polyphenol-based products is complex, necessitating extensive research and documentation to ensure compliance with safety and efficacy standards. Opportunities in polyphenol synthesis . Nanotechnology offers promising solutions to enhance the bioavailability of polyphenols. Nanocarriers, such as liposomes, micelles, and nanoparticles, can improve the stability and absorption of polyphenols in the body. Developing environmentally friendly synthesis methods, such as using plant-based solvents and catalysts, can reduce environmental impact and improve the sustainability of polyphenol production. Advances in biotechnology, including metabolic engineering and synthetic biology, provide opportunities to produce polyphenols more efficiently, potentially overcoming the limitations of traditional chemical synthesis. The incorporation of polyphenols into foods and nutraceuticals represents a growing market, offering health benefits while addressing challenges of bioavailability and stability. Future directions . Future research should focus on optimizing synthesis processes to enhance the yield and purity of polyphenols.

Link: https://doi.org/10.1201/9781003564300-19

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

The Confluence of Bleisure, Sustainability, and Technology: Is REST a BEST?

AUTHOR :

Kaur S.; Singh A.

JOURNAL NAME:

Green Approaches and Environmental Stewardship for Aviation Management

DETAILS:

Published on January 2026

ABSTRACT:

Bleisure originated from the necessity of leisure on the business trip (business and leisure travel). The chapter aims to explore the role of technology advancements that support seamless bleisure experiences and examine the strategies employed by travel companies to incorporate sustainable practices. The chapter discussed the REST approach in the context of bleisure tourism, i.e., Relaxation, Efficiency, Sustainability, and Technology in four Indian bleisure cities. The chapter recommended that the lack of bleisure tourism policies, high infrastructure costs, travel finance, and the lack of digital education among tourism stakeholders are the potential challenges. The chapter found that the advancement of technology, co-working culture, intelligent transportation, and nature-based tourism activities supported the rise of bleisure attractions in Mumbai, Hyderabad, Delhi, and Chennai.

Link: https://doi.org/10.4018/979-8-3373-6685-2.ch017

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Machine Learning-Driven Prediction of Ship Maneuvering Dynamics Using Gaussian Process Regression

AUTHOR :

Mhatre A.G.; Gunjan R.; Sharma A.K.; Balan S.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

The accurate prediction of ship movement is important for optimization of port operations, minimizing delays and enhancing safety. This paper is regarding a novel data oriented machine learning framework to predict ship dynamics using the characteristics of ship, berthing locations and meteorological data. The ship displacements and rotations are predicted by regression based models and further feature engineering is applied to improve accuracy. The model works efficiently in real-world scenarios and is depicted by performance measures such as MSE, RMSE and R2. The results show that the predictions based on Machine Learning based tools enhance mooring strategies, berth allocation, ship scheduling so that maritime maneuvers are expedited and safe.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11284162

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Combined ERP-Based Features and ML Techniques Elucidate the Role of Contrast Negation in Face Recognition

AUTHOR :

Mane R.; Gandhi T.K.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

Although contrast negation significantly reduces facial perception, previous studies have shown that restoring contrast in the eye region can improve recognition accuracy, leading to chimeric faces. Building on this knowledge, we present a hybrid neural decoding approach that explores the neurophysiological bases of this effect using event-related potentials (ERPs) and machine learning. According to our findings, chimeric and positive faces produce statistically similar ERP responses across P 100, N170, and P250 components, whereas negative faces produce delayed and attenuated signals. These results provide neurological evidence for the perceived equality of positive and chimeric faces. Our binary classification accuracy is more than 91% when we utilize supervised classification models that have been trained on ERP data in parallel. Machine learning results established a benchmark in binary classification, reaching over 91% accuracy using optimized ERP features. The frontal brain region was found to be the best predictive region for eye-related inputs, with an accuracy of 76%. The findings support the idea of combining spatiotemporal EEG indicators with classification pipelines for real-time affective state detection. Compared to previous studies that solely examined the N170 component, our integrated paradigm captures richer temporal dynamics across multiple ERP features and offers a more comprehensive framework for decoding structurally manipulated facial stimuli.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11283860

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Graph attention and multi-neural memory networks for fake news detection: FakeDetectNet framework

AUTHOR :

Dixit D.K.; Dangi D.; Kumar J.; Gupta R.; Sharma S.; Bhagat A.

JOURNAL NAME:

Evolving Systems (Vol.-17, Issue-2)

DETAILS:

Published on 17 February 2026

ABSTRACT:

The rapid spread of fake news across social media highlights the need for effective automatic detection methods. This research proposes a novel FakeDetectNet framework to detect fake news using multimodal data (text and images). Text feature extraction is enhanced by using a Bidirectional Encoder Representations from Transformers model and refined using a Graph Attention Network. The image feature extraction is enhanced by using the DenseNet architecture by capturing low-level and high-level visual cues. An Efficient Multimodal Transformer allows deep fusion of textual and visual features with the help of cross-modal attention and the Multimodal Processing Unit with adaptive gating, which enhances inter-modal interaction and fusion effectiveness. The Multi-Neural Memory Network refines the fused multimodal representation with the help of Long Short-Term Memory-based memory gates that selectively retain relevant information and filter out noise. The performance of the FakeDetectNet framework is validated on the SocialNet-Weibo-Version-2 Dataset and the Fakeddit Dataset, which achieves an accuracy of 98.87% and 98.73%, respectively. These results guarantee that the FakeDetectNet framework offers a robust solution for multimodal misinformation detection.

Link: https://doi.org/10.1007/s12530-026-09793-2

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

A Raspberry Pi and Arduino-Powered Remote IoT Platform for Configurable Li-Fi Experiments

AUTHOR :

Salvi S.; Sonigara P.; Kevadia A.; Barolia K.; Banerjee A.; Guha S.

JOURNAL NAME:

2025 International Conference on Green Energy, Computing and Sustainable Technology, GECOST 2025

DETAILS:

Published on November 2025

ABSTRACT:

Visible Light Communication (VLC), or Li-Fi, offers a promising alternative to conventional wireless technologies, particularly in RF-restricted or interference-sensitive environments. However, access to VLC experimentation platforms remains limited in academic settings due to hardware constraints and lack of remote infrastructure. To address this, we propose a remotely accessible, Raspberry Pi and Arduino-based virtual IoT testbed that enables Li-Fi experiments with configurable transmission distance and data rate. The system integrates a motor-controlled linear rail for automatic receiver positioning, On-Off Keying (OOK) modulation for optical transmission, and a web interface for user scheduling, control, and monitoring. Our methodology incorporates repeated trials under varying ambient light conditions, and evaluates system performance using Bit Error Rate (BER) as the primary metric. The results demonstrate a clear relationship between BER, distance, and light intensity, with minimal error observed at lower bit rates and ambient lux levels. Additionally, user feedback from 32 participants confirms the system's usability and educational value, making it suitable for remote learning and scalable research deployment.

Link:
https://doi.org/10.1109/GECOST66002.2025.11324839

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Predict, Prevent, Personalize: A Machine Learning Approach to Heart Attack Risk and Dietary Planning

AUTHOR :

Pawar S.; Kumawat M.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

Heart disease is the leading cause of death across the globe, and early detection is essential for prevention and treatment. This paper describes a machine learning-based strategy for effectively predicting the probability of a heart attack based on a variety of health elements. To anticipate and aid in the prevention of cardiac illnesses, the system features a customised dietary recommendation module based on each user's individual risk profile, utilising Streamlit, a Python library. The Random Forest algorithm is used to make the prediction, and highest accuracy rate of 98% has been achieved compared to KNN. In addition, a the ESP32 controller has been used to collect Electrocardiogram data, which is then analysed in real time to extract slope and essential patterns, thereby improving prediction accuracy.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11284185

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Machine Learning and Deep Learning-Based Comparison Methods for the Estimate of Mobile Device Charging Duration

AUTHOR :

Bhoite S.; Taksale K.; Singh P.K.

JOURNAL NAME:

Artificial Intelligence (AI) for IT Energy Efficiency and Green AI for Environment Sustainability

DETAILS:

Published on January 2026

ABSTRACT:

It is crucial now more than ever to anticipate battery life durations precisely because cell phones are becoming our constant companions. To estimate how long it takes for different mobile phone models to reach full charge, our study compares two cutting-edge machine learning techniques: extreme gradient boosting (XGBoost) and long short-term memory (LSTM). By building our own dataset and focusing on charging time predictions rather than battery longevity, we have gone above and beyond. This innovative approach not only improves energy efficiency and battery management but also enhances the overall user experience. In this study, we generated our own dataset using various mobile phones to predict charging times, rather than focusing on battery longevity as most studies do. Our research has significant implications for user experience, battery management, energy efficiency, sustainability, and technological advancements. These findings offer valuable insights for users, manufacturers, policymakers, and researchers, helping to shape the future of mobile technology and its broader impact on society and the environment. Our research offers valuable insights that will shape the future of mobile technology and its broader impact on society, energy management, healthcare, and beyond.

Link: https://doi.org/10.1007/978-3-031-89420-6_25

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Design and Comparative Analyses of Programmable Frequency Divider using mGDI Technology for Modern Electronics.

AUTHOR :

Doshi B.; Askhedkar A.

JOURNAL NAME:

2025 International Conference on Sustainable Technologies for Humanity and Smart World, HSWTech 2025

DETAILS:

Published on September 2025

ABSTRACT:

This work analyzes the design and creation of a programmable frequency divider circuit at the 45nm technology node using Modified Gate Diffusion Input (mGDI) logic. By reducing propagation latency, dynamic power consumption, and area, this design aimed to solve the drawbacks of conventional CMOS technology. The design is made up of fundamental digital building pieces, such as multiplexers, logic gates, and D flip-flops, which were all created using the mGDI design flow and principles. The design was verified using schematic simulations in the Cadence Virtuoso environment. In comparison to the CMOS divider, the mGDI divider has a 90.78% lower power consumption and near about same latency as of CMOS design. This design is especially appropriate for wearable electronics because of its little power consumption, rendering it highly pertinent for contemporary, portable, and energy-limited applications. According to the results, mGDI provides a competitive alternative to CMOS in the creation of compact, powerful, and energy efficient VLSI architectures. Its improved efficiency, scalability, and appropriateness for next generation semiconductor systems are confirmed by comparison with conventional CMOS implementations.

Link:
https://doi.org/10.1109/HSWTech64936.2025.11277423

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Enhancing Data Privacy in Multi-Institutional Medical AI: A Secure Vertical Federated Learning Framework

AUTHOR :

Prabhune S.; Jagdale B.

JOURNAL NAME:

2025 3rd International Conference on Industry 4.0 Technology, I4Tech 2025

DETAILS:

Published on September 2025

ABSTRACT:

With the growing application of AI for clinical decision-making and tailored therapies, healthcare organizations are tackling the challenge of training AI models for clinical decision-making while safeguarding patient data confidentiality. A solution to this issue is Vertical Federated Learning (VFL), a secure framework for multi-institutional healthcare settings. VFL employs secure multi-party computation and differential privacy to enable privacy-preserving training without data sharing. Demonstrated with the Diabetes 130-US hospitals dataset, VFL shows promise for real-world applications. The VFL model strikes a balance between privacy and utility, maintaining high predictive accuracy while ensuring patient data security. Comparative analyses highlight the efficacy of VFL in preserving privacy and model performance. VFL, with its advanced privacy measures, offers a robust approach for developing accurate AI models for clinical decision-making in healthcare.

Link: https://doi.org/10.1109/I4Tech64670.2025.11277470

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Emotional AI and Adaptive user Interfaces

AUTHOR :

Khadkatkar A.; Rane R.; Sebait S.; Chidrupee M.K.; Siddiq Abdulkhadar Hunchalkar A.

JOURNAL NAME:

2025 International Conference on Intelligent and Secure Engineering Solutions, CISES 2025

DETAILS:

Published on August 2025

ABSTRACT:

Adaptive User Interfaces (AUI) and Emotional AI advance human-computer interaction by allowing computers to identify and dynamically adapt according to user states. Emotional AI uses Facial Emotion Recognition (FER), Speech Emotion Recognition (SER), sentiment analysis, and EEG-based emotion tracking for understanding user states, while AUI adapts layouts, contents, and operations in real-time. Both are used widely for applications in the healthcare, educational, virtual space, and customer service domains. Even with progress, issues like emotional recognition bias, privacy, real-time performance constraints, and ethical threats need to be resolved. Multimodal emotion detection, privacy-enhancing AI, and cross-cultural emotional intelligence will be the focus of future research to provide equitable, secure, and adaptive user experiences. Emotional AI and AUI continue to influence more intelligent and responsive systems with the integration of explainable AI.

Link: https://doi.org/10.1109/CISES66934.2025.11265651

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Mapping User Sentiment in Digital Lending Apps

AUTHOR :

Sharma S.K.; Kumar R.; Devi P.; Kishor K.

JOURNAL NAME:

2025 IEEE International Conference on Emerging Trends in Engineering and Computing, ETECOM 2025

DETAILS:

Published on October 2025

ABSTRACT:

The advancement of financial technology (FinTech) has transformed credit accessibility in India, leading to the proliferation of digital lending platforms. This research evaluates 12,216 user reviews from the Google Play Store for five prominent Indian digital lending applications-Navi, InCred, MobiKwik, Lendingkart, and NeoGrowth utilizing R-based text mining methodologies to gauge user sentiment. A lexicon-based analysis via the Syuzhet package, augmented by TF-IDF word clouds and a sentiment board, indicated that MobiKwik and Navi garnered mainly positive responses, whereas InCred and Lendingkart displayed notable negative sentiments. NeoGrowth demonstrated overall low user engagement. To enhance sentiment classification accuracy, Naive Bayes and Support Vector Machine (SVM) models were employed, with SVM exhibiting superior efficacy (F1-score: 0.832) compared to Naive Bayes (F1-score: 0.270), thereby validating the utility of supervised learning in analyzing contextually rich, user-generated content. The results emphasize the constraints of lexicon-based approaches and highlight the significance of machine learning for scalable sentiment analysis. This research presents a comprehensive framework for understanding user perceptions and informing service improvements within India's digital lending landscape.

Link:
https://doi.org/10.1109/ETECOM66111.2025.11319051

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Mapping AI Governance Models in Finance: A Cross-Country Comparative Study

AUTHOR :

Bhandari R.B.; Ramteke N.; Salunkhe H.A.; Raidas A.; Kankariya R.; Oza K.

JOURNAL NAME:

Communications in Computer and Information Science (2819 CCIS)

DETAILS:

Published on 24 February 2026

ABSTRACT:

The financial service industry is filled with possibilities brought by artificial intelligence (AI), including algorithmic trading, robo-advisory, fraud detection, and credit scoring. But the proliferation of AI raises ethical and regulatory issues, such as bias, opacity, and systemic risk. This paper qualitatively compares AI governance models for finance across five major jurisdictions (EU, US, UK, Singapore, and India). These jurisdictions are united in their objectives of enhancing responsible innovation, protecting consumers, and ensuring transparency, but their regulatory approaches range widely in terms of scope, legal effect, and ethical emphasis. The EU is at the vanguard through its AI Act, which employs a precautionary and rule-driven approach, imposing strict obligations on high-risk uses. By contrast, the US uses a sector-specific, principles-based approach based on existing financial sector regulation and voluntary frameworks, including the NIST AI Risk Management Framework. Both the UK and Singapore have principles-based approaches which promote transparent, accountable, and innovative models based on fluid models, for instance the FEAT framework. India: As an emerging fintech leader, India is building its own balanced model under RBI's FREE-AI initiative, based on global best practices. The article constructs a systemic comparison chart on AI regulation, enforcement institution, financial AI application, and AI ethics of the codified rules. Thematic analysis identifies key dimensions (explained-by, fairness, accountability, standardization potential). The study adds to the increasing policy conversation on regulating AI by providing policy guidelines which highlights dynamic governance, international collaboration, and integration of ethics throughout the AI lifecycle in finance.

Link: https://doi.org/10.1007/978-3-032-17834-3_25

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

A Cyber-Physical Architecture for Manufacturing Process Optimization Enabled by Integration of ANSI/ISA 95 with Native Machine Metadata

AUTHOR :

Ajgar A.

JOURNAL NAME:

2025 International Conference on Sustainable Technologies for Humanity and Smart World, HSWTech 2025

DETAILS:

Published on September 2025

ABSTRACT:

This paper proposes a Cyber-Physical System (CPS) based architecture for intelligent manufacturing process optimization by integrating Manufacturing Execution Systems (MES) and Supervisory Control and Data Acquisition (SCADA) platforms with Machine Native Metadata. The framework leverages native machine metadata including controller-resident operational states, embedded sensor telemetry, and machine-internal diagnostic registers to implement a hybrid predictive maintenance strategy that is data-driven and works with physics-based prognostics. By utilizing such machine-level data, the architecture significantly reduces the dependence on redundant external sensor and instrumentation typically required to feed MES decision-making layers, thereby lowering system complexity and total deployment cost. Standardized data abstraction and interoperable protocols facilitate secure, real-time bidirectional communication between SCADA supervisory layers and MES production scheduling, enabling adaptive closed-loop process control and on-demand reconfiguration. Validation in a smart manufacturing environment demonstrates enhanced anomaly detection, decreased mean time to repair (MTTR), and improved overall equipment effectiveness (OEE). The architecture delivers a scalable and vendor-neutral solution for achieving Industry 4.0 goals by converging machine-native intelligence with enterprise-level production orchestration.

Link:
https://doi.org/10.1109/HSWTech64936.2025.11278133

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Context-Driven approach to real-time language translation (Marathi ↔ English) - CONTEXTA

AUTHOR :

Kulkarni A.; Ghanekar A.; Supe A.; Ceyloni H.; Deshpande S.; Chandankhede C.

JOURNAL NAME:

2025 5th Asian Conference on Innovation in Technology, ASIANCON 2025

DETAILS:

Published on August 2025

ABSTRACT:

In places where many languages are spoken, like India, complicated language interactions can make it hard to talk to each other. Translation tools today don't process information in real time, don't know the context, and only convert text. This project shows off a real-time, context-aware English-Marathi translator that uses advanced natural language processing (NLP) to make sure the translations are correct and sound natural. A summarization module helps people find important information in long bilingual texts. The JavaFX front end makes it easy for users to use, and the Flask back end and MongoDB make sure that communication is smooth and context is kept. Transfer learning and domain adaptation help solve problems with languages that don't have a lot of resources, making them more efficient. Updates in the future will add personalized models and multi-domain adaptation. This system makes it easier for people to get to and understand each other in a variety of situations.

Link:
https://doi.org/10.1109/ASIANCON66527.2025.11281352

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Digital Replicas in Mental Healthcare Education

AUTHOR :

Salvi S.; Borkar M.; Jain P.; Nagare A.; Apune S.; Gawade M.

JOURNAL NAME:

2025 International Conference on Green Energy, Computing and Sustainable Technology, GECOST 2025

DETAILS:

Published on November 2025

ABSTRACT:

Advanced virtual simulation technologies—Digital Twins (DTs) and Digital Cousins (DCs)—are transforming mental healthcare training for trainee doctors. DTs create high-fidelity, patient-specific models that support real-time monitoring, early diagnosis, and in silico therapeutic planning. DCs, by contrast, generate procedurally randomized yet semantically rich clinical scenarios, broadening exposure to diverse psychiatric presentations without the need for exhaustive patient data. This review synthesizes theoretical foundations, current applications, educational implications, technical and ethical challenges, and future research directions. We show how the combined use of DTs and DCs enhances experiential learning, clinical reasoning, and competency assessment, while highlighting the need for standardized semantic frameworks, robust data interoperability, privacy safeguards, and rigorous model validation. Recommendations are offered for empirical efficacy studies, AI-driven adaptive feedback mechanisms, and socio-ethical evaluations to guide responsible implementation. Together, these dual paradigms promise scalable, impactful simulation-based mental healthcare education.

Link:

https://doi.org/10.1109/GECOST66002.2025.11325046

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Employment of Individuals With Intellectual and Developmental Disabilities: Challenges and Needs

AUTHOR :

Ahmad W.; Raj R.; Shokeen R.; Nazli; Ramkumar B.V.; Singh R.R.; Mohammad S.

JOURNAL NAME:

Vocational Rehabilitation for Students with Developmental Disabilities: Transition from Education to Employment

DETAILS:

Published on September 2025

ABSTRACT:

The employment of persons with intellectual and developmental disabilities (PwIDDs) has consistently presented significant challenges. Nevertheless, in the preceding two decades, policy reform, legal interventions, and collaborative public-private partnerships have substantially enhanced the lives of PwIDDs by affording them equitable employment prospects. However, for PwIDDs, finding and keeping a job is a daunting task, compounded by challenges related to their cognitive, emotional, and social functioning. These challenges often manifest as difficulties in communication, task management, and adjustment at workplace. To address these multifaceted challenges, there is a pressing need to develop inclusive and flexible work environments, providing long-term support such as job coaching, promoting educational initiatives to increase awareness about strengths and abilities of PwIDDs. This chapter examines the employment related adversities faced by PwIDDs, concentrating on cognitive, psychological, and environmental obstacles that obstruct their comprehensive engagement in labor market.

Link: https://doi.org/10.4018/979-8-3693-9541-7.ch001

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

3D Printing in Drug Delivery System

AUTHOR :

Polshettiwar S.; Dargude S.; Polshettiwar P.; Ghodmare S.; Jagdale S.; Vinchurkar K.

JOURNAL NAME:

Precision 3D Printing in Pharmaceutical Sciences: A Transformative Shift in Drug Manufacturing and Delivery Systems

DETAILS:

Published on 7 November 2025

ABSTRACT:

Drug delivery methods are undergoing a revolution thanks to three-dimensional (3D) printing, which makes it possible to produce sophisticated, individually tailored pharmaceuticals. The emergence of 3D printing in the 1980s has transformed several domains of research, including the pharmaceutical sector. The primary objective is to provide customized, sophisticated goods on demand using an affordable production approach. Several research organizations have been interested in 3D printing during the past few decades to produce various medication delivery systems. There have been many more publications since the first 3D-printed pharmaceutical product was approved in 2015. This technology allows for the development of custom dosage forms, including tablets, capsules, implants, and transdermal systems, with precise control over drug release profiles and dosages. Several 3D printing techniques, such as FDM, SLS, as well as inkjet printing, are employed to manufacture these drug delivery devices. The benefits of 3D printing in this context are enhanced flexibility, cost-effectiveness, and the capability to produce intricate designs that are impractical with conventional manufacturing methods. Ongoing research and development are expected to expand the applications of 3D printing in personalized medicine and multi-drug delivery systems, further advancing the capabilities of this innovative technology. Drug delivery systems are divided into subgroups that include micro- and nanoscale dosage forms, tablets, capsules, orodispersible films, implants, transdermal delivery systems, microneedles, and vaginal drug delivery systems. The field is poised for further growth with ongoing research into new materials and printing techniques. Future developments may include more sophisticated multi-drug delivery systems and broader applications in personalized medicine.

Link: https://doi.org/10.1002/9781394337576.ch7

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

IoTide: A Smart Underwater Monitoring System for Aquatic Life and Debris Detection Using AI and IoT

AUTHOR :

Walimbe S.; Pardeshi P.; Abhyankar C.; Phadke A.; Deshmukh A.

JOURNAL NAME:

2025 International Conference on Sustainable Technologies for Humanity and Smart World, HSWTech 2025

DETAILS:

Published on September 2025

ABSTRACT:

There is an urgent need to help the marine pollution which we humans cause. Constantly throwing waste into water bodies, industrial waste, and in general trash which automatically gets into water bodies is a major concern. Our solution to that is IoTide. IoTide is an intelligent IoT-based device that monitors trash and marine life in real time using ESP32-CAM and YOLOv8 visual model. Best suited for small scale uses such as pond level garbage detection, fish culture, fish farming, etc. IoTide achieves a high accuracy in detecting such examples and is reliable as a device which detects trash and aquatic life easily. Just a device which goes underwater and a ground unit which makes the detections. With further improvements based on integrating the processing unit into the underwater device itself, IoTide becomes future ready to tackle marine issues.

Link:
https://doi.org/10.1109/HSWTech64936.2025.11278148

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

XAI Integration into Cancer Care for Effective Decision Making

AUTHOR :

Khan I.; Bhoite S.

JOURNAL NAME:

Proceedings of the 7th International Conference on Innovative Data Communication Technologies and Application, ICIDCA 2025

DETAILS:

Published on October 2025

ABSTRACT:

For advanced personalized clinical decision making, accurate and interpretable prediction of cancer risk is essential. This study is focused on an explainable artificial intelligence (XAI) framework integrating Logistic Regression, Decision Tree, Random Forest and Support Vector Machine. For training these models stratified 5-fold cross validation technique was used and for evaluation ROC curves, calibration analysis and decision curve analysis were used. For each patient level explanation LIME was used and for global feature contributions SHAP was used. Logistic regression achieved an accuracy of 0.97 with precision, recall and F1 also as 0.97, while other models Decision Tree, Random Forest and SVM reached perfect accuracy of 1.00 along with precision, recall and F1-score of 1.00. Calibration curves are nearly ideal probability reliability and the ROC and the AUC analysis confirms 1.00 across the classifiers. In the decision curve analysis ML models consistently delivered higher net clinical benefit relative to "treat all"and "treat none"strategies. By interpretability analysis Age, Gender and Air Pollution were identified as consistent global predictors and also strongly associated with cancer risk for symptom related variables such as Wheezing, Obesity and Coughing of Blood. At the patient level LIME confirmed alignment between local and global reasoning and SHAP highlighted the dominant factors as Age and Air Pollution. The proposed framework offers a transparent, reproducible, and clinically meaningful decision support tool by combining predictive performance, probability calibration, and interpretability. These findings demonstrate the promise of interpretable ML to improve cancer risk stratification and promote safe integration of AI in oncology.

Link: https://doi.org/10.1109/ICIDCA66325.2025.11280442

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Introduction to Additively Manufactured Thin-Walled Structures

AUTHOR :

Pesode P.; Mugale M.; Wankhede S.

JOURNAL NAME:

Additive Manufacturing of Thin-Walled Structures

DETAILS:

Published on February 2026

ABSTRACT:

Additive manufacturing (AM), commonly known as 3D printing, is revolutionizing the production of complex geometries by building components layer by layer from digital models. One of its prominent applications lies in fabricating thin-walled structures—components with small thickness relative to their other dimensions—widely used in aerospace, automotive, biomedical, and architectural sectors. These structures offer significant weight reduction without compromising strength or functionality. However, their fabrication via AM presents unique challenges. Due to their delicate geometry, thin-walled structures are highly susceptible to material and geometric defects, which can adversely impact fracture behavior and overall structural performance. This vulnerability underscores the need for improved understanding and refined processing strategies. AM techniques enable the use of diverse materials such as polymers, metals, and ceramics. Polymers, processed through methods like stereolithography and fused deposition modeling, allow for rapid prototyping and customization. Metallic structures created via electron beam melting and selective laser melting are valued for high strength-to-weight ratios and precision. Ceramics, despite brittleness, are gaining traction in lattice and advanced applications. This chapter explores AM's role in developing thin-walled structures across material classes, discusses the technical barriers involved, and emphasizes the ongoing need for research to optimize their design, integrity, and functionality.

Link: https://doi.org/10.1201/9781003571209-1

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Strategic integration of SDGs and DEIB in employer branding: a conceptual framework for attracting and retaining Generation Z talent

AUTHOR :

Nagre A.; Dixit A.S.

JOURNAL NAME:

International Journal of Organizational Analysis

DETAILS:

Published on 20 February 2026

ABSTRACT:

Purpose – This study aims to develop an integrative framework that embeds selected Sustainable Development Goals (SDGs), notably SDG 5, SDG 8, SDG 10 and SDG 13, with diversity, equity, inclusion and belonging (DEIB) principles into employer branding (EB) to enhance the attraction and retention of Generation Z talent. The study focuses on the Global South, where demographic pressures, institutional constraints and rising youth expectations heighten the need for values-driven employer strategies. Design/methodology/approach – The paper adopts a structured conceptual methodology, drawing on a narrative synthesis of peer-reviewed research, United Nations policy guidance and recent industry studies. The analysis integrates insights from sustainable human resource management (HRM), DEIB, EB and generational theory to derive a multi-level framework linking SDG–DEIB commitments with human resources (HR) systems, employer value proposition design and employer–brand communication. Findings – Existing organisational approaches to sustainability and inclusion remain fragmented, limiting employer credibility among Gen Z. The proposed framework specifies how integrated SDG–DEIB strategies can strengthen trust, belonging and employer attractiveness, particularly in emerging labour markets. Research limitations/implications – The paper is conceptual and relies on secondary sources; empirical testing is recommended to validate and extend the framework. Originality/value – The study moves beyond traditional corporate social responsibility (CSR)- or environmental, social, and governance (ESG)-based models by articulating a unified, values-centred employer-branding approach grounded in SDG and DEIB integration and tailored to Generation Z.

Link: https://doi.org/10.1108/IJOA-08-2025-5911

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Progressive collapse resistance of reinforced concrete irregular flat slab buildings on sloping terrain with bracing configurations

AUTHOR :

Patil S.Y.; Kurlapkar R.R.; Shendkar M.R.

JOURNAL NAME:

Journal of Building Pathology and Rehabilitation (Vol.-11, Issue-2)

DETAILS:

Published on 14 March 2026

ABSTRACT:

This study investigates the progressive collapse behavior of an irregular building situated on sloping terrain, with particular emphasis on the effect of column removal location. It also examines the role of bracing systems in enhancing the structural robustness of the building. The objective is to evaluate the vulnerability of such structures and identify effective mitigation strategies. A nonlinear static pushover analysis was carried out in ETABS using finite element modelling, with scenarios involving the removal of columns from different strategic locations. Various bracing configurations, including bracing at different story levels, were analyzed to assess their impact on collapse resistance. The results revealed that column removal at the center of the longer edge triggered structural failure due to a lack of alternate load paths, making it the most critical case. In contrast, plastic hinge formation remained within acceptable limits when columns were removed from corners or short edges. The results indicate that the incorporation of a bracing system at top storey enhances the progressive collapse resistance of building by reducing the vertical joint displacement at the top of the removed column by up to 78%. The top-story bracing configuration significantly improved structural stability, showing no collapse hinge formation and the lowest displacement at column removal points.

Link: https://doi.org/10.1007/s41024-026-00807-9

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Lightweight concrete and sustainability: materials, performance and environmental benefits

AUTHOR :

Rodhia R.; Pandey A.; Kumar B.

JOURNAL NAME:

European Journal of Environmental and Civil Engineering (Vol.-30, Issue-1)

DETAILS:

Published on 27 February 2026

ABSTRACT:

Lightweight concrete (LC) has emerged as a key material in the modern construction industry due to its distinctive combination of improved acoustic and thermal insulation, low density and enhanced sustainability. These unique properties of LC not only facilitate ease of handling and installation but also improve structural efficiency across a variety of applications. This paper delves into the properties, types and applications of LC and examines how the higher porosity of LC affects its mechanical strength, durability and workability and provides insights into optimal mix designs. Various studies on key types of LC, including foamed concrete, no-fines concrete, aerated concrete and lightweight aggregate concrete, were examined. Recent advancements in LC technology highlight innovative mix designs that optimise both performance and sustainability. Therefore, the paper explores the role of LC in innovative construction techniques such as 3D printing and nanotechnology utilisation and highlights their potential for creating cost-effective and eco-friendly structures. This research also underscores the critical role of LC's capabilities and offers a comprehensive understanding of its limitations and prospects. The current study concludes by discussing the challenges and opportunities in optimising LC for high-performance structures and its role in modern construction practices aimed at reducing material consumption.

Link: https://doi.org/10.1080/19648189.2026.2628146

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Sexual Harassment and Safety Awareness among Women in Delhi-NCR: An Analytical Study of Age Vulnerability and Defence Mechanisms

AUTHOR :

Tanwar S.; Singh S.P.; Pal B.K.; Saloni; Sharma S.; Singh J.P.

JOURNAL NAME:

MSW Management (Vol.-36, Issue-1)

DETAILS:

Published on 2026

ABSTRACT:

In the present era, we live in a society where many people think that men and women should be given equal opportunities and rights but at the same time, women are the one who face different kinds of harassment in their daily lives. Every time a woman is harassed, it leads to the violation of the fundamental right, i.e., right to equality which has been provided under Article 14 of Indian Constitution. The intention of this research is to find the age group among women wherein sexual harassment is more prevalent and to highlight the importance of safety measure for women at public places. The statistical analysis among 298 women participants from Delhi-NCR region reveals that young women in the age group of 18-25 years are more prone to sexual harassment with less awareness and maturity.

Link:
https://mswmanagementj.com/index.php/home/article/view/1658

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Multimodal Disease Detection MedBot

AUTHOR :

Dhir A.; Jain S.; Sankuratri T.; Motade S.

JOURNAL NAME:

2025 9th International Conference on Computing, Communication, Control and Automation, ICCCBEA 2025

DETAILS:

Published on August 2025

ABSTRACT:

Multimodal Disease Detection MedBot, investigates the use of artificial intelligence to enhance early diagnosis of retinal diseases. It combines two main components: an automated retinal image analysis module powered by a fine-tuned Vision Transformer (ViT) model and a health-oriented conversational chatbot utilizing a fine-tuned LLaMA 3.1 8B language model. Designed to improve accessibility to preliminary health screening, especially in remote or underserved areas, the system processes fundus images to detect conditions such as Diabetic Retinopathy. Images undergo preprocessing steps like contrast enhancement and resizing to optimize model accuracy. Concurrently, the chatbot provides real-time, context-sensitive responses to general health questions, leveraging a quantized LLaMA model fine-tuned on medical question-answer datasets. The user interface, built with Streamlit, enables smooth toggling between image diagnosis and chatbot interaction, while FastAPI manages backend communication and data processing. This integrated platform exemplifies the synergy of computer vision, natural language processing, and user-centered design to support early intervention and broaden access to medical expertise. Future enhancements include multilingual capabilities, electronic health record integration, and mobile deployment, positioning the MedBot as a scalable AI-driven telemedicine solution.

Link:
https://doi.org/10.1109/ICCUBEA65967.2025.11284195

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

The digital boost: how digital payments shape home-buying sentiments in India

AUTHOR :

Rooj D.; Saha A.; Sengupta R.; Banerjee A.

JOURNAL NAME:

Journal of Housing and the Built Environment

DETAILS:

Published on 25 February 2026

ABSTRACT:

In this paper, we examine the role of digital payments on household home-buying sentiments. Using a large panel dataset from the Consumer Pyramids Household Survey (CPHS) in India, combined with digital payments data from the Reserve Bank of India from January 2020 to June 2023, we find that increased digital payment adoption is associated with greater optimism in the housing market. Our heterogeneity analysis also indicates that this effect is more pronounced among urban households, low-income groups, and self-employed individuals. We further document how digital payments shape home-buying sentiment through three key channels: easing credit constraints, enhancing confidence in personal economic conditions, and improving perceptions of the broader economic environment. Our findings provide robust evidence of the forward-looking role of digital payments in strengthening housing sentiment and, by extension, the overall economy. We argue for further policy impetus by the government and the regulator towards digitalization, especially in rural areas. Improvements in regulatory tools can further encourage digital payments by banks and fintech companies can gradually bridge the gap between rural and urban areas. Such policy initiatives can foster healthy growth in housing market sentiment, home-buying decisions, and, ultimately, the country's economic growth and development.

Link: https://doi.org/10.1007/s10901-026-10282-w

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Youtube Trending Video Analysis Using Natural Language Processing and Machine Learning

AUTHOR :

Endait O.; Iyer M.; Somashetti U.; Zoting K.; Bhagat D.

JOURNAL NAME:

2025 International Conference on Sustainability, Innovation and Technology, ICSIT 2025

DETAILS:

Published on August 2025

ABSTRACT:

In today's digital world, platforms like YouTube generate a massive amount of user interaction data every single day. This paper takes a closer look at what makes certain YouTube videos trend by analyzing patterns behind their popularity. Using tools from Natural Language Processing (NLP) and Machine Learning (ML) in Python, the study examines video metadata, user sentiment, and key engagement metrics like the like-to-view and comment-to-view ratios. To understand how viewers feel about the videos, sentiment analysis is done using TextBlob. Topic modeling is carried out using Latent Dirichlet Allocation (LDA), which helps uncover common themes in video titles and the general emotional tone. For prediction, models like Linear Regression and XGBoost are used to model the relationship between engagement features and view counts. The results indicate that both video metadata and audience sentiment significantly contribute to a video's popularity. Furthermore the explanatory models - particularly Linear Regression and XGBoost - demonstrated strong performance in explaining the variance in view counts. These findings highlight the value of data-driven approaches in understanding content performance and offer a foundation for optimizing video strategies on dynamic platforms like YouTube.

Link: https://doi.org/10.1109/ICSIT65336.2025.11295060

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

EfficientNet-Based Deep Learning Framework for Multi-Class Eye Disease Classification

AUTHOR :

Bhaskar S.; Kumar S.; Rani R.

JOURNAL NAME:

2025 5th Asian Conference on Innovation in Technology, ASIANCON 2025

DETAILS:

Published on August 2025

ABSTRACT:

The identification and classification of eye diseases are important for early diagnosis and successful treatment, preventing vision loss and blindness. This research aims to classify four prominent eye diseases - Cataract, Diabetic Retinopathy (DRE), Glaucoma, and Normal cases - based on EfficientNet, a recent deep learning model. The methodology includes preprocessing color fundus images, feature extraction, and classification based on an optimized EfficientNet model. The dataset, which is obtained from credible medical centers, contains heterogeneous retinal images to improve model generalization. The research utilizes segmentation methods like Trans-MobileUnet and hybrid deep learning networks, with attention mechanisms and dilated convolutions for enhanced classification performance. Comparative evaluation with conventional deep learning models shows better performance in accuracy, sensitivity, and specificity. The model recorded an overall accuracy of 94%, and macro and weighted averages for precision, recall, and F1-score, all at 0.94. Experimental outcomes suggest considerable enhancement in the accuracy of disease classification, further reinforcing the capability of deep learning in automated ophthalmic disease identification and clinical decision-making support.

Link:
https://doi.org/10.1109/ASIANCON66527.2025.11281295

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Predicting Sectoral Stock Market Responses to Macroeconomic Indicators Using Machine Learning

AUTHOR :

Thapliyal N.; Srivastava D.; Tiwari P.K.; Bari M.

JOURNAL NAME:

2025 International Conference on Next Generation of Green Information and Emerging Technologies, GIET 2025

DETAILS:

Published on August 2025

ABSTRACT:

This paper integrates AI and ML techniques with traditional correlation analysis to examine the influence of macroeconomic factors, like inflation, interest rates, and GDP growth, on the performance of the stock market. This study aims to discuss and analyze the strength of connections and correlations between stock prices and some macroeconomic indicators such as interest rate, inflation, and GDP growth using historical data and advanced AI-driven models. The study focuses on four disparate sectors: IT, energy, banking, and pharmaceuticals. Through the use of techniques such as clustering algorithms, time-series analysis, and predictive modelling, the paper finds industry-specific sensitivities in positive as well as negative associations. This multifaceted approach highlights not only the complex interplay between macrovariables and sectoral stock performance but also allows policymakers and investors to work towards actionable strategies based on these findings.

.Link: https://doi.org/10.1109/GIET65294.2025.11234810

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Probability of collision estimation - A comparative review of physics-based, machine learning, and hybrid methods for a safer space environment

AUTHOR :

Mazire, P; Pardeshi, P; Solanki, MT

JOURNAL NAME:

ACTA ASTRONAUTICA

DETAILS:

Published on February 2026

ABSTRACT:

The rapid growth of space debris poses a significant threat to the long-term sustainability of space operations. Potential collisions are mitigated through Risk Reduction Maneuvers (RRMs), whose effectiveness depends critically on the accurate estimation of collision risk, commonly expressed as the Probability of Collision (Pc). Numerous analytical, data-driven, and hybrid approaches have been developed to quantify this risk, yet their relative strengths, limitations, and operational applicability remain fragmented across the literature. This review provides a comprehensive comparative assessment of physics-based, machine learning-based, and hybrid Pc estimation methods, with emphasis on their underlying assumptions, computational efficiency, interpretability, and suitability for real-world conjunction assessment. Particular attention is given to recent operational developments, uncertainty modeling limitations, and the role of automation in maneuver decision-making. By synthesizing current methodologies and identifying persistent research gaps, this work clarifies the conditions under which emerging data-driven approaches can meaningfully augment established analytical frameworks. The review highlights the need for improved uncertainty characterization, reduced missed-detection rates, and rigorous validation of hybrid systems to support reliable, large-scale space traffic management. These findings provide practical guidance for the development of robust next-generation collision risk assessment tools.

Link: https://doi.org/10.1016/j.actaastro.2026.02.056

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Onion Crop Disease Identification Using Deep Learning Models: A Machine Learning Approach

AUTHOR :

Amondkar, M; Tiwari, B

JOURNAL NAME:

SMART TRENDS IN COMPUTING AND COMMUNICATIONS, SMARTCOM 2025, VOL 7

DETAILS:

Published on October 2025

ABSTRACT:

Onion, which is also called as Allium Cepa, is cultivated over an area of 5.7 million ha (Mha) which represents a production of 106.59 million ton (MT) in the world. Onion is a temperate crop but can be grown under a wide range of climatic conditions such as temperate, tropical, and subtropical climate. The best performance can be obtained in mild weather without the extremes of cold and heat and excessive rainfall (Vikaspedia. https://vikaspedia.in/agriculture/crop-production, [1]). As agricultural production increases, there is often a corresponding rise in the incidence of crop diseases, which can significantly impact yield quality and quantity. Early detection of crop diseases is crucial, as it enables farmers to apply the appropriate fertilizers and remedies, thereby preserving the current crop and optimizing resource use. This proposed solution leverages machine learning techniques for identifying diseases in onion crop leaves through image classification. The dataset utilized for this research has been sourced from Karnataka, ensuring region-specific applicability and relevance (Aishwarya and Reddy in Data Brief 54, 2024, [2]). The paper proposed the use of a deep learning model such as DenseNet, Inception, and Convolutional Neural Networks (CNNs) for image classification. All the deep learning models such as DenseNet, Inception, and CNN have shown a good accuracy percentage as 96%, 97%, and 95%, respectively.

Link: https://doi.org/10.1007/978-981-96-7511-1_43

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Surfactant-modified carbon fiber-epoxy composites: Interfacial control of mechanical performance

AUTHOR :

Salunkhe, AB; Ghadge, RR; Kumar, P

JOURNAL NAME:

JOURNAL OF COMPOSITE MATERIALS

DETAILS:

Published on 13 March 2026

ABSTRACT:

Interfacial load-transfer inefficiency between carbon fibers and epoxy matrices limits the mechanical reliability of carbon fiber-reinforced polymer composites. This study treats Triton X-100 surfactant concentration as a controlled interfacial design variable and evaluates its effect on the mechanical behavior of short carbon fiber-epoxy composites. Fibers were surface-modified at 1, 2, and 3 wt.% Triton X-100 and incorporated into compression-molded epoxy composites at similar to 40% fiber volume fraction. Tensile and compressive properties were measured per ASTM D3039 and D695; wettability, surfactant uptake, void fraction, and fracture morphology were characterized by contact angle goniometry, gravimetric analysis, Archimedes densitometry (ASTM D792), and scanning electron microscopy. The 1 wt.% composite exhibited tensile strength of 116.00 MPa (similar to 40.3% above untreated: 82.67 MPa) and a comparable compressive strength gain, while elastic modulus remained constant at similar to 2.0 GPa across all conditions. Gravimetric analysis confirmed monolayer adsorption at 1 wt.% and excess deposition at 2 wt.%, consistent with the observed mechanical optimum. SEM revealed reduced fiber pull-out (64 +/- 9 mu m to 22 +/- 4 mu m) and suppressed debonding in the optimally treated composite. Controlled surfactant treatment provides a scalable, non-destructive route to enhance interfacial efficiency and mechanical performance in short carbon fiber-epoxy systems.

Link: https://doi.org/10.1177/00219983261432464

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Digital Transformation and the Waste Management Revolution-Application of Innovative Technologies for Smart City

AUTHOR :

Deshmukh, R; Jadhav, B; Pasumarti, SS; Mohite, M

JOURNAL NAME:

SMART TRENDS IN COMPUTING AND COMMUNICATIONS, SMARTCOM 2025, VOL 1

DETAILS:

Published on October 2025

ABSTRACT:

In response to the issue of growing garbage, researchers, foundations, and businesses worldwide developed concepts and created new technology that sped off the procedure. Trash comes from a variety of sources, including municipal solid trash (such as discarded food, paper, cardboard, plastics, and textiles) and industrial garbage (such as ashes, hazardous wastes, and materials used in building and demolition). Contemporary waste management methods often take sociological factors into account in addition to technological ones. This review paper's goal is to talk about the potential applications of cutting-edge digital technology in the waste disposal sector. With reference to smart cities, this study aims to comprehend the environment, including the opportunities, barriers, best practices at present, and catalysts and facilitators of Industry 4.0 technologies. An innovative approach for examining the use of digital technology in smart city transformation is put out in this study. Analysis of the suggested conceptual framework is done in light of research done in both developed and developing nations. The study offers case studies and digital technology applications in trash management. This article will examine the ways in which waste management firms are utilizing cutting-edge technology to transform waste management and contribute to the development of a healthier tomorrow.

Link: https://doi.org/10.1007/978-981-96-7496-1_9

(WOS)

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

SmartMail Insights: Revolutionizing Email Management

AUTHOR :

Naik, S; Khande, R; Rajapurkar, S; Dalvi, K; Rajpure, S; Kalhapure, V

JOURNAL NAME:

SMART TRENDS IN COMPUTING AND COMMUNICATIONS, SMARTCOM 2025, VOL 8

DETAILS:

Published on October 2025

ABSTRACT:

SmartMail Insights is an intelligent web-based toolkit that is created for email management and all goes above delivering the basic functions of most online mail applications. Through the automation priority ranking, auto-responses and emails summarization, it makes it easier for the users to deal with urgency and important mails to emails that may not be very tiresome. The ML algorithms that it uses help easily sort the emails by content, sender, and, there are separate filters to highlight important emails with variable options. Auto replies are supported by NLP and there is the summarization of text to make it easier to read. Despite this, there are ways that SmartMail Insights could advance its current model of categorization one way is to incorporate its model for identifying and sorting through spam emails and promotional ones at least, into more refined sort of emails such as personal, business, and so on since doing so would prove helpful in improving categorization accuracy.

Link: https://doi.org/10.1007/978-981-96-7514-2_19

(WOS)

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

ICT-Driven Financial Literacy Programs: Empowering Citizens for Better Financial Governance

AUTHOR :

Sangjukta, H; Deshmukh, R

JOURNAL NAME:

SMART TRENDS IN COMPUTING AND COMMUNICATIONS, SMARTCOM 2025, VOL 1

DETAILS:

Published on October 2025

ABSTRACT:

This study scrutinizes the impact of ICT-driven financial literacy agendas in India, focusing on their role in promoting financial inclusion and enhancing governance. By leveraging digital tools such as mobile apps, online courses, and e-governance platforms, these programs have effectively increased financial literacy, particularly among underserved populations. The research highlights that while challenges such as the digital divide, language barriers, and varying levels of digital literacy persist, these programs significantly empower citizens to make conversant financial choices and participate more actively with public fiscal management. The incorporation of financial literateness into digital platforms also fosters greater transparency and accountability in governance. For the purpose of improving these programs, legislators, educators, and tech developers may benefit greatly from the insights this research offers. Additionally, it makes recommendations for future research topics to investigate the long-term effects of financial literacy programs powered by ICT on financial behaviors and governance in various socio-economic situations across India.

Link: https://doi.org/10.1007/978-981-96-7496-1_7

(WOS)

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Enhancing Portfolio Analysis and Stock Prediction Through LSTM and XGBoost Integration

AUTHOR :

Khande, R; Naik, S; Tayade, A; Kale, A; Phalke, K

JOURNAL NAME:

SMART TRENDS IN COMPUTING AND COMMUNICATIONS, SMARTCOM 2025, VOL 7

DETAILS:

Published on October 2025

ABSTRACT:

The authors propose for the LSTM-XGBoost model for portfolio optimization as well as stock price prediction. The model has incorporated the benefits derived from XGBoost, a gradient-boosting algorithm that enhances the ability of a model to predict structured and improved data, and Long Short-Term Memory (LSTM) networks, which excel at characterizing time-series data based on temporal relationships. The XGBoost model takes advantage of the LSTM model by utilizing the anticipated outputs it makes for improving the precision and overall efficiency of the model while the LSTM model is designed to work with ordered data peculiar to stock markets specifically on patterns and trends over time. In the study authors employ this type of hybrid to determine variables such as volatility and the moving average of historical stock price index of NIFTY50. The authors have obtained total model accuracy of 98.33%. Authors also use the Sharpe ratio to maintain an optimal portfolio because it shows investors the optimal ratio of expected stock returns. This research contributes to enhancing financial forecasting by integrating deep learning and machine learning techniques, ultimately offering the formulation of a new risk avert portfolio as well as stock price prediction.

Link: https://link.springer.com/chapter/10.1007/978-981-96-7511-1_16

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Removal of crystal violet dye from wastewater using Chitosan green peas peel powder composite as a biosorbent

AUTHOR :

Jadhav, A; Parikh, S; Kulkarni, AD; Nandi, S; Khurpade, PD

JOURNAL NAME:

NEXT SUSTAINABILITY

DETAILS:

Published on 2026

ABSTRACT:

Dye containing wastewater generated from industrial sectors such as textile, printing, leather, food, and cosmetics necessitates efficient treatment to prevent environment and human health risks. In present study, Green peas peel powder (GPP), Chitosan hydrogel particles (CHP) and composite of Chitosan-Green peas peel powder (CHGP) were utilized as an effective biosorbent for the removal of crystal violet (CV) dye from aqueous medium. The influence of various factors viz. adsorbent dosage, initial dye concentration and contact time on dye removal efficiency was examined. The CV dye removal efficiency was investigated using UV-Visible spectroscopy, while Fourier Transform Infrared spectroscopy (FTIR), Scanning Electron Microscopy (SEM), X-ray diffraction (XRD) and Thermogravimetric analysis (TGA) were employed for structural, morphological, thermal stability analysis of synthesized biosorbent. The maximum removal efficacy using CHGP composite of greater than 96% in first 30 mins and with 99.4% after 120 mins of contact time was achieved at pH 6. The nonlinear kinetic and isotherm studies revealed that adsorption process is better characterized by both Langmuir and Freundlich and pseudofirst and pseudo-second order model and showed a maximum adsorption capacity of 9.996 mg/g. Additionally, CHGP biosorbent was able to remove the 98% of CV dye after three regeneration cycles. Compared to single component CHP and GPP, CHGP composite exhibited enhanced adsorption performance as a result of its enriched active functional groups. Thermodynamic analysis revealed that the adsorption process is endothermic, spontaneous and favorable. TGA analysis of CHGP and CHP showed reduced thermal stability of composite. Overall findings of present study indicate that bio-composite of Chitosan-Green peas peel powder can be used as low-cost, environmentally friendly and circular-economy aligned solution for efficient removal of crystal violet dye from contaminated wastewater.

Link: https://doi.org/10.1016/j.nxsust.2026.100277

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Machine learning-driven insights into nano fly ash synergy for advanced mortar performance optimization

AUTHOR :

Krishnaraj, L; Nakkeeran, G; Shinde, SN; Thenmozhi, S; Alaneme, GU; Bakare, MS; Esenogho, E

JOURNAL NAME:

DISCOVER APPLIED SCIENCES

DETAILS:

Published on 25 January 2026

ABSTRACT:

The research examines the potential of employing nano technology to modify the physical characteristics of fly ash and improve the engineering performance of mortar. Utilizing Nano Fly Ash (NFA) as a substitute for cement at different ratios demonstrated that the meticulous approach impacted the sample size and surface area, but did not alter the chemical structure and constituents. The analysis of X-ray diffraction (XRD) indicated a reduction in particle size and a complex lattice phase strain in the Fly Ash nanoparticles. The analysis showed that the particles exhibited non-spherical shapes and dimensions measuring under 5 mu m. The results of the compressive strength test indicated that the mortar with 15% Nano Fly Ash replacement exceeded the control mortar. Moreover, it was demonstrated that machine learning algorithms can accurately forecast experimental data and the connections between variables, as evidenced by metrics such as Mean Absolute Error (MAE), Root Mean Square Error (RMSE), and the coefficient of determination (R-2). The RSM model demonstrated a high level of accuracy in predicting the mechanical properties, achieving a degree of precision with R2 values equal to or greater than 0.9539. The ANN model showed its capability to capture the variability of the data, as shown by a robust R-2 threshold (R-2 > 0.9995) across training, testing, and validation phases. Utilizing high volumes of Fly Ash allows for the conservation of renewable resources, reduction of carbon emissions in cement production, and effective management of the disposal and contamination of inland Fly Ash.

.Link: https://doi.org/10.1007/s42452-026-08296-8

(WOS)

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Computational Investigations Of Sound Transmission Loss In Hybrid Multi - Layered Fiber - Aluminium Composite Material

AUTHOR :

Vedpathale, SG; Chavande, Y; Ghadge, RR

JOURNAL NAME:

Proceedings Of Asme 2025 International Mechanical Engineering Congress And Exposition - India, Imece-India2025, Vol 2

DETAILS:

Published on 3 December 2025

ABSTRACT:

Noise pollution has caused problems for the health of people, workers, and the environment mainly in cities and factories for this reason, soundproof materials are essential in reducing indoor noise levels. For this research, the researcher evaluates the way glass fiber, basalt fiber, and perforated aluminum contribute to sound acoustics. The effectiveness of the composite design depends on fiber direction, the order of the sheet, and the pattern's cutting. When more layers are added, the performance and stability of the acoustics of the sound system get better. The perforated discs made from aluminum increase the release of sound through structural resistance. The advantage comes from glass and basalt fibers stopping heat and noise, and rubber helping to absorb vibrations both at the office and in cars. Furthermore, Lightweight acoustic models have the ability to perform highly. and great at keeping noise in. They greatly help the acoustics and lower the energy used. There is a need for scientists to carry on investigating and verifying the results in experiments to make the acoustics better, build sustainability, and improve the possibility of mass production. This paper describes the role of acoustic engineers using new methods and tools to make today's buildings and infrastructure quieter

Link: https://doi.org/10.1115/IMECE-INDIA2025-159907

(WOS)

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Comprehensive Review on Rehabilitation Strategies for Indian Bridge Infrastructure

AUTHOR :

Nilapwar, D; Shelake, A.G; Minde, P.R.

JOURNAL NAME:

Journal Of Structural Design And Construction Practice

DETAILS:

Published on 24 December 2025

ABSTRACT:

This paper underscores the critical role of bridges in India's transportation network and highlights the pressing need for effective rehabilitation strategies to address their aging infrastructure. With over 200 bridges exceeding 75 years of age, the transportation network urgently requires proactive rehabilitation efforts. While government initiatives like Setu Bharatam aim to tackle this challenge, the current approaches remain inadequate and largely reactive. This review delves into various rehabilitation strategies, including repair, replacement, retrofitting, and reconstruction, examining their materials, methodologies, and specific applications. It emphasizes that the selection of an appropriate strategy should be tailored to the unique defects and conditions of each bridge. By categorizing common defects in aging bridges and aligning them with suitable rehabilitation methods, the study offers a systematic framework to enhance the safety, durability, and longevity of bridge infrastructure. Furthermore, a comparative analysis of materials and techniques highlights the strengths and limitations of each approach, advocating for a structured and proactive strategy that prioritizes cost-effectiveness and safety. The paper concludes by providing recommendations for the optimal application of rehabilitation methods, addressing the specific challenges faced in the Indian context.

Link: https://doi.org/10.1061/JSDCCC.SCENG-1947

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

MorseMate: Portable Morse Code to Text Converter

AUTHOR :

Papanwar, KV

JOURNAL NAME:

Smart Trends In Computing And Communications, Smartcom 2025, Vol 9

DETAILS:

Published on October 2025

ABSTRACT:

MorseMate is a user-friendly Morse code converter designed to simplify the process of converting Morse code to alphanumerical values by allowing input through three buttons for three separate functions involved in the transmission of the code. This approach eliminates the need for timing-based input, making Morse code more accessible and easier to use. The device, powered by an ESP8266 microcontroller and featuring a 128 x 64 Organic Light Emitting Diode (OLED) display, converts Morse code into readable text in real-time. Users can input their sequences with the press of a button, and a long press of the submit button clears the display, allowing for continuous use. Custom I2C configuration provides flexibility in hardware setup, while the compact design ensures portability. This paper elaborates on how the system combines simplicity, efficiency, and practicality, to make Morse code more accessible to a wider audience.

Link: https://doi.org/10.1007/978-981-96-7520-3_26

(WOS)

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

ChSp-ACN: Channelized Spatial Attention Enabled Adam-Optimized Convolutional Neural Network for Intrusion Detection

AUTHOR :

Patil, N; Joshi, S

JOURNAL NAME:

Cybernetics And Information Technologies

DETAILS:

Published on 1 March 2026

ABSTRACT:

Intrusion detection is a major concern in network systems where numerous smart devices are interconnected to handle sensitive information. Such interactions expose networks to threats like weak authentication, eavesdropping, malicious payloads, and a high false alarm rate. To address these challenges, a Channelized Spatial Attention enabled Adam optimized Convolutional Network (ChSp-ACN) is developed to identify malicious activities. The proposed ChSp-ACN effectively manages data imbalance and refines input features using KNN imputation and normalization. Its spatial attention mechanism enhances detection accuracy by focusing on relevant attack features, while the Adam optimizer fine-tunes model parameters to minimize false positives. Experimental evaluation demonstrates that ChSp-ACN achieves superior results compared to existing methods, attaining an accuracy of 97.22%, specificity of 97.24%, sensitivity of 97.20%, and a False positive rate of 0.03, which attains maximal performance effectiveness under the BoT-IoT dataset.

Link: https://doi.org/10.2478/cait-2026-0007

(WOS)

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Three years of chemotherapy tolerance with concurrent Ayurvedic treatment in a metastatic lung adenocarcinoma: A case report

AUTHOR :

Nimbalkar, RG; Marne, PA; Kulkarni, VM; Baheti, AM; Pawar, AT; Tagalpallewar, AA; Nimbalkar, MR

JOURNAL NAME:

Journal Of Ayurveda And Integrative Medicine

DETAILS:

Published on March 2026

ABSTRACT:

Lung adenocarcinoma, a prevalent form of non-small cell lung cancer, presents significant challenges due to its advanced stage at diagnosis and heterogeneity. This case report details the therapeutic journey of a 61-year-old female patient diagnosed with metastatic lung adenocarcinoma, managed through an integrative approach combining chemotherapy and Ayurvedic treatment. Conventional therapy consisted of carboplatin, pemetrexed, and geftinib, targeting both primary and metastatic sites. Concurrent Ayurvedic treatment was introduced to alleviate chemotherapy-related side effects and enhance the patient's quality of life. Over a 36 months period, the patient demonstrated minimal side effects and a near-complete regression of the primary lung lesions. This case highlights the potential of Ayurvedic medicine as an adjunct to chemotherapy, offering improvements in symptom management and overall patient well-being, without obstructing the chemotherapy efficacy.

Link: https://doi.org/10.1016/j.jaim.2026.101325

(WOS)

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Workforce agility revisited: a comprehensive framework and strategic directions based on mixed methods research

AUTHOR :

Ajgaonkar, S; Neelam, NG

JOURNAL NAME:

International Journal Of Organizational Analysis

DETAILS:

Published on 24 March 2026

ABSTRACT:

PurposeThe purpose of this paper is to critically attain a comprehensive understanding and prediction of workforce agility (WA) and its organisational and individual enablers, along with moderators, required to manage the high pressure on high-growth and high-tech IT Industry.Design/methodology/approachThe study has adopted a concurrent mixed method approach, comprising quantitative survey of employees, tested using partial least square structural equation modelling for causal-predictive capabilities and explored WA using qualitative interviews of senior leaders.FindingsThis research explains a fundamental change in how the construct of WA needs to reflect in research. The article provides a new definition, a theoretical framework and insights on contextual, strategic and tactical management of WA with the overarching dynamic capability theory. Independent variables show significant positive effects on employee agility (EA), namely, organisational enablers, individual enablers - career self-management (CSM) and intolerance for ambiguity. The study shows that CSM has a positive and the most significant effect on EA and professional client interaction has a significant negative moderation.Practical implicationsMeta-integration provides recommendations for industry managers who will find an advisory on agility centric organisational practices of leadership, career management, client interaction, organisation-employee strategic alignment, drawbacks and restrictions of agility, along with predictive WA models for practice. This exhaustive study of evolution in the meaning of WA and workforce management practices (WMP) is capable of impactful implications.Originality/valueThe study affirms the inclusion of WMP and CSM, states the difference between employee agility and WA constructs and explores the drawbacks of WA.

Link: https://doi.org/10.1108/IJOA-05-2025-5574

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Surface functionalization techniques for improved additive manufacturing of aramids

AUTHOR :

Kulkarni, DS; Indalkar, A; Gupta, S; Kandasubramanian, B

JOURNAL NAME:

Bulletin Of Materials Science

DETAILS:

Published on 19 March 2026

ABSTRACT:

Aramid fibres serve as exceptional reinforcements in composite materials owing to their combination of high modulus, superior specific strength and low density. Their remarkable properties make them well-suited for additive manufacturing (AM) applications. However, their smooth, chemically inert surface limits fibre-matrix bonding. Surface modifications enhance surface roughness and chemical activity, improving adhesion and composite performance. Unlike conventional methods, AM offers precise control over material distribution, fibre alignment and complex geometries, enabling lightweight, strong structures. Aramid fibre-reinforced polymers produced through AM show enhanced tensile strength, superior impact resistance and enhanced thermal stability, rendering them highly advantageous for aerospace, automotive and defence industries. Fused filament fabrication and selective laser sintering, which are the recent advancements in AM technologies, have improved fibre dispersion and orientation in both thermoplastic and thermosetting matrices, while reducing material waste and supporting sustainability. Despite these benefits, challenges like fibre breakage, anisotropic mechanical properties and poor interfacial adhesion persist. Future research should focus on printing parameter optimization, developing novel fibre-polymer compatibilization techniques, and exploring hybrid reinforcements to further improve AM-fabricated aramid composites. As AM evolves, it holds significant potential to transform composite manufacturing through enhanced design flexibility, efficiency and mechanical performance.

Link: https://doi.org/10.1007/s12034-025-03535-x

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Influence of Aggregate Gradation and Mineral Admixtures on the Properties of Permeable Concrete: An Experimental Study

AUTHOR :

Sathe, S; Ansari, U; Razvi, SWN; Kangda, MZ

JOURNAL NAME:

Journal Of Structural Design And Construction Practice

DETAILS:

Published on 23 December 2025

ABSTRACT:

Strength and permeability are crucial design factors for permeable concrete (PC), but limited research has examined the influence of aggregate size and mineral admixtures on PC properties. In the studies, the constant head permeability method was used to find the coefficient of permeability of the PC, as there is no standard method for measuring it correctly and precisely in laboratory conditions. X-ray fluorescence spectroscopy, scanning electron microscopy, and Fourier-transform infrared spectroscopy analyses were performed on cement, fly ash (FA), and microsilica (MS) to characterize their morphology, chemical properties, quality, and reactivity. Also, the experiment aims to investigate the influence of various aggregate grading (single-, two-, and three-particle size gradations), MS and FA, and water-to-binder ratio (0.20, 0.25, and 0.30) with a constant C/A ratio of 0.25 on the compressive strength (CS), split tensile strength (STS), flexural strength (FS), permeability, and porosity of PC. The findings demonstrate that three-particle size gradation mixes give higher CS, STS, and FS than single- and two-particle size gradations. For single-sized aggregates, permeability decreases with increasing particle size. A combination of three-particle size gradations results in the lowest permeability. The maximum CS and maximum permeability for the combined use of MS and FA are found at the replacement levels of 5% and 10%, respectively. The investigation also established the correlation between porosity and permeability.

Link: https://doi.org/10.1061/JSDCCC.SCENG-2016

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

An Analysis of Cross-Lingual Natural Language Processing for Low-Resource Languages

AUTHOR :

Naik, V; Rajeswari, K; Jadhav, K; Rahalkar, A

JOURNAL NAME:

Proceedings Of Tenth International Congress On Information And Communication Technology, Icict 2025, Vol 9

DETAILS:

Published on October 2025

ABSTRACT:

This study examines cross-lingual natural language processing (NLP) techniques to address the challenges of developing conversational AI systems for low-resource languages. These languages often lack extensive linguistic resources such as large-scale corpora, annotated datasets, and language-specific tools, making it difficult to capture the linguistic distinctions and contextual meaning essential for high-quality dialogue systems. This language gap restricts accessibility and inclusivity, preventing speakers of these underrepresented languages from fully benefiting from advancements in technology. The study compares various factors that affect model performance, including transformer model architecture, cross-lingual embeddings, fine-tuning strategies, and transfer learning approaches. Despite these challenges, the research shows that cross-lingual models offer promising solutions, especially when utilizing techniques like transfer learning and multilingual pre-training. By transferring knowledge from high-resource languages, these models can compensate for the scarcity of data in low-resource languages, enabling the development of more accurate, culturally sensitive, and inclusive AI systems. The findings highlight the importance of bridging linguistic divides to foster greater language diversity, accessibility, and technological inclusivity, ultimately supporting cultural preservation and revitalization.

Link: https://link.springer.com/chapter/10.1007/978-981-96-6438-2_4

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Decentralized finance evolution: A comprehensive bibliometric analysis

AUTHOR :

Kumar, R; Sharma, SK; Kishor, K; Devi, P

JOURNAL NAME:

Sustainable Futures

DETAILS:

Published on December 2025

ABSTRACT:

The swift advancement of technology has transformed numerous sectors, particularly the financial services business, with Decentralised Finance (DeFi) emerging as a notable disruptor. To guarantee the sustained development and integration of DeFi, it is necessary to investigate and comprehend the emerging trends in this field. This study presents a bibliometric analysis of 181 Decentralized Finance articles published from 2010 to 2024 in the Scopus database The data were examined and illustrated utilising the VoS viewer platform and R software, yielding both descriptive and visual insights. Authored by 503 researchers across 418 universities, these works span 129 journals and cite 10,428 references. Publications show an annual growth rate of 29.2 %, with 2024 exhibiting unprecedented output. Frontiers in Blockchain leads with six publications, followed by the Journal of Risk and Financial Management. New Zealand tops the citation rankings, led by Auckland University with 338 citations. Bellavitis C. and Chen Y. are the most prolific authors each with 338 citations. The cluster analysis identifies six thematic areas, offering insights into various aspects of decentralized finance. This study offers critical insights for academics, policymakers, and industry practitioners by mapping DeFi's transition from conventional financial systems to decentralized ecosystems. The findings illuminate research gaps, propose future research avenues, and underscore the necessity of developing policies and cyber hygiene protocols to mitigate the risks of decentralized finance. This work thus serves as a valuable resource for advancing the discourse on DeFi and its implications for financial innovation.

Link: https://doi.org/10.1016/j.sftr.2025.101209

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Membrane proximal actin cytoskeleton and protein crowding synergistically modulate the mesoscale mobility of membrane components in the cell membrane

AUTHOR :

Talluri, S; Varma, S; Krishna, PS; Banerjee, A; Iyer, M; Ganji, M; Sarkar, S; Mayor, S

JOURNAL NAME:

Biophysical Journal

DETAILS:

Published on 9 February 2026

ABSTRACT:

The plasma membrane is a dynamic interface where cells interact with their environment, organize signaling cascades, and engage in trafficking processes. Critical to these functions is the diffusion of membrane constituents such as proteins and lipids to enable encounters between functional counterparts leading to signaling reactions or building molecular assemblies in the membrane. The membrane is tethered to a cortical actin meshwork and exhibits a high density of peripheral and membrane proteins, contributing to protein crowding in the membrane. The influence of these features has been considered to be key regulators of diffusion at the membrane. In this study, we combined live-cell imaging with a minimal, reconstituted, in vitro system to test how actin fences and protein crowding shape the mesoscale diffusional transport of membrane proteins. Using imaging-fluorescence correlation spectroscopy (ImFCS), we were able to measure the relationship between membrane proximal actin density and molecular mobility of an actin-binding protein and a tracer protein that is incapable of binding actin. We also developed a robust pipeline to measure the density of proteins at the cell membrane using quantitative microscopy, super resolution imaging, and bioinformatic analyses. We then systematically varied actin-based picketing and protein density in our in vitro and in silico model membrane systems, measured protein mobility, and compared it with mobility in cell membranes. We find that while membrane-proximal actin density directly influences actin-binding membrane proteins, protein crowding in the bilayer masks the influence of local actin structures on tracer mobility at the mesoscale. Therefore, cortical actin density and protein crowding together serve to regulate molecular mobility in the plasma membrane, opening up the possibility for tuning of mobility by the local crowder density and architecture of the actin cortex.

Link: https://www.cell.com/biophysj/fulltext/S0006-3495(25)02294-5

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Design and Implementation of a Student-Built Ground Station Antenna in CanSat

AUTHOR :

Choudhary, M; Tambekar, R; Saranjame, S

JOURNAL NAME:

2025 Ieee Space, Aerospace And Defence Conference, Space

DETAILS:

Published on July 2025

ABSTRACT:

The paper focuses on the design and optimization of an antenna system for a CanSat, emphasizing the importance of reliable communication between the CanSat and the ground station, particularly for the CanSat India Student competition. It discusses the selection of the XBee S2C Pro communication device, which operates at 2.4 GHz and has a theoretical range of 3200 m, highlighting its performance and reliability. The design process involved using materials like aluminum and wooden structures, with a transition to measuring tape for better reliability in connections. The antenna was simulated using MATLAB and ANSYS HFSS, indicating a focus on achieving optimal impedance matching for efficient signal transmission.

Link: https://doi.org/10.1109/SPACE65882.2025.11171358

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Low-Cost Ground Station Design for NOAA APT signal reception using SDR

AUTHOR :

Choudhary, M; Tambekar, R

JOURNAL NAME:

2025 Ieee Space, Aerospace And Defence Conference, Space

DETAILS:

Published on July 2025

ABSTRACT:

This study presents the design and testing of a V-dipole antenna, Quadrifilar Helix Antenna (QHA) and Turnstile Antenna for receiving NOAA satellite signals using RTL-SDR. The V-dipole, a simple and effective design, provided strong reception under optimal satellite pass conditions, while the QHA, with its circular polarization, ensured more stable signals. Signals were acquired using SDR++ and decoded using SatDump and NOAA APT, successfully capturing Automatic Picture Transmission (APT) images. Results confirm that low-cost, student-built antennas can effectively receive weather satellite data, demonstrating the potential of SDR-based ground stations for real-time meteorological applications.

Link: https://doi.org/10.1109/SPACE65882.2025.11171258

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

A Novel Extension of Akash Distribution: Properties, Simulation and Applications

AUTHOR :

Rather, AA; Mohiuddin, M; Alotaibi, ES; Qayoom, D; Saraja, DV; Metkewar, PS; Dar, SA

JOURNAL NAME:

Lobachevskii Journal Of Mathematics

DETAILS:

Published on April 2026

ABSTRACT:

This paper presents a novel generalization of the Akash distribution using the Alpha Power Transformation method, enhancing its flexibility and applicability in statistical modeling. The proposed distribution is systematically examined through an in-depth analysis of its key properties, including moments, skewness, kurtosis, and reliability measures. Its ability to effectively capture skewed data patterns makes it a valuable addition to the family of generalized distributions. Parameter estimation is conducted using both the maximum likelihood and least squares methods to ensure robust inference. The superiority of the proposed model is demonstrated through extensive empirical validation using real-world datasets from medical sciences, where it consistently outperforms existing distributions in terms of goodness-of-fit criteria. The findings underscore the broader applicability of the new distribution in various scientific and engineering domains, offering a powerful tool for researchers and practitioners dealing with asymmetric data.

Link:
https://link.springer.com/article/10.1134/S1995080225609683

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Field Emission Performance of 2D Ti2CT x (T x = O2, F2, O-F) MXene: Experimental Insights and Theoretical Endorsement

AUTHOR :

Kakade, PM; Aher, R; Kachere, AR; Cho, JN; Deore, A; Jadkar, SR; Chauhan, I; Kim, T; Mandlik, NT; Kim, JM; Bulakhe, RN

JOURNAL NAME:

Acs Applied Nano Materials

DETAILS:

Published on April 2026

ABSTRACT:

Field emission (FE) is an important electron emission mechanism for vacuum microelectronic devices; however, conventional emitters often exhibit high turn-on fields, limited emission stability, and degradation during prolonged operation. Two-dimensional MXenes have recently emerged as promising FE materials due to their remarkable electrical conductivity, comparatively low work function, and tunnelable surface terminations. Nevertheless, most studies have focused on Ti3C2T x MXene, while other compositions such as Ti2CT x remain largely unexplored, particularly regarding the influence of surface terminal groups on their electronic and emission properties. Herein, Ti2CT x (T x = -F2, -O2, -OF) MXene was synthesized via selective chemical etching of the Ti2AlC MAX phase and investigated for its FE characteristics. The material exhibits a polycrystalline hexagonal layered structure with a high specific surface area of 349.02 m2 g-1. Ti2CT x MXene demonstrates excellent FE performance with a low turn-on field of 1.56 V mu m-1 and a threshold field of 2.0 V mu m-1 (at 10 mu A cm-2), along with a stable emission for 4 h. Density functional theory calculations further reveal that surface terminations strongly influence the electronic structure and work function, with the experimental value of 4.66 eV closely matching the -F2 termination. These results highlight Ti2CT x MXene as a promising material for stable and efficient FE applications.

Link: https://doi.org/10.1021/acsanm.6c00228

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Data-driven and experimental synergy: Metaheuristic-optimized extreme gradient boosting modeling of self-compacting concrete compressive strength

AUTHOR :

Vardhan, DS; Sharma, A; Biswas, R; Bura, A

JOURNAL NAME:

Engineering Structure And Civil Engineering

DETAILS:

Published on April 2026

ABSTRACT:

This investigation develops a comprehensive framework that integrates machine learning modeling with experimental validation for predicting the compressive strength of self-compacting concrete (SCC). The predictive models were constructed using a consolidated data set from existing literature and validated through independent laboratory experiments on ternary blends incorporating fly ash and silica fume. Experimental results demonstrated that optimized combinations of 30% fly ash and 5%-7.5% silica fume produced superior fresh-state properties, including enhanced flowability and reduced segregation, while achieving substantial improvements in compressive, tensile, and flexural strengths across all curing ages. Advanced ensemble learning techniques were employed by coupling Extreme Gradient Boosting (XGBoost) with three metaheuristic optimization algorithms: Tuna Swarm Optimization (TSO), Coyote Optimization Algorithm, and Giant Trevally Optimization. The XGB-TSO model demonstrated superior predictive performance, achieving coefficient of determination R2 = 0.9690, root mean square error of 2.15 MPa, weighted mean absolute percentage error of 2.63%, and Nash-Sutcliffe efficiency of 0.9674. Model interpretability analysis using SHapley Additive explanations (SHAP) identified concrete age and cement content as the most influential parameters, providing transparent insights into strength development mechanisms. Taylor diagram analysis confirmed statistical robustness through high correlation coefficients and minimal centered root mean square error. A graphical user interface was developed to enable real-time strength prediction from standard mix parameters, facilitating practical implementation. Experimental validation using laboratory-produced SCC specimens demonstrated excellent agreement with model predictions, achieving validation R2 = 0.9698 and mean absolute error of 1.83 MPa. The strong correlation between predicted and measured values validates the framework's reliability for engineering applications.

Link: https://doi.org/10.1007/s11709-026-1277-9

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Thermal and hydraulic performance evaluation of a modified circular leaf type receiver for solar tower systems

AUTHOR :

Kulkarni, KG; Tamkhade, PK; Nalavade, SP; Gurav, RB; Mundra, SS; Joshi, SP

JOURNAL NAME:

Heat And Mass Transfer

DETAILS:

Published on April 2026

ABSTRACT:

Heliostats concentrate solar radiation onto a central receiver in solar tower systems; however, conventional receiver designs often suffer from limited thermal power output, efficiency, and operational stability. To address these limitations, this research introduces a Modified Circular Leaf Type Solar Receiver with an optimized geometric configuration aimed at enhancing thermal performance, minimizing hydraulic losses, and improving overall energy utilization. The study combines computational fluid dynamics (CFD) simulations using ANSYS (R) 16 with laboratory-scale experiments to provide a detailed thermofluidic and thermodynamic evaluation. A comparative analysis is performed between the proposed design and conventional receivers, including conical, cylindrical, and billboard types, under varying solar flux intensities (1000-3000 W/m(2)) and mass flow rates (0.1-1.0 kg/s), using water as the heat transfer fluid. In addition to thermal performance, exergy analysis is conducted to evaluate system irreversibility, determine the quality of energy conversion, and identify regions with maximum exergy destruction. It is important to note that the study focuses on comparative thermofluidic assessment under low-to-moderate heat flux conditions rather than full-scale concentrated solar power (CSP) tower operation. The results demonstrate that the proposed receiver achieves a maximum thermal efficiency of up to 95%, representing an improvement of 16-51% over conventional designs at lower flow rates (0.1-0.6 kg/s). Additionally, a reduction in pressure drop of approximately 12% is observed, along with a peak power output of 0.09 kW. The reported efficiency corresponds to receiver-level heat absorption under controlled laboratory conditions, excluding heliostat and atmospheric losses, indicating enhanced thermodynamic performance for practical applications.

Link: https://link.springer.com/content/pdf/10.1007/s00231-026-03678-5.pdf

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

In silico aptamer design: from sequence selection to structural optimization and computational modelling strategies

AUTHOR :

Sinharay, A; Raut, M; Kale, A

JOURNAL NAME:

Journal Of Computer-Aided Molecular Design

DETAILS:

Published on April 2026

ABSTRACT:

Aptamers are of growing importance due to their high specificity, tunable affinity, and versatility across therapeutic, diagnostic, and biosensing applications. Unlike antibodies, they can be synthesized rapidly, modified easily, and remain stable under diverse conditions, making them powerful tools in both fundamental research and translational healthcare. The De Novo approach to aptamer development represents a paradigm shift from traditional SELEX-based methods toward fully computational, data-driven design. This strategy integrates bioinformatics, artificial intelligence, and molecular modeling to generate high-affinity aptamer sequences without relying on pre-existing libraries. Beginning with target characterization, ranging from small molecules to macromolecules and whole cells, the pipeline employs tools like SwissModel and AlphaFold for structural prediction, and FTsite or Fpocket for binding site identification. AI techniques such as Monte Carlo Tree Search, Hidden Markov Models, and Variational Autoencoders guide sequence generation, followed by secondary structure prediction and molecular dynamics simulations for interaction validation. Advanced platforms including AptaTRACE, RaptGen, AptaDiff, AptaTrans, and AiDTA demonstrate the power of generative modeling, transformer architectures, and reinforcement learning in aptamer discovery. These frameworks enable first engineering, validated through SPR and in vitro assays, and offer scalable solutions to overcome limitations in dataset size, structural modeling, and experimental throughput. The De Novo approach thus establishes a robust design-test-learn cycle, positioning AI-driven aptamer development as a cornerstone of next-generation diagnostics, therapeutics, and biosensing.

Link: https://link.springer.com/article/10.1007/s10822-026-00800-x

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Advanced skin delivery of L-arginine: design, characterization, and anti-aging efficacy of optimized cubosomal nanocarriers

AUTHOR :

Vinchurkar, R; Kuchekar, A

JOURNAL NAME:

Pharmaceutical Development And Technology

DETAILS:

Published on April 2026

ABSTRACT:

The purpose of this study was to develop a L-arginine-loaded cubosomal nanocarrier cream for topical anti-aging application. Glyceryl Monooleate and Poloxamer 407 cubosomes effectively encapsulated L-arginine, resulting in a nanosized structure (similar to 34.7 nm) with high entrapment efficiency (71.67 +/- 0.81%). Optimal drug content (96 +/- 0.08%), ideal viscosity (19,666 cps), and skin-compatible pH (6.4 +/- 0.3) were obtained when incorporated into a cream base containing almond oil, Cosmacol ELI, and Sepineo P600. Formulation physiochemical compatibility was confirmed by FTIR and DSC study, sustained drug release (78.92% over 6 h) shown by in vitro release study. Reduced TNF-alpha expression indicated that the formulation did not elicit any pro-inflammatory response, whereas cell viability was found to be above 80%. Reduced MMP-1 and increased collagen I gene levels demonstrated anti-aging efficacy. Over a six-month period, stability studies confirmed that there was no phase separation. Overall, the cubosomal cream showed outstanding entrapment, stability, safety, and anti-aging potential, offering a promising non-invasive cosmeceutical approach for skin rejuvenation.

Link: https://doi.org/10.1080/10837450.2026.2652978

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Controlled release of urea from poly(butylene adipate-co-terephthalate) nanoparticles

AUTHOR :

Musale, T; Khurpade, PD; Kulkarni, AD

JOURNAL NAME:

Green Materials

DETAILS:

Published on April 2026

ABSTRACT:

Rapid dissolution, volatilisation and leaching of fertilisers has been a major concern in agriculture industry. Controlled-release fertilisers help to regulate the nutrient release and reduce the environmental damage. In the present study, poly(butylene adipate-co-terephthalate) (PBAT)-based nanoparticles were synthesised for the controlled delivery of urea. Formulations with different urea to PBAT weight ratios (1:5, 1:10 and 1:15) were prepared using solvent evaporation method and characterised for morphology, crystallinity and release kinetics. X-ray diffraction analysis showed the absence of additional peaks of urea, suggesting that urea remained dispersed within the PBAT network. Scanning electron microscopy images displayed changes from rough and agglomerated surfaces in samples with lower polymer content to compact and uniform surfaces for higher PBAT compositions, thereby indicating enhanced distribution and encapsulation of urea in the polymer matrix. Zero-order, first-order, Higuchi and Korsmeyer-Peppas models were used to study urea release kinetics. The analysis showed a transition from Fickian diffusion to anomalous transport and again to Fickian diffusion with increasing polymer content, suggesting molecular diffusion and polymer relaxation. The results highlight the role of polymer composition in controlling the nutrient release behaviour and the potential of PBAT-based systems as biodegradable controlled-release fertilisers for sustainable agricultural systems.

Link: https://doi.org/10.1680/jgrma.26.00004

(WOS)

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Dynamics Of Currency Exchange Rates Co-Movements And Volatility: Indian Rupee Against Major Trading Currencies

AUTHOR :

Kumar, M; Patil, AA; Jaroliya, DD; Bhatt, A; Gaurav, K

JOURNAL NAME:

Banks And Bank Systems

DETAILS:

Published on 17 March 2026

ABSTRACT:

Foreign exchange markets have intrigued not only corporations engaged in export and import, but also individuals and other entities seeking to achieve decent risk-adjusted returns and protect themselves from future currency exchange rate exposure. Hence, researchers are drawn to examine the volatility of returns and identify diversification and hedging opportunities to mitigate country and financial risks of the five largest trading currencies with respect to the Indian currency, the rupee. The study used historical daily exchange rate data for the Indian currency with respect to American dollar, euro, British pound, Japanese yen, and Australian dollar, spanning from January 1, 2008 to December 31, 2025. American dollar has the highest average daily return among the five currencies, followed closely by euro and pound. Pound exhibits the highest standard deviation, and its volatility suggests greater uncertainty for investors dealing in these transactions. High correlations between dollar-euro and euro-pound indicate that they are influenced by similar economic factors or market sentiments. Frequent structural breaks highlight the possibility for currency exchange rates to shift dramatically due to unforeseen events. This is a crucial insight for risk management, as it signals the need for dynamic hedging strategies that can adapt to sudden changes in market conditions. Investors and policymakers can leverage these findings to optimize currency portfolios and reduce financial risk, especially when seeking diversification benefits and longterm stability amidst global market shifts.

Link: http://dx.doi.org/10.21511/bbs.21(1).2026.09

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Breaking Down IPO Barriers: Cultivating Conducive Retail Investment Environment

AUTHOR :

Srivastava, SP; Himanshu; Jyoti, G; Gupta, S

JOURNAL NAME:

Journal Of Public Affairs

DETAILS:

Published on April 2026

ABSTRACT:

The paper aims at providing a modeling framework on the barriers, which influence the retail investment decision in the initial public offering (IPO) market. Based on a structured literature review and nominal group-based expert discussions, eight major barriers were identified and they were assessed through the grey-DEMATEL methodology. The findings point out that information asymmetry and higher pricing by issuers are the most prominent barriers. High information asymmetry and a lack of understanding of IPO issuers' future prospects force investors to make decisions based on heuristics rather than on reliable and relevant information. The absence of a standard valuation method compels uninformed investors to perform a subjective valuation of IPO issuers. Investors become unable to distinguish between underpriced and overpriced IPOs. Thus, this study provides a supporting explanation for the winner's curse and the hot issue market phenomena. The current study suggests that the establishment of a favorable investment environment is an ongoing activity, and the regulators have to intervene frequently in order to achieve optimality.

Link: https://doi.org/10.1002/pa.70127

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Reliability and Feasibility Assessment of EldenCare: A Geriatric Clinical Decision Support System Pilot Study

AUTHOR :

Syed, J; Chalasani, SH; Pereira, P; Sharma, A; Patil, V; Ramesh, M; Dayananda, M; Polumuri, SK; Tank, NB; Pallavi, TL; Deepa, T; Ghule, G

JOURNAL NAME:

Hospital Pharmacy

DETAILS:

Published on April 2026

ABSTRACT:

Background: Medication safety is a critical concern in geriatric care, with high rates of polypharmacy and potentially inappropriate medications among older adult patients in India. The EldenCare application was developed as a digital clinical decision support tool to address these challenges through evidence-based screening and collaborative medication management. Objective: To evaluate the reliability and feasibility of the EldenCare system in supporting safe medication practices among older adults. Methods: This prospective observational study was conducted over 10 days with 22 healthcare professionals and 15 simulated patient profiles. Reliability assessment included the validation of automated clinical calculations (creatinine clearance and glomerular filtration rate) and the evaluation of drug-related problem (DRP) detection. Feasibility was measured using the System Usability Scale (SUS), AttrakDiff Mini questionnaire, and Technology Acceptance Model. A companion mobile application was also evaluated by 15 Android users based on 11 key features. Results: The EldenCare system received positive usability ratings (SUS: 72.82 +/- 9.83) and high acceptance scores (perceived usefulness: 5.86 +/- 0.65; perceived ease of use: 6.02 +/- 0.60) from healthcare professionals, with no significant differences between physicians and clinical pharmacists (P > .05). However, significant technical limitations were identified: (1) none of the 25 test cases for clinical calculations fell within the acceptable +/- 2% error margin; (2) DRP detection showed inadequate accuracy across all categories (53.42% overall, range: 61.64% to 76.02%, all below the predetermined 95% threshold); and (3) the patient mobile application's medication and appointment reminder notifications failed after 3 days. Conclusion: EldenCare shows promising potential through high user acceptance but requires substantial technical refinement before clinical implementation. Future development should focus on algorithm accuracy, medication database mapping, and notification reliability to enhance medication safety in older adults.

Link: https://doi.org/10.1177/00185787261426945

(WOS)

Published on March 2026

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