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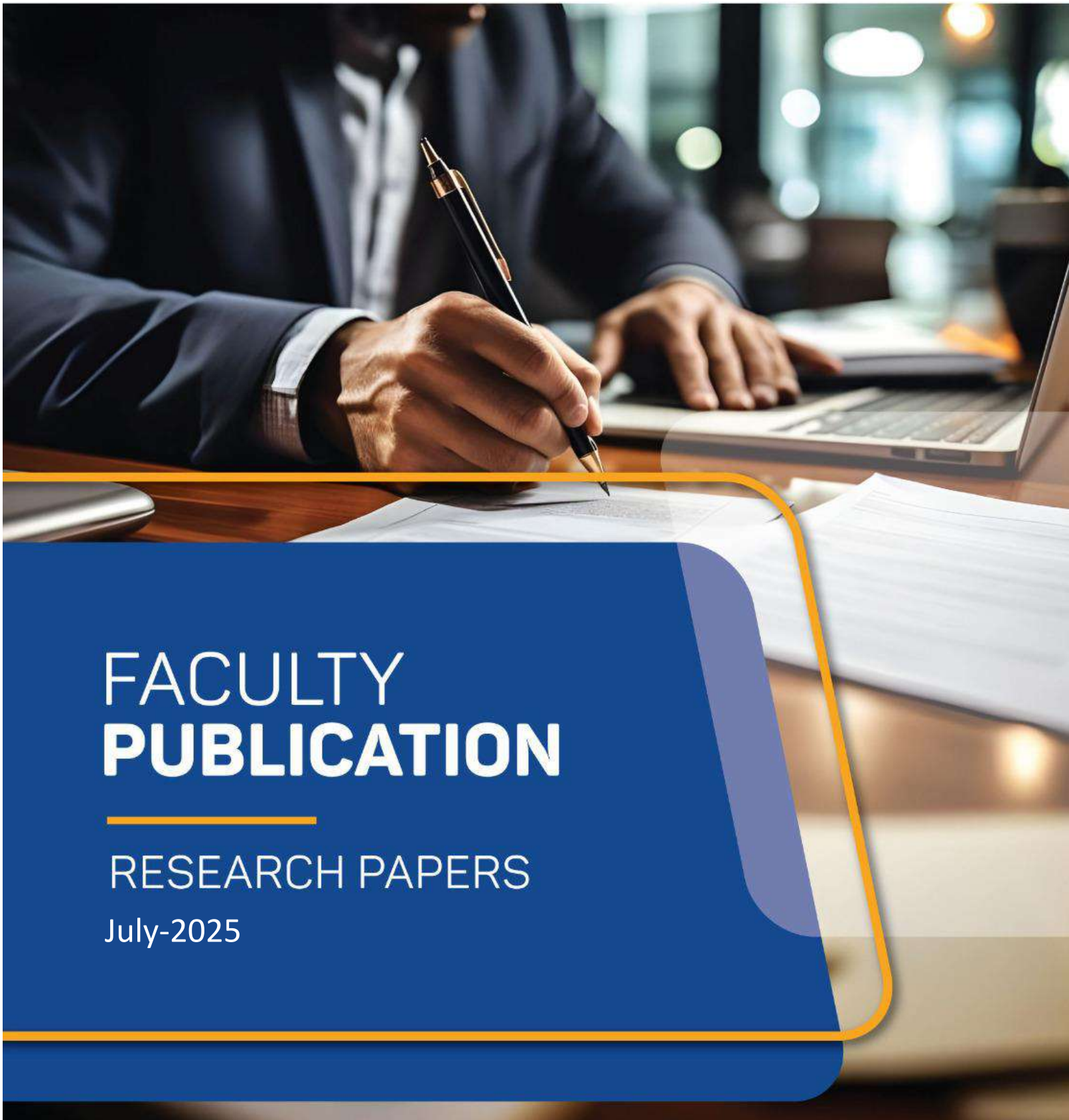

FACULTY PUBLICATION

RESEARCH PAPERS

July-2025

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TITLE:

Artificial Intelligence Based Recruitment Prediction and Sentiment Analysis for Enhanced HR Efficiency

AUTHOR :

Tripathi M.A.; Komatiguntala D.; Moorthygari S.L.; Dadhabai S.; Mishra A.; Bommisetti R.K.

JOURNAL NAME:

Journal of Machine and Computing (Vol.-5, Issue-3)

DETAILS:

Published on 5 July 2025

ABSTRACT:

In the present era of data-driven organizational environment, the practice of Human Resource Management (HRM) has become increasingly reliant on intelligent Decision-Support Systems (DSS). This study develops a multifaceted two-pipeline model of Predictive Modelling (PM) and Sentiment Analysis (SA) to enhance workforce analytics capabilities. A publicly available HRM analytic dataset is used to train supervised classification models, including Random Forest (RF), Extreme Gradient Boosting (XGBoost), and Long Short-Term Memory (LSTM), as well as an ensemble model that integrates these classifiers. These approaches use structured data to predict employee attrition based on features such as age, job role, experience, and job satisfaction. The unstructured textual data sources, including resumes and employee reviews, are handled using state-of-the-art Natural Language Processing (NLP) such as tokenization, Term Frequency-Inverse Document Frequency (TF-IDF), and Bidirectional Encoder Representations as Transformers (BERT)-based embeddings. The new Mathematically Modified Robustly Optimized BERT Pretraining (MM-RoBERTa) is proposed for extracting the PM and SA. All the models are evaluated using k-fold Cross-Validation (CV) and standard evaluation measures, namely Accuracy, F1-score, Area Under the Receiver Operating Characteristic Curve (AUC), and Mean Absolute Error (MAE). The ensemble model achieves a predictive accuracy of 91.3%, and MM-RoBERTa outperforms existing SA with an accuracy of 93.1 %. The combination of predictive and affective insights is of practical use in fine-tuning talent retention, empowering HRM professionals to make informed decisions based on objective performance indicators and subjective emotional states.

Link:
https://anapub.co.ke/journals/jmc/jmc_abstract/2025/jmc_volume_05_issue_03/jmc_volume5_issue3_145.html

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TITLE:

Investigation of mechanical performance of concrete with end-of-life solar panels as sand replacement

AUTHOR :

Shitole A.D.; Gogate N.; Zele S.; Joshi A.; Jagadale A.

JOURNAL NAME:

Journal of Sustainable Cement-Based Materials

DETAILS:

Published on 16 July 2025

ABSTRACT:

This study explores the use of solar waste sand (SWS), obtained from end-of-life photovoltaic panels, as a partial substitute for manufactured sand (M-sand) in M30 grade concrete to promote sustainable construction. SWS was incorporated at 25%, 50%, and 75% replacement levels, and its effect on mechanical, durability, and microstructural properties was evaluated. A 48% improvement in workability was observed due to the lower water absorption of SWS. Compressive strength ranged from 35.6 to 45.6 MPa, satisfying the IS 456:2000 recommendation for M 30 concrete despite strength reduction at higher SWS contents. Flexural (3.67–3.75 MPa), split tensile (2.68–3.68 MPa), and modulus of elasticity (33.48–39.74 MPa) values also met IS code requirements. Microstructural analysis revealed weak interfacial bonding and isolated air voids, contributing to higher porosity and reduced strength. However, the pore discontinuities and fewer microcracks lowered permeability and chloride ingress, thereby enhancing durability and confirming structural application potential.

Link: https://doi.org/10.1080/21650373.2025.2530746

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TITLE:

Corporate Social Responsibility: Economic Impacts on Consumer Loyalty and Brand Value in the Digital Era

AUTHOR :

Waghmare G.; Dash P.; Jogalekar J.; Killedar M.; Rao M.S.; Biswas M.

JOURNAL NAME:

ECONOMICS - Innovative and Economics Research Journal (Vol.-13, Issue-2)

DETAILS:

Published on 5 June 2025

ABSTRACT:

The study focuses on the impact of Corporate Social Responsibility (CSR) on customer loyalty together with brand appreciation throughout the digital transformation period. The research uses Carroll's (1991) CSR Pyramid, together with Porter & Kramer's (2011) Creating Shared Value theory, to study the impact of CSR programs on consumer perceptions and actions. The research used quantitative survey data combined with qualitative semi-structured interviews conducted with CSR managers who work in retail and technology sectors and sustainable goods industries to gather information. The research evidence reveals that measurements of consumer loyalty are positively correlated with CSR perception evaluations. The implementation of sustainability and transparency-focused CSR programs has brought profitable economic results, including market and revenue expansion. The digital age helps businesses improve the visibility of their CSR activities, gaining greater consumer trust and engagement as their audience grows older. Business competition in the present era relies heavily on CSR as a strategic element that creates enduring customer relationships and expands sustainable business operations. The research also investigates the emergence of greenwashing risks by studying authentic CSR communication practices. Overall, the research provides new evidence regarding how CSR affects economic performance in digital business operations.

Link: https://sciendo.com/article/10.2478/eoik-2025-0045

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TITLE:

Evaluating the Consistency of Neutrosophic Data Using Various Statistical Distributions: Comparative Studies and Applications

AUTHOR :

Singh A.; Alotaibi E.S.; Aslam M.

JOURNAL NAME:

International Journal of Analysis and Applications (Issue-23)

DETAILS:

Published on 16 July 2025

ABSTRACT:

In this paper, we primarily have given neutrosophic coefficient of variation, robust neutrosophic coefficient of variation concern to interquartile range, and robust neutrosophic coefficient of variation concern to median absolute deviation. Following the introduction, we have explored the methods of neutrosophic coefficient of variation, which is an effective method for modeling data that is fuzzy, imprecise, and uncertain. For the comparative study, we have given numerical studies based on neutrosophic distributions including discrete and continuous distributions. First, we have compared all three neutrosophic coefficient of variations and then have given the comparative study for all neutrosophic distributions for these neutrosophic coefficient of variations. Also, we have given real data analysis on climate data to highlight the impact of the neutrosophic coefficient of variations. We found that neutrosophic coefficient of variations NCV and based on IQR have near about similar values while the neutrosophic coefficient of variation based on MAD has higher values than other two for all samples and distributions. Further, we observe that with increasing the sample values all three neutrosophic coefficients of variations also increase for all the distributions and provide a general framework over classical methods of coefficient of variations, and the graphical representations also clarify this.

Link: https://doi.org/10.28924/2291-8639-23-2025-170

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TITLE:

Mass mortality of the endangered Purple Frog, Nasikabatrachus sahyadrensis Biju and Bossuyt, 2003, in the Nelliyampathy Hills, Southern Western Ghats, India

AUTHOR :

Sushanth S.; Darshan M.K.; Ganesh S.R.; Molur S.; Kumara H.N.; Singh M.

JOURNAL NAME:

Amphibian and Reptile Conservation (Vol.-19, Issue-1)

DETAILS:

Published on 30 April 2025

ABSTRACT:

The Purple Frog (Nasikabatrachus sahyadrensis) is a globally endangered, ancient relic-tual frog endemic to the Western Ghats, a biodiversity hotspot of India. Here, we present observations on mass mortality of this species at the Nelliyampathy Hills, a Reserved Forest interspersed by private coffee, rubber, and tea plantations. During 25 person-hours of surveying during January to May 2024 at three sites with various land uses, including Chernalli (a rubber plantation), Nooradi (a tea plantation + village), and Kaikatty (a forest), 185 sightings of Purple frog were obtained. Direct sightings included live tadpoles (N=100; Chernalli; January) and dead tadpoles (N=75; Nooradi; March), with indirect detection of adult males based on their breeding calls emanating from underground (N=10; Kaikatty; May). Our surveys documented the persistence of a breeding population of Purple frog and recorded a mass mortality event in the adjoining plantations. Mass mortality is a cause of concern and calls for better protective measures. Histopathological studies on tadpoles that are found dead without any traumatic injury are recommended to determine the cause of the mortality and to identify measures for preventing a reoccurrence.

Link: https://amphibian-reptile-conservation.org/manuscript/index.php/arc/article/view/122/7

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Correction to: Performance evaluation predictive modeling of cement mortar durability with dimensional limestone waste (Journal of Building Pathology and Rehabilitation, (2025), 10, 2, (139), 10.1007/s41024-025-00645-1)

AUTHOR :

Chauhan H.S.; Sharma K.V.; Gautam P.K.

JOURNAL NAME:

Journal of Building Pathology and Rehabilitation (Vol.-10, Issue-2)

DETAILS:

Published on 30 June 2025

ABSTRACT:

This study investigates the durability and performance of cement mortar incorporating dimensional limestone crushed sand (DLCS) and dimensional limestone slurry (DLS) waste as a partial replacement for river sand. Fourteen mortar mixes with DLS and DLCS replacements of 20%, 30%, and 40% were evaluated for resistance to environmental conditions, including acid attack, sulfate attack, chloride ion penetration, and carbonation. Multiple Linear Regression (MLR), Random Forest Regression (RF), Support Vector Regression (SVR), and Artificial Neural Networks (ANNs) were used to predict the longterm durability of the mortar mixes. ANNs, a machine learning approach that mimics neural structures to model complex relationships in data, achieved the highest prediction accuracy, with R2 values exceeding 0.90 across all degradation mechanisms. Feature importance analysis indicated that DLS/DLCS replacement percentage and exposure duration were the most influential factors affecting durability. Results revealed that mixes with 20–30% replacement exhibited superior performance in reducing strength loss and permeability while enhancing microstructural integrity. This study provides critical insights into optimizing cementitious materials for enhanced durability in environmentally challenging conditions.

Link: http://dx.doi.org/10.1007/s41024-025-00658-w

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TITLE:

Enhanced thermal management of 21,700 NMC Li-ion batteries using PCMs: correlation development and numerical analysis
r

AUTHOR :

Kongi P.; Waghole D.R.; Babu P.K.A.

JOURNAL NAME:

Ionics

DETAILS:

Published on 12 July 2025

ABSTRACT:

The limited thermal conductivity of phase change materials, unequal temperature distribution, integration issues between phase change materials and battery modules, and limited scalability for real-world applications are some of the issues that have been brought to light by earlier research on the batteries. Furthermore, most of the studies did not produce validated thermal correlations or lacked sufficient experimental evidence to back up practical application and long-term viability. This research advances thermal regulation of 21,700 NMC lithium-ion batteries using phase change material (PCM)-based strategy, supported by numerical simulations and experimentally validated thermal correlation. In comparison to previous works focusing on hybrid systems, nano-enhanced PCMs, and designs specific to certain structures, this research introduces a correlation-based modeling and optimization framework of a PCM which increases the liquid fraction and reduced surface temperatures during charging and discharging. The contribution to the field is by accurately modeling PCM and validating the results; providing a research-backed extension of the boundaries for passive thermal management; where performance and safety are improved to avoid thermal runaway based on standard thermal management system, while surpassing traditional numerical and hybrid PCM approaches. The research involves creating detailed thermal model of battery system, incorporating phase change material properties and behaviors. Correlation is validated using numerical analysis, confirming the accuracy and reliability, with results showing that PCM utilization notably enhances thermal management, thereby boosting both battery efficiency and safety. Furthermore, it keeps the battery surface temperature below 39 °C, as opposed to the 44 °C and 46 °C seen in the previous methods.

Link: http://dx.doi.org/10.1007/s11581-025-06520-w

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TITLE:

Integrating Machine Learning With Secure Telemedicine Image Transmission

AUTHOR :

Palimkar S.S.; Malwade S.S.; Shaikh F.I.; Nagalakshmi B.; Grace L.K.J.; Sidhu K.S.

JOURNAL NAME:

Advanced Secure Transmission of Telemedicine-Based Bio-Medical Images

DETAILS:

Published on April 2025

ABSTRACT:

The rapid development of telemedicine has resulted in the emergence of significant challenges concerning the transmission of medical images in a secure manner. Given the growing reliance of the healthcare industry on digital platforms for diagnosis and treatment, it is of the utmost importance to protect the confidentiality and integrity of sensitive patient data. The application of machine learning (ML) in the context of improving the safety and effectiveness of telemedicine image transmission. By utilizing advanced machine learning techniques, such as dynamic encryption algorithms, real-time anomaly detection, and adaptive security protocols, healthcare providers are able to better protect themselves against cybersecurity threats while simultaneously ensuring that they have timely access to high-quality medical images.

.Link: http://dx.doi.org/10.4018/979-8-3693-9821-0.ch006

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TITLE:

Cutting-Edge Techniques for Detecting Fake Reviews

1

AUTHOR :

Vayadande K.; Mishra A.; Patil G.R.; Bodhe Y.; Nooji P.; Kale N.; Katariya A.; Kharade A.; Supekar P.; Patil L.

.

JOURNAL NAME:

EAI Endorsed Transactions on AI and Robotics (Vol.-4)

DETAILS:

Published on 9 July 2025

ABSTRACT:

The paper reviews various approaches for detecting fake reviews using different machine learning techniques, each with distinct strengths and limitations. It examines existing literature on supervised learning methods, unsupervised techniques, graph-based models, and hybrid approaches. Among these, unsupervised models rely on pattern recognition, while supervised methods, including SVM and transformer-based models like BERT, offer high accuracy but struggle with class imbalance and computational efficiency. Unsupervised and graph-based models serve as effective alternatives when labeled data is scarce or when complex relationships between reviews and users must be analyzed. Additionally, hybrid approaches that integrate multiple techniques are gaining traction, as they enhance feature selection and model performance. In this paper, we explore different methodologies for fake review classification, analyze their advantages and drawbacks, and highlight key challenges in the field.

Link: https://doi.org/10.4108/airo.8945

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TITLE:

Thermophysical characterization and Al-agglomerate particle size evaluation in an AP-HTPB composite propellant's flame through image processing

AUTHOR :

Raibole K.; Upadhyay J.; Kalal R.K.; Sherawat R.; Jain M.K.

JOURNAL NAME:

Fuel (Vol.-404)

DETAILS:

Published on July 2025

ABSTRACT:

Flame temperature of any type of solid rocket propellant is of integral importance to evaluate the propellant's performance and its thermodynamic characteristics. However, quantifying this flame temperature poses a lot of challenges due to the limitations of conventional intrusive measurement techniques. In the present study, the thermophysical characteristics of a 17 % aluminized AP-HTPB composite propellant were evaluated by developing an image-based non-intrusive temperature measurement technique. A relation in between pixel intensities of monochrome images and blackbody temperature was established through image post-processing tools which was further implemented to generate 2D temperature contour plots of the propellant's flame. At a pressure of 1.0 MPa a peak temperature of 2770 K was estimated within the flame along with a surface temperature of 925 K. Furthermore, the condensed and gaseous phase slopes of the combustion wave were determined which were further used to evaluate a heat energy release of −798 kJ/kg on the propellant's burning surface. Through the implementation of image analysis, alumina agglomerate particle size distribution above the propellant's surface was determined with the average agglomerate particle diameter being 65 μm. The temperature profile of the flame acquired in this study exhibited a maximum deviation of under 8 % for the peak temperature.

Link: https://doi.org/10.1016/j.fuel.2025.136364

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TITLE:

A Brief Review of Different Optimization and Machine Learning Techniques for Mesh Refinement

AUTHOR :

Ramgude A.A.; Purohit P.M.; Sapre M.S.; Kulkarni A.J.

JOURNAL NAME:

Optimization Methods for Finite Element Analysis and Design

DETAILS:

Published on May 2025

ABSTRACT:

Enhancing solutions for finite element analysis (FEA) challenges remain a crucial focus, with ongoing extensive research delving into artificial intelligence (AI) and machine learning (ML) based methods. Meshing optimization techniques have evolved significantly in recent years and are pivotal in achieving optimal outcomes for mechanical engineering problems addressed through FEA. The key to success lies in effectively refining the meshing of selected elements within a component. Diverse optimization techniques are employed in contemporary research to achieve refined meshing. This paper explicitly reviews the refinement of elements by applying various optimization strategies. It also provides an overview of the current trends involving integrating different AI and ML tools. These tools are strategically utilized to systematically transform unstructured meshes into structured ones, facilitating improved refinement. This progressive refinement ultimately contributes to obtaining solutions that closely align with the correct resolution of engineering problems.

Link: http://dx.doi.org/10.1201/9781003564911-1

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TITLE:

Current Treatment Modalities for Chronic Obstructive Pulmonary Disease: Challenges and Limitations

AUTHOR :

Kulkarni M.S.; Tiwary N.K.; Nilkari A.P.; Deshmukh C.D.; Bhatt S.

JOURNAL NAME:

Advanced Drug Delivery Systems in Management of Chronic Obstructive Pulmonary Disease

DETAILS:

Published on June 2025

ABSTRACT:

Two significant characteristics of chronic obstructive pulmonary disease (COPD) are emphysema and chronic bronchitis, both of which are progressive diseases of the respiratory system. Long-term bronchial inflammation is known as chronic bronchitis, while alveolar wall deterioration caused by different proteases is known as emphysema. This degradation of alveolar wall leads to a decrease in the overall surface area of bronchi and reduces effectiveness of gas exchange. It is more common with cigarette smoke. Additionally, alpha1-antitrypsin (AAT) deficiency is linked to COPD and is a hereditary condition. In addition, CD8+T lymphocytes, neutrophils, macrophages and various chemokines and cytokines are also involved in the pathological progression of the disease. Serum levels of various proteases such as serine proteases, cathepsins and matrix metalloproteinase (MMP) are highly increased in COPD. The imbalance of oxidative and anti-oxidant mechanisms is also linked with COPD. Excessive production of reactive oxygen species leads to degradation of alveolar cells and its internal structure. Compared to asthma, the condition progresses over time and has a stronger inflammatory component. To treat COPD, specific therapy solutions that combat inflammation and remodeling must be developed. Treatment options of COPD mainly include bronchodilators and a combination of bronchodilators and steroids. Hence, this chapter will discuss about the current treatment modalities used for the treatment and management of COPD. Various challenges and limitations associated with the use of these treatment strategies will also be discussed with them.

Link: https://www.scopus.com/inward/record.uri?eid=2-s2.0-105011909719&doi=10.1201%2f9781003498926-3&partnerID=40&md5=79c335b76475f9154fd53c365c1e5dbd

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TITLE:

AI-Powered Workforce Analytics for Human Resource Planning and Optimization

AUTHOR :

Devi P.R.; Shaikh M.; Tilak Babu S.B.G.; Yadav N.; Sugandha S.; Garg K.

JOURNAL NAME:

International Journal of Environmental Sciences (Vol.-11, Issue-4)

DETAILS:

Published on July 2025

ABSTRACT:

The application of predictive analytics technology helped transform employee conduct examination and business requirement assessment through its ability to generate data-based insights about employee activities and business necessities. Human resources departments utilize machine learning algorithms to identify workforce prediction needs that determine staff retention rates together with skills gaps assessment and worker headcount requirements. Employee retention problems and skill deficit detection emerges from predictive models that evaluate past employee records alongside staff engagement data with external market data. Staff retention strategies from HR departments join recruitment tactics to help members of departments create workplace plans that boost workforce planning while enhancing operational performance. Predictive analytics efforts to match talent acquisition procedures with organizational needs direct organizations toward efficient operational achievements with little impact on business operations. Workforce preparedness increases when organizations implement systems that help employees understand their work environment better for making improved decisions under varying circumstances.

Link: https://theaspd.com/index.php/ijes/article/view/2011

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TITLE:

Augmenting Chemotherapy Response in Ovarian Cancer: N-3 Polyunsaturated Fatty Acids Target TOP2A

AUTHOR :

Gurav P.; Hajare S.; Swamy V.; Ramakant Nirmala K.

JOURNAL NAME:

Current Medicinal Chemistry

DETAILS:

Published on June 2025

ABSTRACT:

Introduction: Ovarian cancer, a significant contributor to global female mortality and the third most prevalent gynecological cancer in India, poses challenges for conventional treatments like chemotherapy and radiotherapy.

Method: This study explores the effect of omega-3 polyunsaturated fatty acids (n-3 PUFAs) on the efficacy of chemotherapy, particularly doxorubicin (DOXO), in ovarian teratocarcinoma (PA-1) cells. Rigorous cell viability assays demonstrated that n-3 PUFAs in combination significantly enhanced DOXO-induced cytotoxicity, reducing cell survival and migration potential. N-3 PUFAs and DOXO synergistically reduced colony formation in the group receiving the combination treatment as seen in the clonogenic assays, as further validated by hanging drop and apoptosis assays results.

Results: Network pharmacological investigations pinpointed the gene topoisomerase II A (TOP2A) as a pivotal target, while molecular docking simulations revealed structural similarities between n-3 PUFAs (DHA or EPA) and DOXO, implying probable common mechanisms such as DNA intercalation and topoisomerase II inhibition. Molecular dynamics simulations delineated distinct interaction profiles for Docosahexaenoic acid (DHA) and Eicosapentaenoic acid (EPA) with TOP2A, offering mechanistic insights. Combining computational and experimental methodologies reveals the synergistic benefits of n-3 PUFAs and DOXO in treating ovarian cancer, leading to improved therapeutic outcomes.

Conclusion: These results provide a comprehensive view of the potential of combining n-3 PUFAs with DOXO for more potent ovarian cancer treatments.

Link:
http://dx.doi.org/10.2174/0109298673359261250504031207

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TITLE:

Synthesis, in Vitro Antibacterial, Antioxidant, and Anti-Inflammatory Studies of p-Substituted Aniline-Based Diadducts: A Potential Dendritic Core

AUTHOR :

Hemso B.E.; Das P.; Apte S.; Mavani A.; Therese G.; Deshmukh R.; Puzari A.

JOURNAL NAME:

Chemistry Select (Vol.-10, Issue-25)

DETAILS:

Published on 26 June 2025

ABSTRACT:

The alarming increase in the antibiotic resistance of numerous microorganisms represents a critical threat to both human health and economy. Consequently, design of new antibiotics as substitute for existing ones has become one of the top priorities for scientific community. Dendrimers, a special class of polymers find numerous applications in biomedical field, and have been explored as antimicrobial agents. In this study, we have reported the microwave-assisted synthesis and characterization of ester-terminated p-substituted aniline-based diadducts as dendritic core. The antibacterial properties of the diadducts were evaluated against Gram-positive bacteria, Staphylococcus aureus MTCC 5021 and Gram-negative bacterial species, namely, Pseudomonas aeruginosa MTCC 424 and Escherichia coli MTCC 723, which revealed exceptional bactericidal activities of more than 90% reduction in most cases. The antioxidant properties of the diadducts were investigated through DPPH free radical scavenging assay and quantified in terms of their IC50 values, which showed excellent values of 15.08, 26.29, and 41.38 µg/mL for three of the compounds. Additionally, the study on the inhibition of protein denaturation indicated the possible anti-inflammatory property of the studied compounds.

Link: https://doi.org/10.1002/slct.202501435

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TITLE:

Securing Digital Healthcare System from Cyber Attacks Driven by Hardware Accelerated AES Algorithm

AUTHOR :

Singh A.; Gangurde R.; Sharma P.; Thakkar H.K. L.

JOURNAL NAME:

2nd International Conference on Research Methodologies in Knowledge Management, Artificial Intelligence and Telecommunication Engineering, RMKMATE 2025

DETAILS:

Published on 25 June 2025

ABSTRACT:

With the exposure of digitization and the application of various advanced technologies including internet of things, artificial intelligence, machine learning and especially the big data technique that has witnessed its significance in dealing healthcare management on digital platform. Amid COVID-19, the upsurge was reported in the shifting of healthcare system to the internet benefiting the society in number of ways. The access to healthcare services has been provided by various revolutions in the form of internet of (medical) things, sensors, wearable devices etc. with these enabling technologies, the one is empowered to have access to the services facilitated by the healthcare departments remotely and from point of care perspective. The shifting of traditional paradigm of manual healthcare management system holds many features that it performs effectively and seamlessly which can be characterized but not limited to accessing the records, maintaining bulk records effectively with guaranteed availability of the data anytime from anywhere and enabling sensors to monitor the systems. Despite of underlying advantages offered by the digital paradigm of healthcare management system; it possesses some limitations too.

Link:
https://doi.org/10.1109/RMKMATE64874.2025.11042579

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TITLE:

Exploring polymer matrix composites reinforced with agro-waste wheat straw fibers from a tribological perspective in sustainable materials

AUTHOR :

Girase S.B.; Kothavale B.S.

JOURNAL NAME:

Jurnal Tribologi (Vol.-45)

DETAILS:

Published on 2025

ABSTRACT:

Burning agro-waste materials creates pollution, but repurposing them into inexpensive, biodegradable, and lightweight products reduces pollution and conserves the environment by reducing reliance on woody products. In this study, tribological testing was conducted per ASTM G99 standards using a Pin-on-Disc Tribometer on commercial brake friction materials and wheat straw composites, both treated and untreated. The contact pressure ranged from 1 MPa to 3 MPa in steps of 0.5 MPa, with a fixed rubbing velocity of 2.1 m/s for 20 minutes. Results showed a significant reduction in specific wear rate (SWR) by 17% to 56% and a marginal increase in the coefficient of friction (COF) in cashew nutshell liquid (CNSL)-treated composites compared to untreated ones. The 1:3 MFR treated composite exhibited 2% to 41% less SWR than the 1:5 MFR treated composite. Additionally, the variation in COF and SWR for brake pad material ranged from 0% to 7% and 0% to 18% with respect to contact pressure. COF and SWR results suggest that treated natural fibers could be partially or fully utilized in various products like brake friction materials, particle boards, and wooden flooring to minimize negative environmental impact. Additionally, worn surface morphology was analyzed under scanning electron microscopy.

Link: https://www.scopus.com/inward/record.uri?eid=2-s2.0-105011770200&partnerID=40&md5=bcc9d6ecda71fbbf625ebfe6a8b01ad2

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TITLE:

Design, Synthesis, and Inhibitory Activity of Benzimidazole-2-thiol Derivatives on SHSY-5Y Neuroblastoma Cancer Cell Line

AUTHOR :

Suryavanshi H.; Chabukswar A.; Meshram R.; Waghmare P.; Jagdale S.; Sakharkar A.; Patil V.; Navin J.

JOURNAL NAME:

Chemistry Select (Vol.-10, Issue-25)

DETAILS:

Published on July 2025

ABSTRACT:

Neuroblastoma, a prevalent childhood cancer, necessitates the design of more potent and more selective drugs. Benzimidazole derivatives are reported to possess significant anticancer activity in recent investigations. In this report, we designed, synthesized, and tested a new series of benzimidazole-2-thiol derivatives targeting the WD repeat-containing protein 5 (WDR5), particularly its less-studied WBM (WDR5 binding motif) binding site. 10 derivatives were prepared and characterized by IR, ^{1}H NMR, ^{13}C NMR, and LC–MS. In silico docking and ADMET profiling revealed good binding affinity, pharmacokinetics, and blood–brain barrier permeability. HS-5G and HS-5H of the synthesized compounds were found to possess high inhibitory activity against SH-SY5Y neuroblastoma cells, and high cytotoxicity was reported at 48 h (IC_{50} = 25 μM). Structure-activity relationship (SAR) analysis implied the enhancement of activity by dichloro substitutions due to improved hydrophobic interactions and target binding. This research shows one of the earliest examples of benzimidazole-2-thiol derivatives that have been designed to inhibit the WBM site of WDR5. The integration of docking-guided synthesis, favorable ADMET profiles, and compelling in vitro activity places HS-5G and HS-5H as prominent lead candidates for further investigation in neuroblastoma treatment.

Link: https://doi.org/10.1002/slct.202406047

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Prospects of Teleconsultation in the Management of Diabetes Mellitus

AUTHOR :

Singh R.; Singh R.; Dikkatwar M.; Yadav S.K.; Bindu R.; Kuchekar A.B.; Chand S.

JOURNAL NAME:

Current Drug Therapy

DETAILS:

Published on 26 May 2025

ABSTRACT:

The rise and increasing prevalence of chronic diseases have transformed the healthcare delivery system, leading to the emergence of various modalities. This study aims to provide an over-view of patient-centered care by focusing on diabetes self-management education, drawing insights from existing literature on lifestyle modifications, exercise, dietary changes, glycemic index manage-ment, and raising awareness about hypoglycemia. It also highlights the possibilities and needs of teleconsultation and telemedicine for a better health outcome. Further, achieving this desired success requires close collaboration between patients and a well-coordinated physician team, which may in-clude physicians, dieticians, nephrologists, endocrinologists, health educators, ophthalmologists, trained counsellors, clinical pharmacists, and psychiatrists. Working together, they can ensure com-prehensive care and better outcomes for patients with diabetes. Bringing together these experts to care for patients may represent an ideal scenario in healthcare settings. Moreover, assembling such teams could foster patient trust and enhance the acceptability of teleconsultation and telepharmacy services.

Link:
http://dx.doi.org/10.2174/0115748855379106250519065745

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Combination Therapies for the Management of Cancer Immunotherapy

AUTHOR :

Chenchula S.; Anitha K.; Posinasetty B.; Bhatt S.; Mishra N.; Sharma N.; Chandran P.

JOURNAL NAME:

Nanotechnology Based Strategies for Cancer Immunotherapy: Concepts, Design, and Clinical Applications

DETAILS:

Published on 8 February 2025

ABSTRACT:

Cancer immunotherapy has transformed cancer treatment by utilizing immune system's ability to identify and eradicate tumours. While immunotherapy has demonstrated exceptional efficacy in certain patients, many others do not respond to it or develop resistance to it. To address these issues, researchers have concentrated on developing combination medicines that improve the efficacy of cancer immunotherapy. This abstract gives an overview of the present state of combination treatments for cancer immunotherapy management. Combination therapies entail the employment of multiple therapy methods at the same time or sequentially to boost the anti-tumour immune response. Immune checkpoint inhibitors, targeted treatments, chemotherapy, radiation, and adoptive cell transfer are among of the key techniques used in combination therapies. Combination therapies aim to overcome resistance and enhance patient outcomes by targeting several pathways and mechanisms involved in tumour growth and immune evasion. Recent advances in combination therapy have yielded encouraging results. Combination of immune checkpoint inhibitors, such as anti-CTLA-4 or anti-PD-1 antibodies, with targeted therapy, for example, has demonstrated synergistic effects in numerous cancer types. Furthermore, combining immunotherapy with chemotherapy or radiotherapy has proven to boost immune response and overall survival in specific patient populations. However, the development of combination medicines is fraught with difficulties, such as potential toxicity and adverse outcomes. To maximize therapeutic benefits while minimizing side effects, proper pharmacological dosages, scheduling, and patient selection must be carefully considered. Finally, combination treatments have emerged as a potential technique for cancer immunotherapy management. These medicines aim to improve the anti-tumour immune response and overcome resistance by utilizing synergistic effects and targeting numerous pathways. More research and clinical trials are required to improve combination medicines and uncover predictive biomarkers that can guide medication selection for specific patients.

Link: http://dx.doi.org/10.1007/978-981-97-7022-9_5

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Ecosystem-atmosphere exchanges of carbon dioxide, water vapour and energy in India: A synthesis of insights from eddy covariance measurements

AUTHOR :

Deb Burman P.K.; Bhat G.S.; Tiwari Y.K.; Morrison R.; Rodda S.R.; Mukherjee S.; Dadhwal V.K.; Turner A.G.; Das P.; Agarwal G.; Sarma D.; Mutyala P.; Gogoi N.; Gnanamoorthy P.; Paleri S.; Desai D.

JOURNAL NAME:

Agricultural and Forest Meteorology (Vol.-372)

DETAILS:

Published on 15 September 2025

ABSTRACT:

India is a large country characterised by diverse bioclimatic regions and semi-natural and managed ecosystems, with some of the largest areas of arable land and mangroves, globally. Eddy covariance represents the state-or-the-art for directly quantifying the exchange of mass and energy between land surface and atmosphere. Here, we collate eddy covariance flux observations from several sites across India, covering major land use and vegetation types and spanning twenty-seven site-years. The pattern of maximum and minimum CO_2 exchange differ widely among the sites and ecosystems. Croplands exhibit maximum CO_2 uptake during the monsoon in response to rainfall. Some forests, croplands, and mangroves behave as well-watered ecosystems, whereas others oscillate between well-watered and water-stressed states, due to temperature and moisture dynamics. Respiration changes commensurately with photosynthetic CO_2 uptake, primarily comprising growth respiration. Grasslands have a higher carbon retention capacity, followed by croplands, forests, and mangroves. CO_2, water, and sensible and latent heat fluxes peaked during different times of the day across ecosystems, imprinting phase-lags that vary by site and season. Water-limited ecosystems register the highest ecosystem water use efficiency (WUE), whereas the irrigated croplands have the lowest WUE. Forests have intermediate WUE of these two; however, Indian forests (predominantly tropical and subtropical) have lower WUE than their temperate and boreal counterparts. Canopy-atmosphere coupling is tightest during the dry periods, with their physiological controls regulating the properties of the surface atmosphere. This is reversed during the monsoon when environmental control dominates physiological control. This information is essential for the long-term monitoring of these ecosystems and climate studies and will be useful to different communities, including scientists, economists, resource managers, and policymakers.

Link: https://doi.org/10.1016/j.agrformet.2025.110730

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Early Investigations into Music-Induced Neural and Cardiovascular Responses

AUTHOR :

Purnaye P.; Salvi S.

JOURNAL NAME:

Lecture Notes in Networks and Systems (Vol.- 5589 LNNS)

DETAILS:

Published on 25 June 2025

ABSTRACT:

This study aims to explore the neural correlation to heartbeat in response to music, unraveling the mechanisms by which musical stimuli influence the human nervous and cardiovascular systems. Through empirical research involving 30 participants aged 18–22, we observed that slow music significantly accelerates heart rate recovery post-exercise, with an average resting heart rate of 75.6 bpm and an average elevated heart rate of 103.8 bpm. Utilizing a K-Nearest Neighbors (KNN) algorithm, our machine learning analysis demonstrated a notable predictive accuracy with an score of 0.77, indicating a substantial correlation between predicted and actual recovery times. Additionally, EEG data revealed distinct neural patterns corresponding to different musical stimuli, suggesting that slow music enhances parasympathetic activation and promotes a faster return to homeostasis. Through empirical research, the study strives to contribute valuable insights that can inform the development of innovative applications and interventions, harnessing the power of music to promote happier and healthier lives.

Link: http://dx.doi.org/10.1007/978-981-96-1687-9_10

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Network pharmacology, in-silico and in-vivo studies for analgesic and antipyretic activities of Haplanthodes tentaculata (L) leaves

AUTHOR :

Kulkarni V.M.; Srinivasan M.; Gangurde A.; Marne P.A.; Salvi D.S.; Tagalpallewar A.A.; Nagar S.; Pawar A.T.; Baheti A.M.

JOURNAL NAME:

Journal of Ethnopharmacology (Vol.-353)

DETAILS:

Published on July 2025

ABSTRACT:

Ethnopharmacology relevance: Haplanthodestentaculata (L.) R.B.Majumdar (Family: Acanthaceae) is traditionally claimed for wound healing, stamina improvement, diabetes, kidney diseases, and antipyretic activity.Aim of the study: The present study aimed to investigate the analgesic and antipyretic activities of Haplanthodes tentaculata (L.) R.B.Majumdar (H. tentaculata) using network pharmacology, in-silico and in-vivo methods to validate its traditional use and advance knowledge of its ethnopharmacological significance.

Materials and methods: For network pharmacology, analgesic and antipyretic targets were obtained from the DisGeNET database. The top 20 proteins were selected based on their score. Of these, 19 proteins were within the protein-protein interactions network. Piperine and paracetamol were used as reference standards for molecular docking. The Flex-X software was used in molecular docking studies. In-vivo analgesic activity of the aqueous extract of H. tentaculata (HTLE) leaves was evaluated by using acetic acid-induced writhing and Eddy's hot plate tests in mice. Brewer's yeast-induced pyrexia rat model was used for screening of antipyretic activity.

Results: The noteworthy protein-ligand interactions observed for piperine, haplanthin, and paracetamol provide insight into their possible modes of analgesic and antipyretic actions. In-silico studies showed the highest score of haplanthin in comparison with other ligands. The HTLE caused a significant increase in reaction time in Eddy's hot plate test. In the acetic acid-induced writhing test, HTLE treatment resulted in fewer abdominal writhings. HTLE also lessened yeast-induced pyrexia in rats. Conclusion: The aqueous extract of H. tentaculata leaves exerts analgesic and antipyretic effects by both cerebral and peripheral pathways.

Link: https://doi.org/10.1016/j.jep.2025.120301

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Development and Impact of a Patient Information Leaflet on the Knowledge of Patients with Diabetes: A Validation Study

AUTHOR :

Pounarkar A.G.; D'souza P.; DS P.; Bhandari S.; Kolar R.; Jeeragi M.V.; B.C V.; Chand S.

JOURNAL NAME:

Current Drug Therapy

DETAILS:

Published on 23 June 2025

ABSTRACT:

Background Diabetes management is critical for patient health, yet many individuals lack essential knowledge about their condition. Aim This study aimed to develop and validate a patient information leaflet (PIL) focused on diabetes, assessing its effectiveness in enhancing patient knowledge among individuals with diabetes. Objective The primary objective was to prepare and validate a patient information leaflet (PIL) on diabetes and evaluate its impact on patient knowledge among diabetic individuals. The secondary objective was to analyze demographic factors, education, family history, and comorbidities influencing baseline knowledge and post-intervention knowledge improvement. Methods Quasi-experimental pre and post-test design was carried out enrolling 78 inpatients and outpatients diagnosed with T1DM or T2DM. The PIL was developed using evidence-based resources and validated through expert panel reviews. Its readability was evaluated using Flesch Reading Ease (FRE) and Flesch-Kincaid Grade Level (FK-GL) scales, with additional validation through user testing. The leaflet's design adhered to Baker-Able Leaflet Design (BALD) principles. Pre- and post-intervention knowledge was measured through a structured questionnaire, and participant feedback on the leaflet's content and layout was collected. Results The FRE and FK-GL scores for the PIL were 60.3 and 8, respectively. The BALD scores for the English and Kannada versions were 25 and 24, respectively. User testing revealed significant improvements in knowledge, with mean scores increasing from 33.85 ± 23.43 to 93.23 ± 8.58 for the Kannada PIL and from 59.23 ± 24.31 to 93.08 ± 9.47 for the English PIL. A total of 85.9% of participants rated the leaflet as effective in improving their understanding of diabetes management. Conclusion The validated PIL significantly enhanced patient knowledge of diabetes. These findings suggest that such educational tools can effectively support patient education in both T1DM and T2DM populations.

Link:
http://dx.doi.org/10.2174/0115748855368265250312032743

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Experimental and numerical analysis of plain and variable height plate fin heat sinks subjected to natural convection

AUTHOR :

Gaikwad A.; Sathe A.; Sanap S.
.

JOURNAL NAME:

Numerical Heat Transfer, Part B: Fundamentals

DETAILS:

Published on 17 July 2025

ABSTRACT:

Effective thermal management is essential in the design phase to ensure the optimal performance of solar PV panels. This work uses combination of experimental and numerical methodologies to examine improvements in heat transfer in plain plate fin and variable height plate fin heat sink. The investigation considers different orientations and heat inputs. The study focuses on four specific orientation angles: 0°, 30°, 60°, and 90° including a range of heat inputs, from 25 W to 100 W. The objective is to assess the performance of two different heat sink configurations. The numerical simulations conducted using ANSYS Fluent yield results that closely correspond to the experimental observations, indicating a significant level of agreement. A significant increase in the Nusselt number and heat transfer coefficient was observed when the heat input of 100 W was applied, reaching their maximum values. The Nusselt number (Nu) for the plain plate fin heat sink reached a maximum value of 81.22, while the variable height plate fin heat sink achieved 91.69 when positioned at a 90° orientation. The plain plate fin heat sink achieved a maximum heat transfer coefficient of 11.77 W/m2K, but the variable height plate fin heat sink surpassed it with a heat transfer coefficient of 14.27 W/m2K. The findings offer useful insights for the creation of effective heat sink designs, especially for applications related to solar PV panels.

Link: https://doi.org/10.1080/10407790.2025.2531243

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Metaverse and Its Underlying Challenges in Higher Education: A Case Study- Based Approach

AUTHOR :

Mukherjee S.
.

JOURNAL NAME:

AI Applications and Strategies in Teacher Education

DETAILS:

Published on 2025

ABSTRACT:

The term Metaverse has become part of today's reality. In the educational front, (1) virtual learning using the Metaverse has the potential to surge availability for students with incapacities or persons residing in the isolated and inaccessible areas; (2) classrooms using the Metaverse domain can offer collaborative knowledge experience done through numerous virtual simulations, and virtual field journeys further enable teamwork between students in actual time, irrespective of their bodily place; (3) the application of virtual learning will lead to cost reduction of teaching leading to greater engagement and motivation among students. However, in spite of the advantages, there are numerous challenges. Results show that the concept, application, and awareness related to metaverse is still not spread and is in the nascent stage. Furthermore, the study highlighted the limitations and challenges of the application of Metaverse in the 21st century with suitable suggestions for improvement in the context of higher education.

Link: https://www.igi-global.com/chapter/metaverse-and-its-underlying-challenges-in-higher-education/358902

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Design and Analysis of Gas Turbine Rotor Blade with Film Cooling for Aeronautical Applications

AUTHOR :

Pillai A.M.; Dogra A.; Uplenchwar A.; Thomas B.; Kale I.R.

JOURNAL NAME:

Optimization Methods for Finite Element Analysis and Design

DETAILS:

Published on 2025

ABSTRACT:

Turbomachinery is a pinnacle of engineering. These machines have a very important role in many industries and have complex workings especially the ones used in the aviation industry. The purpose of this paper is to explain the theories and methodology used for the design and analysis of a turbine rotor blade. Even designing a single rotor blade requires intricate calculations for the entirety of the turbojet engine, from the compressor to the nozzle. This paper analyzes different blade profiles and materials that can be used for the turbine rotor blade with subsequent structural and computational fluid dynamics (CFD) simulations to test its integrity. The design of turbine rotor blade is an essential part of the turbojet engine as it provides the driving force, and may fail with inadequate blade design. Hence, it is imperative to design the rotor blade with utmost precision.

Link: https://www.scopus.com/inward/record.uri?eid=2-s2.0-105011901689&doi=10.1201%2f9781003564911-4&partnerID=40&md5=238fcb0413c333e99f74e725045e01d6

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Analysis of the fractional proto Bhalekar–Gejji system

AUTHOR :

Jadhav R.S.; Deshpande A.S.; Daftardar-Gejji V.

JOURNAL NAME:

Computational and Applied Mathematics (Vol.-44, Issue-357)

DETAILS:

Published on 14 July 2025

ABSTRACT:

The study of bifurcation and chaos in fractional-order dynamical systems finds innovative applications in science and engineering, particularly in chaos-based cryptography for enhanced security. This paper investigates the fractional proto Bhalekar–Gejji (BG) system, a three-dimensional, non-linear dynamical system for chaotic motion. We perform stability analysis, plot bifurcation diagrams and explore chaotic regions. We observe that in fractional proto-BG system an equilibrium point undergoes a subcritical Hopf bifurcation leading to chaos. Further we determine Hopf critical values, plot corresponding curves, and compute Lyapunov coefficients. It is observed that chaos diminishes as the fractional order decreases, with a threshold value of 0.977 for the order of the derivative, below which chaos ceases to exist.

Link: http://dx.doi.org/10.1007/s40314-025-03311-x

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Navigating the path to construction's digital renaissance

AUTHOR :

Minde P.; Patil J.

JOURNAL NAME:

Digital Transformation in the Construction Industry: Sustainability, Resilience, and Data-Centric Engineering

DETAILS:

Published on January 2025

ABSTRACT:

A digital renaissance is unfolding in the construction industry, which has traditionally been defined by craftsmanship and advanced design. This is being pushed by the disruptive influence of 5G (fifth-generation wireless technology) connectivity. This chapter navigates the intersection of tradition and innovation, highlighting the transition from 4G (fourth-generation wireless technology) to 5G and highlighting key 5G features such as ultra-low latency, high data rates, and broad device connectivity. More than just an innovation, the development heralds a paradigm shift in a field where digital connectivity is transforming construction practices. The chapter explores the revolutionary applications of 5G in construction, from real-time monitoring to augmented reality (AR), virtual reality (VR), internet of things (IoT) integration, and the advancement of building information modeling (BIM). The benefits of 5G deployment are highlighted, including efficiency through real-time communications and remote monitoring. Safety protocols are evolving with the integration of AR and VR providing advanced safety training in simulated environments. However, the chapter acknowledges challenges such as infrastructure requirements, costs, security issues, and skill gaps associated with implementing 5G in construction. Looking ahead, it provides an overview of the potential future of 5G infrastructure and describes it as a major shift for the industry. Finally, this chapter serves as a guide for stakeholders, providing information on the construction industry's applications, benefits, challenges and future trends, as well as the digital transformation journey enabled by 5G. The research takes a global perspective and presents views and examples from different parts of the world. The focus of the research is in the Indian context.

Link: https://doi.org/10.1016/B978-0-443-29861-5.00003-2

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Green synthesis of Ag@TiO2 nanomaterials using Achyranthes aspera leaf extract for sustainable photocatalytic degradation of dyes

AUTHOR :

Jadhav V.; Patil M.; Pardeshi S.; Suryavanshi H.; Bhagare A.

JOURNAL NAME:

Discover Applied Sciences (Vol. 7, Issue 7)

DETAILS:

Published on 1 July 2025

ABSTRACT:

In this study, we employed a greener, eco-friendly method for synthesizing Ag@TiO2 nanomaterials via the hydrothermal method using the plant Achyranthes aspera leaf extract. Different analytical techniques were employed for characterization, including UV-Vis, FTIR, XRD, SEM-EDX, and TEM-SAED analysis. From the UV-Vis spectrum, it was observed that an absorption peak occurs at 350 nm, corresponding to a band gap of 3.54 eV. FTIR analysis attributed several functional groups or vibrational modes, such as 659 cm− 1 (Ag-Ti), 410 cm−1 (Ti-O-Ti), and 2347 cm−1 (C ≡ C or C ≡ N). SEM-EDX revealed an irregularly shaped morphology, constituting the only elements silver (Ag), titanium (Ti), and oxygen (O). An average crystallite size of 8.11 nm was determined using XRD analysis, and TEM-SAED revealed a quasi-spherical morphology and polycrystalline nature. The photocatalytic activity of the synthesized Ag@TiO2 nanomaterial was assessed by the degradation of methylene blue (MB) dye under UV-visible light irradiation. The degradation rate of MB in the nanomaterial is 89.96% at 60 min, exhibiting excellent photocatalytic efficiency. The velocity constant is 3.583 × 10− 2 min− 1, and the half-life (t1/2) is 19.34 min. This is enhanced by the synergistic interaction between Ag and TiO2, which improves separation efficiency and suppresses the recombination of electron-hole pairs. The environmentally friendly synthesis method developed using the leaf extract of Achyranthes aspera is advantageous due to its economic benefits, low ecological impact, and potential for mass production. Thus, the present work demonstrates significant potential in utilizing biogenic synthesis to develop effective and environmentally friendly photocatalytic agents for environmental remediation.

Link: http://dx.doi.org/10.1007/s42452-025-07324-3

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

A Comprehensive Analysis of Machine Learning Algorithms For Predictive Modeling in Dementia Detection

AUTHOR :

Ohal H.S.; Mantri S.

JOURNAL NAME:

Journal of The Institution of Engineers (India): Series B

DETAILS:

Published on 10 July 2025

ABSTRACT:

Dementia is an irreversible neurological condition that primarily impacts older individuals. The development of effective automated approaches is necessary to achieve timely and accurate detection. Various innovative methodologies have been suggested by researchers to categorize dementia. However, it is crucial to have a thorough comprehension of the current research to improve learning techniques. The objective of this paper is to provide an extensive analysis of current research which aims to utilize machine learning techniques to diagnose dementia and thus further enhance the advancement of more efficient method for the detection of dementia by consolidating the existing information in this sector. A systematic review was conducted utilising the PRISMA technique, which stands for Preferred Reporting Items for Systematic Reviews and Meta-Analyses. A bibliometric survey with keywords for Dementia and different machine learning techniques was carried out in the Science direct, IEEE, Springer and PubMed databases. It conducts a comprehensive examination of various Machine Learning studies. It also has a thorough analysis of Deep Learning (DL) based work. Initially, the identification stage records the number of results obtained from database searches, which amounts to 7112, screening step retrieved 2190 records and finally 65 records were included for analysis. Also, SVM and K-Nearest Neighbors (KNN) classifiers are trained on Electroencephalogram based dataset developed at Florida State University and have achieved 97.1% and 95.3% accuracy for SVM and KNN respectively. This study provides an extensive analysis of current research that aims to utilize machine learning techniques to diagnose dementia, along with a demonstration of EEG-based dementia detection.

Link: http://dx.doi.org/10.1007/s40031-025-01259-4

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Predicting student performance via machine learning approaches: An organized review of the literature

AUTHOR :

Koyande A.U.; Yaseen S.M.

JOURNAL NAME:

Progressive Computational Intelligence, Information Technology and Networking

DETAILS:

Published on 2025

ABSTRACT:

Student performance plays a great role in the determining of higher education, institutions rankings and the observed quality. Accurate prognosis and assessment of the performance of the learners assist the teacher to identify the areas of intervention and enhance the performance of the students. However, getting accurate results is far from easy because of the vast availability of educational data and the extra work carried out regarding prediction methodologies as well as the tendency of overcomplication. The best machine learning algorithms and relevant factors to enhance the likelihood of students' success are discussed in this complete work. After analysing thirty papers, the five significant prediction methods that were identified were artificial neural networks (ANNs), decision tree, support vector machine (SVM), K-nearest neighbour (KNN) and naïve Bayes. Furthermore, it was observed that the overall performance of the models was in the descending order of ANN followed by but not limited to, SVMs and CARTs and, finally, decision trees. For informative measures, ANN was again found to be the most preferable and accurate of all the models. Academic, family person, internal evaluation and community data were identified as the most commonly adopted predictors for student performance.

Link:
https://www.scopus.com/pages/publications/105010780181?inward=

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Design of an innovative fuel-efficient stove for reducing air pollution and enhancing sustainability

AUTHOR :

Nayak R.C.; Roul M.K.; Kulkarni M.V.
.
.

JOURNAL NAME:

Environmental Progress and Sustainable Energy

DETAILS:

Published on 30 June 2025

ABSTRACT:

Purpose:

This study presents a fuel-efficient stove designed to reduce harmful emissions, thereby improving indoor air quality in rural households. Traditional stoves are a significant source of household air pollution (HAP), which is linked to respiratory and other health issues. The innovative design of this stove minimizes emissions and maximizes thermal efficiency, directly addressing the challenge of reducing indoor air pollution.

Design/Methodology/Approach:

The improved stove operates using solid biomass fuel, with an innovative design aimed at enhancing combustion efficiency and reducing emissions. Wood is used as the primary fuel, while superheated steam is introduced into the combustion zone to aid in particulate matter reduction. The stove utilizes a solar-powered fan to regulate airflow, improving combustion conditions. Unlike natural buoyancy-driven draft through a chimney, the fan assists in controlling the airflow dynamics by either enhancing the air intake or supporting the exhaust process, depending on operating conditions.

Findings:

Superheated steam aids in improving the combustion efficiency of the primary fuel by promoting better mixing and flame temperature, thereby leading to more complete combustion and reduced emissions. Additionally, the presence of steam contributes to better heat transfer within the stove, causes an improvement in overall thermal efficiency

Link: https://doi.org/10.1002/ep.70022

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Assessing efficacy of proposed safety headwear with an Android app interface in an environmental heat-stress surveillance application

AUTHOR :

Sharma M.; Alam M.S.; Yashpal; Kant S.

JOURNAL NAME:

International Journal of Occupational Safety and Ergonomics

DETAILS:

Published on 8 November 2 July 2025

ABSTRACT:

Objectives. The present study aimed to analyze the prospective impact of wearable sensor-based safety headgear with an Android app interface in environmental heat-stress surveillance. *Methods*. The suggested prototype was examined under distinctive locations with individuals carrying out certain work activities. *Results*. Monitored thermal indices recorded higher heat exposures under the outdoor condition (with discomfort index [DI] > 32.1 °C) compared to indoors (DI 29 to <32 °C). A rise in users' physiological attributes was linked with the outdoor condition (engaged in heavy workload activity; with average skin temperature = 37.47 °C and eardrum temperature [a core body temperature indicator] = 38.14 °C), followed by the indoor moderate and light work tasks. The assessed heat-stress variables under the targeted environments showed significant variations (one-way analysis of variance, $p < 0.01$), suggesting that the proposed safety headgear was sensitive to the thermal work settings and the physical job task carried out. *Conclusions*. The developed Android app could enable users to assess heat-stress parameters monitored by the proposed safety helmet and keep them aware of thermal work ambience at a personal level. Implementing these kinds of interventions might be helpful in workplace heat-stress surveillance in a cost-effective manner, particularly in low and medium-income countries.

Link: https://doi.org/10.1080/10803548.2025.2516950

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Influence of Marginal Bone Loss with Variable Mandibular Bone Densities Under Masticatory Loading Using Finite Element Analysis

AUTHOR :

Deshmukh P.; Dhatrak P.

JOURNAL NAME:

Regenerative Engineering and Translational Medicine

DETAILS:

Published on 25 July 2025

ABSTRACT:

Dental implants are widely used in modern dentistry, but bone loss around implants, often due to peri-implantitis, can compromise their stability. The density of surrounding bone, both cancellous (spongy) and cortical (hard) influences how forces are distributed at the implant site. This study investigates how different levels of marginal bone loss and varying bone densities affect implant stability using Finite Element Analysis (FEA). A 3D model of a dental implant system was created and simulated under two types of chewing forces: an occlusal load (120 N) and an angled oblique load (also 120 N at 75°). Three bone loss levels (0%, 20%, and 40%) and four types of bone densities were tested using FEA software. As cortical bone thickness decreased and bone density reduced, both stress and displacement increased, especially under oblique loading. Denser bone models showed lower stress and displacement, indicating better implant stability. Even small levels of bone loss (0.4 mm–0.6 mm) can support normal chewing forces if bone density is sufficient. These results help explain how bone structure affects implant performance and highlight the importance of early detection of bone loss. Further clinical studies are needed to validate the findings. This study examines the impact of marginal bone loss on stress distribution at the implant-bone interface using Finite Element Analysis (FEA). A 3D CAD model was developed, and simulations were conducted under occlusal and oblique loading for three bone loss conditions (0%, 20%, 40%) and four bone density variations. Results showed increased stress and displacement with decreasing cortical bone thickness, while cortical stress decreased as bone became more porous. Findings suggest minimal bone loss (0.4 mm–0.6 mm) can support implant loads, highlighting the role of cortical thickness in implant stability. Further clinical studies are needed for validation.

Link: http://dx.doi.org/10.1007/s40883-025-00451-8

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Qbd (Quality By Design) Approach: Development And Validation Of An Rp-Hplc Method For Estimating Imeglimin Hcl And Its Ketone Impurity

AUTHOR :

Giri P.T.; Chabukswar A.R.; Jagdale S.C.; Chindhe S.A.

JOURNAL NAME:

International Journal of Applied Pharmaceutics (Vol.-17, Issue-4)

DETAILS:

Published on July 2025

ABSTRACT:

Objective: Quality by Design (QbD) is a structured approach that ensures consistently high-quality outcomes by following a systematic methodology. This study aimed to develop and validate a robust and reliable Reverse-Phase High-Performance Liquid Chromatography (RP-HPLC) method for the simultaneous quantification of Imeglimin hydrochloride (IMG) and its ketone impurity, Imeglimin Ketone Impurity (IKI), utilizing a Quality by Design (QbD) approach to ensure enhanced method precision, accuracy, and regulatory compliance. Methods: A risk-based strategy guided method development, employing the Agilent Zorbax Bonus RP (AZB-RP) column (25 cm×4.6 mm, 5.0 µm) under isocratic elution with a Mobile Phase (MP) of Trifluoroacetic acid (TFA) and Acetonitrile (ACN) (45:55 v/v). Chromatographic conditions included a flow rate of 0.45 ml/min, an injection volume of 10 µl**, and a column temperature of 30 °C. A Central Composite Design (CCD) was applied to study the influence of MP ratio and Flow Rate (FR) on Critical Analytical Parameters (CAPs) using Design Expert 13.0 software. Results: The method showed excellent linearity with R^2 = 0.9998 for imeglimin hydrochloride (80–120 ppm) and R^2 = 0.9994 for its ketone impurity (4–6 ppm) at 238 nm. The recovery was 100.02–100.78% for imeglimin hydrochloride and 99.98–100.02% for the impurity. The Limit of Detection (LOD) and Limit of Quantitation (LOQ) for the impurity were 0.23 ppm and 0.70 ppm, respectively. The Analysis of Variance (ANOVA) results confirmed the model's significance and predictive ability, highlighting the method's robustness and reliability for routine quality control applications. Conclusion: The QbD-based RP-HPLC method described here is accurate, precise, and robust for the simultaneous estimation of IMG and IKI and can be used for routine quality control.

Link: https://doi.org/10.22159/ijap.2025v17i4.54506

Since 1983

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Performance score-driven multi-objective thermal optimization of metal foam-enhanced tube-in-tube heat exchanger under forced convection

AUTHOR :

Dhavale A.A.; Lele M.M.

JOURNAL NAME:

Numerical Heat Transfer, Part B: Fundamentals

DETAILS:

Published on 13 June 2025

ABSTRACT:

Optimizing flow through metal foams (MFs) in double-tube heat exchangers for solar flat plate collectors is critical for enhancing heat transfer while minimizing pressure drop. This research employs a multi-objective approach to achieve this balance by optimizing the thermal and fluid dynamics of the system. The study uses the Technique for Order Preference by Similarity to the Ideal Solution (TOPSIS) and modified TOPSIS (M-TOPSIS) for comparative analysis to identify the most efficient MF configurations. Copper and Aluminum foams with varying porosities and pore densities are examined, focusing on five key criteria that prioritize both flow resistance and heat transfer. Results indicate that higher pore density and Copper materials generally yield superior performance. For instance, 20 PPI Copper foam achieves a score of 0.92 at a Reynolds number of 3,000, with only a slight decrease of 0.25% at 6,200. When balancing pressure drop and heat transfer equally, the 20 PPI Copper foam positioned on the inner lateral pipe yields the highest score of 0.910. A comparative analysis of TOPSIS and M-TOPSIS further underscores their effectiveness in multi-criteria decision-making.

Link: https://doi.org/10.1080/10407790.2025.2515294

Since 1983

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Navigating Uncertainties Using Type I Sensitivity Analysis For Transportation Problems: A Mid-Width Technique With Crisp And Fuzzy Scenarios

AUTHOR :

Kavitha K.; Palanivel K.; Akilbasha A.; Edalatpanah S.A.; Behera D.

JOURNAL NAME:

Journal of Industrial and Management Optimization (Vol.-21, Issue-7)

DETAILS:

Published on July 2025

ABSTRACT:

The COVID-19 pandemic highlighted the critical need for efficient vaccine distribution. This research study introduces a novel transportation model that leverages a mid-width Type 1 sensitivity analysis to optimize vaccine shipping from factories to diverse destinations. By incorporating crisp and fuzzy scenarios and considering interval transportation problems, our model provides valuable insights for minimizing shipping costs and enhancing the resilience of vaccine distribution networks. Moreover, the study employing a case study in pharmaceutical logistics, our study stands out for its unique applicability to diverse methods (interval transportation problem, mid-value, half-width) demonstrates the model's versatility and its ability to achieve superior optimal solutions with enhanced cost-sensitivity efficiency.

Link: https://doi.org/10.3934/jimo.2025072

Since 1983

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Future Perspectives on Surveillance Systems

AUTHOR :

Bhagat D.; Hanwate A.; Salunkhe R.; Jagyasi T.; Sardare P.; Sahu M.

JOURNAL NAME:

Modern Advancements in Surveillance Systems and Technologies

DETAILS:

Published on 2025

ABSTRACT:

This chapter explores the future perspectives of surveillance systems in light of emerging technologies such as artificial intelligence (AI), big data analytics, the Internet of Things (IoT), and biometric advancements. As surveillance systems evolve, they offer significant benefits in areas such as public safety, traffic management, healthcare, and workplace security. However, these advancements also raise critical ethical, legal, and social concerns, particularly regarding privacy, bias, and the psychological impact on individuals. This chapter delves into the balance between enhancing security and protecting privacy, proposing frameworks for ethical surveillance practices and policy recommendations. By examining the technological innovations, potential applications, and associated challenges, this chapter aims to contribute to the development of a responsible and balanced approach to future surveillance systems.

Link: http://dx.doi.org/10.4018/979-8-3693-6996-8.ch014

Since 1983

MIT-WPU

।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Post COVID-19 Adoption of Digital Financial Services Analyzing Usage Patterns and Demographic Influences in Maharashtra State

AUTHOR :

Kakade K.; Kulkarni A.; Patil A.; Bhoyar P.; Brahmane J.; Yadav S.

JOURNAL NAME:

2024 International Conference on Smart Technologies for Sustainable Development Goals, ICSTSDG 2024

DETAILS:

Published on 17 June 2025

ABSTRACT:

Information technology has severely influenced numerous facets of human existence, particularly the banking sector. The need for financial literacy is growing as the financial landscape is complex, and many people remain uninformed, leading to financial stress and poor decisions. Fintech companies have emerged as a solution to this issue by providing personalized platforms for financial literacy and easy access to formal financial channels. The COVID-19 epidemic has expedited the integration of digital technologies and heightened the demand for fintech services. Nonetheless, owing to poverty and insufficient financial literacy, a considerable segment of the population in undeveloped and developing nations cannot utilize the services offered by fintech companies. This study seeks to address the research gap by analyzing the factors affecting the adoption of digital financial services in India. The results will a i d in formulating regulations to enhance the fintech sector and guarantee financial inclusion for most of the populace.

Link:
https://doi.org/10.1109/ICSTSDG61998.2024.11026760

Since 1983

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Optimization Methods for Finite Element Analysis and Design

AUTHOR :

Kale I.R.; Bureerat S.; Rao R.V.

JOURNAL NAME:

Optimization Methods for Finite Element Analysis and Design

DETAILS:

Published on May 2025

ABSTRACT:

Optimization Methods for Finite Element Analysis and Design describes recent developments in Finite Element Methods (FEM). It gives a brief introduction of the applications of AI-based nature-inspired metaheuristic algorithms and machine learning (ML) at various stages of FEM. The book covers a range of state-of-the-art application areas including medical equipment, structural analysis and machinery products.

It explores the applications of optimization and ML techniques in mesh smoothing, quality improvement and Laplacian and Taubin smoothing. The book also discusses the optimization of cable nets and steel frames using nature-inspired metaheuristic methods.

Link: http://dx.doi.org/10.1201/9781003564911

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

pH-Responsive Natural Polymers as Versatile Carriers for Drug Delivery in Breast Cancer: A Review

AUTHOR :

Velapure P.D.; Chakote S.R.; Kansal D.; Barooah A.; Pawde D.M.; Bobade C.D.

JOURNAL NAME:

Biomedical Materials and Devices

DETAILS:

Published on 15 July 2025

ABSTRACT:

Cancer remains to be among the leading causes of mortality globally, with over 10 million new cases reported annually. The tumor microenvironment and complexity poses considerable challenges to breast cancer treatment. Various intrinsic and extrinsic stimuli, including temperature, redox conditions, ultrasound, magnetic fields, and pH, can be used for triggering drug release. The intracellular pH of solid tumors is maintained to remain lower than the extracellular pH. Consequently, pH-responsive nanoformulations demonstrate superior efficacy in drug delivery to tumors relative to conventional formulations. Natural polymers based nanoformulations offers a novel approach to overcome these stimuli related limitations. The acidic tumor microenvironment of solid tumours can be exploited by pH responsive nanoformulations to achieve a smart stimuli responsive drug delivery. Natural polymers have some abundant functional groups that enable chemical modification to enhance solubility of drug, loading capacity of drugs and also targeting ligand attachment. This review explores the types of pH-responsive natural polymers such as chitosan, alginate, and gelatin, describing their chemical structures and pH-response mechanisms, also highlighting the most representative applications of pH-responsive polymers in cancer therapy. Recent advancements, present challenges, and the clinical significance of natural polymer-based nanocarriers for the treatment of breast cancer are all addressed in the article.

Link: https://doi.org/10.1007/s44174-025-00427-w

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Computational design and evaluation of indolo-phenazine analogues as anti-breast cancer agents targeting casein kinase 2α and topoisomerase II

AUTHOR :

Waghmare P.; Chabukswar A.; Nanaware R.; Raut K.; Jagdale S.
.

JOURNAL NAME:

Vietnam Journal of Chemistry

DETAILS:

Published on 25 July 2025

ABSTRACT:

This study investigates the molecular docking, drug-likeness, pharmacokinetic properties, and molecular dynamics (MD) simulation of 15 indolo-phenazine analogues, focusing on their potential as inhibitors for topoisomerase II (5GWK) and casein kinase 2α (3OWJ). Using PyRx software (AutoDock Vina), we docked the ligands and identified IP4 as the most stable compound, forming strong hydrogen bonds with the receptor proteins. The analogues exhibited superior docking scores compared to the standard compound ellipticine, indicating enhanced binding affinity. Drug-likeness analysis based on Lipinski's Rule of Five demonstrated that all compounds, except IP8, comply with the criteria, and their moderate solubility and synthetic accessibility suggest feasibility for drug development. Pharmacokinetic analysis revealed high gastrointestinal absorption and bioavailability for the analogues, with some compounds exhibiting no blood–brain barrier penetration, implying minimal central nervous system side effects. Target prediction suggested that the compounds, particularly IP4 and IP9, exhibit stronger kinase inhibition compared to ellipticine. MD simulations further supported the binding stability, with IP2 showing more favorable stability and fewer structural fluctuations compared to ellipticine. MM-GBSA calculations revealed that ellipticine forms a more stable binding complex with 3OWJ, primarily due to favorable hydrophobic and van der Waals interactions. Overall, these findings highlight the promising drug-like properties of indolo-phenazine derivatives, especially IP4 and IP9, for potential anticancer applications through kinase inhibition. These findings provide insights into their molecular interactions and pharmacological properties, suggesting these analogues as lead candidates providing a foundation for synthesizing and evaluating the pharmacological activity of Indolo-phenazine analogues as kinase-inhibiting, anti-breast cancer agents.

Link: https://doi.org/10.1002/vjch.70053

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Surveillance Systems in Healthcare

AUTHOR :

Bhagat D.; Kumre J.; Dhore A.; Bodhe K.; Nagdive A.; Saraf P.D.; Karad V.

JOURNAL NAME:

Modern Advancements in Surveillance Systems and Technologies

DETAILS:

Published on 2025

ABSTRACT:

This chapter examines the transformative impact of modern surveillance systems in healthcare, driven by advancements in AI, big data, and the Internet of Things (IoT). These technologies have expanded the scope of surveillance beyond traditional monitoring to include real-time disease tracking, enhanced patient monitoring, healthcare fraud detection, and improved security in healthcare environments. While these innovations offer significant benefits, they also introduce important ethical and privacy concerns. The chapter explores the balance between leveraging these technological advancements and protecting patient rights and data security, providing an overview of current trends and challenges, and offering best practices to maximize the potential of surveillance systems in healthcare.

Link: http://dx.doi.org/10.4018/979-8-3693-6996-8.ch008

Since 1983

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Transactional leadership in public sector organizations: A bibliometric analysis

AUTHOR :

Udin U.; Dananjoyo R.; Shaikh M.

JOURNAL NAME:

International Journal of Advanced and Applied Sciences (Vol.-12, Issue-7)

DETAILS:

Published on July 2025

ABSTRACT:

In rapidly changing and dynamic environments, transactional leadership plays an essential role in achieving long-term success in public sector organizations. This leadership style emphasizes setting clear priorities and managing tasks to ensure that individual efforts align with organizational goals. This study aims to review the literature on transactional leadership from the past thirty years (1993–2023) through a bibliometric analysis of authorship, citations, countries, and publication sources. A total of 95 articles from the Scopus database are analyzed using VOSviewer software. The results show that, at the individual level, transactional leadership positively impacts job satisfaction, psychological empowerment, and employee performance. At the organizational level, it consistently enhances organizational commitment, culture, innovation, and performance.

Link: https://doi.org/10.21833/ijaas.2025.07.024

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Characterization of dual porosity in bioturbated tight sandstone reservoir: insight from Mesozoic Jhuran Formation of Kachchh–Saurashtra offshore basin—India

AUTHOR :

Jyotsna G.D.D.; Singh A.; Kushwaha S.; Kumar R.; Puppala L.; Desai B.G.

JOURNAL NAME:

Acta Geophysica

DETAILS:

Published on 15 July 2025

ABSTRACT:

The Mesozoic Jhuran Formation in the Kachchh offshore basin is a well-established tight gas reservoir with complex lithology. The lithological description highlights sandstones being highly bioturbated, with porosity and permeability distribution resembling a dual porosity system which requires detailed characterization. The present work proposes an integrated approach of porosity analysis in bioturbated sandstones from Offshore Jhuran Formation combining wireline log data (viz. nuclear magnetic resonance log (NMR), formation microresistivity image log (FMI)), laboratory-based routine core analysis (RCAL), and special core analysis (SCAL). Three methods are employed to discern quantitatively and qualitatively pore throat classes in cores. The first method employs pore typing using various NMR parameters (bulk volume irreducible, free fluid index, clay-bound water). The second method uses image analysis to identify dual porosity, bioturbated intervals on microresistivity image. This is a qualitative approach to correlate petrophysical properties with bioturbation. In the third approach, NMR laboratory analysis of selected bioturbated cores was performed to understand T 2 cutoff resulting in bimodal porosity distribution from different pore classes in Jhuran sandstone layers. Thus, the integrated analysis of resistivity image logs-FMI, NMR logs along with laboratory-based core petrophysical and NMR data indicates that sandstone reservoirs of offshore Mesozoic Jhuran Formation show a prominent dual porosity system attributed to a higher degree of bioturbation. The study shows the existence of bioturbation-induced dual porosity system within the sand layers of Jhuran Formation and identified pores classes, and these can be categorized as macropores, micropores, and mesopores. Furthermore, analysis is required to fully exploit the extent of bioturbation and its relation to petrophysical properties in other parts of the offshore field.

Link: http://dx.doi.org/10.1007/s11600-025-01654-x

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Flexural Behavior of Corroded Reinforced Concrete Beams with GGBS: A Comparative Study

AUTHOR :

Sathe S.; Razvi S.W.N.; Pandey A.; Dandin S.; Kangda M.Z.

JOURNAL NAME:

Iranian Journal of Science and Technology - Transactions of Civil Engineering

DETAILS:

Published on 12 July 2025

ABSTRACT:

The present study analyses the influence of ground granulated blast furnace slag (GGBS) on the rate and mechanisms of corrosion in reinforced concrete (RC) beams. A total of 12 RC beams of 150 × 150 × 1500 mm admixed with GGBS (0%, 20%, 40%, and 60%) were cast. Beams with 0%, 20%, 40%, and 60% GGBS content were cast for 0%, 10%, and 15% reinforcement corrosion. The 0% corrosion reinforcement with 0%, 20%, 40%, and 60% GGBS content served as control specimens. The Half-cell potential technique assessed the corrosion resistance of these reinforcements embedded in RC beams. The rebars were extracted from the beams and weighed to determine the actual level of corrosion. The flexural strength (FS), load deflection (P–Δ), moment–curvature (M–θ), ductility (μ), and cracking behavior were analyzed for all sets of RC beams. It was found that 40% GGBS as a cement replacement enhances a maximum 9.32% increase in ultimate FS compared to the control beam and provides superior corrosion protection. Nonetheless, a substantial decrease in maximum FS was noted as corrosion levels rose from 10 to 15%. Further, all the experimental results were validated using finite element analysis (FEA). The experimental results showed good agreement with the FEA predictions, with a maximum deviation of 12% observed in P–Δ and FS outcomes.

Link:
https://ui.adsabs.harvard.edu/link_gateway/2025IJSTT.tmp..261S/doi:10.1007/s40996-025-01945-9

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Stimulant immobilized bioactive film of functionalized egg albumin blend for wound healing

AUTHOR :

Gautam T.R.; Patel P.R.; Singam A.R.; Jagtap A.S.; Desai P.; Gundloori R.V.; Pawar A.T.; Dastager S.G.

JOURNAL NAME:

International Journal of Pharmaceutics (Vol.-682)

DETAILS:

Published on 27 June 2025

ABSTRACT:

Wound healing materials with advanced properties that facilitates higher collagen deposition, improved angiogenesis and quick tissue regeneration are crucial for clinical wound management. To meet the requirement, for the first time, our studies focus on engineering bio-originated natural materials, which are tested in combination with the active agents, ascorbic acid (AA), a stimulant and metronidazole (Mtz), an anti-microbial drug. Accordingly, a dual drug (AA, and Mtz) loaded film of functionalized egg albumin (FEA)-poly(vinyl alcohol) (PVA) was fabricated following the solution casting method. The film was characterized for its morphology and physicochemical properties using various analytical tools. The potential of the film as a wound healing material was evaluated, by in vitro drug release, degradation, cell viability, antimicrobial studies, in vivo wound healing, and histopathological analyses. In vitro degradation studies confirmed their degradability in enzymatic and soil burial conditions. Cytotoxicity studies demonstrated their non-toxicity, and the antimicrobial investigations showcased that the material was antibacterial. On the 14th day, the wound closure percentage of the wound induced control group, GI (without treatment) was notably higher at 95 % compared to the test formulation group, GV [FEA-PVA (30/70 w/w) loaded with Mtz and AA (10 % w/w of the total polymer weight), respectively], which exhibited a wound closure of 83 %. Furthermore, the histopathological examinations revealed that the inner wound healing in GV was comparatively better than in GI in terms of angiogenesis, epidermal remodeling, higher collagen deposition, coherency, and tissue regeneration. Consequently, the formulated film can be deemed a suitable wound dressing material.

.Link: https://doi.org/10.1016/j.ijpharm.2025.125896

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Click, Search, Travel: Understanding Tourist Behaviour in the Digital Age

AUTHOR :

Berry K.; Shukla A.; Singh A.; Satpute P.

JOURNAL NAME:

Decoding Tourist Behavior in the Digital Era: Insights for Effective Marketing

DETAILS:

Published on September 2024

ABSTRACT:

The advent of digital technology has dramatically changed the way people travel, affecting their information searches, itineraries, decisions and experiences shared on social media sites like Twitter, Instagram and Facebook, to assist prospective travellers. Besides highlighting the impact of digital technologies such as social media, online booking platforms, mobile applications and augmented virtual reality, this chapter also examines various aspects of tourist behaviour in the digital age through recent developments, and relevant case studies. It also provides insights into how tourist destinations and businesses can adjust themselves to meet the shifting demands and patterns of travel. This meticulous overview interconnects “tourist behaviour” and the “digital era” to reveal how the development of mobile and internet-based technology has changed the travel and tourism sector.

Link: http://dx.doi.org/10.4018/979-8-3693-3972-5.ch002

Since 1983

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

A novel framework GRCornShot for corn disease detection using few shot learning with prototypical network

AUTHOR :

Rani R.; Sahoo J.; Bellamkonda S.; Kumar S.

JOURNAL NAME:

Scientific Reports (Vol.-15, Issue-1)

DETAILS:

Published on 21 July 2025

ABSTRACT:

Precision and timeliness in the detection of plant diseases are important to limit crop losses and maintain global food security. Much work has been performed to detect plant diseases using deep learning methods. However, deep learning techniques demand a large quantity of data to train the models for diagnosis and further classification. Few-shot learning has surfaced to remove the drawbacks of deep learning methods. Therefore, the proposed work presents a novel GRCornShot model for corn disease diagnosis using few-shot learning with Prototypical Networks based on metric learning. Metric Learning calculates the distance to measure the similarity between the data points. Hence, addressing the challenge of limited labeled data, GRCornShot effectively classifies healthy and corn diseases. Furthermore, the Gabor filter is incorporated into the backbone network ResNet-50 to extract the texture features and to enhance the classification performance. The experiments show the promising application of few-shot learning in agronomic applications, providing a robust solution for detecting corn diseases precisely with minimal data requirements. Using a 4-way 2-shot, 3-shot, 4-shot, and 5-shot learning strategy, GRCornShot achieves impressive accuracy of 96.19%, 96.54%, 96.90%, and 97.89%, respectively.

Link: https://doi.org/10.1038/s41598-025-10870-w

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Artificial Intelligence for Smarter Financial Decisions: A Comprehensive Analysis of Risk Assessment and Predictive Tools

AUTHOR :

Deshmukh R.; Tan S.-H.; Tan Y.-F.; Shrivastava A.

JOURNAL NAME:

Journal of Machine and Computing (Vol.-5, Issue-3)

DETAILS:

Published on 5 July 2025

ABSTRACT:

The advent of Artificial Intelligence (AI) has revolutionized the financial industry by enabling more accurate, efficient, and dynamic decision-making processes. This paper explores the transformative role of AI in financial risk assessment and the development of predictive tools that facilitate smarter financial decisions. It investigates how machine learning algorithms, natural language processing, and neural networks are deployed to assess credit risk, forecast market trends, detect fraud, and enhance portfolio management. By synthesizing recent advancements and real-world applications, this study evaluates the efficacy, reliability, and ethical considerations of AI-driven tools in finance. The paper also addresses the challenges of data quality, algorithmic bias, and regulatory compliance. Through a comprehensive analysis, it provides insights into the current landscape and future prospects of AI in shaping a resilient and intelligent financial ecosystem.

Link: http://dx.doi.org/10.53759/7669/jmc202505130

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Institutionalizing corporate social irresponsibility within the framework of corporate social responsibility: lessons of corporate advocacy

AUTHOR :

Singh A.S.; Pillai D.; Bhosale T.

JOURNAL NAME:

Cogent Business and Management (Vol.-12, Issue-1)

DETAILS:

Published on 12 July 2025

ABSTRACT:

The research proposition that CSR counteracts CSIR is examined through multiple case studies. The study identifies the functional areas of corporate irresponsible actions that deter multi-stakeholder value. The coexistence of CSIR within the CSR framework evidences the presence of the paradox theory. Organizations' simultaneous engagement in socially responsible and irresponsible conduct impends business sustainability and communal interest, raising conflict between the company's mission and behavior. Three distinctive cases of business organizations: manufacturing, hospitality, and the service sector, have been selected to study the existence of CSIR and its interplay with paradox and stakeholder theory. The study findings establish short-term profit maximization strategy significantly stimulates CSIR, distorting the firm's legitimacy and leading to multi-stakeholder discontent. Governance breaches and lack of business ethics are additional factors that drive CSIR; thus, the benchmarks for accountability standards require attention. The study provides grounds for exploring the motivational factors of CSIR behavior and categorizes incidents across industries that mandate the need for a governance mechanism. The study presents a new perspective on stakeholder theory in the background of CSIR practices and sets the direction of future research.

Link: https://doi.org/10.1080/23311975.2025.2526142

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Design, Synthesis and Evaluation of Novel Phenyl-(1-morpholine-4-dimethyl/piperazin-1-ylmethyl)-1H-indol-3-ylmethylene Amine Derivatives Against Breast Cancer Cells

AUTHOR :

Gadhave R.V.; Dhongade R.S.; Raut S.D.; Shastri M.A.; Mehta P.P.; Ozarde Y.S.

JOURNAL NAME:

Chemical Methodologies (Vol.-9, Issue-10)

DETAILS:

Published on July 2025

ABSTRACT:

The indole derivatives, phenyl-(1-morpholin-4-yl methyl/piperazine-1-yl methyl)-1H-indol-3-ylmethylene amines were designed for interaction with progesterone receptor. The molecular docking was performed on progesterone receptor using crystal structure with PDB ID: 4OAR. Out of 139 designed molecules 10 molecules showed good binding interactions withGlu-695, Asp-697, and His-770amino acid residues, which are vital for required binding orientation of target protein binding cavity and are similar to interactions of reference standard Sunitinib. The combination of hydrogen bonding, hydrophobic, and ionic interaction confirmed the robust nature of the ligand-protein binding and docking score ranged from -7.5 to -9.9 kcal/mol. IBMA-2 demonstrated the most potent binding affinity of -9.9 kcal/mol. The synthesized compounds were evaluated on MCF-7 cell line for anticancer activity. In the MTT and cell apoptosis assays IFMA-4 and IFMA-5 showed significant activity with IC50 values of 37.13±0.64 µg/mL and 40.94±0.86 µg/mL, respectively, compared to reference standard Sunitinib having IC50 value 30.05±0.96 µg/mL. Molecular docking study aligned with the biological activity results. The study highlighted the role of progesterone receptor in treatment of hormone receptor positive breast cancer. The synthesized compounds displayed optimum biological activity. Therefore, these can be treated as lead nucleus for further structural modifications.

Link: https://doi.org/10.48309/chemm.2025.517119.1938

Since 1983

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Advances in photo-fermentative biohydrogen and biomethane production from organic waste: a comprehensive review of processes, parameters, and integrated pathways

AUTHOR :

Sharma S.; Meena P.K.; Tripathi A.K.; Burande C.G.; Shelare S.; Wagle C.S.

JOURNAL NAME:

Biofuels

DETAILS:

Published on 7 July 2025

ABSTRACT:

The depletion of fossil fuels and rising environmental concerns have accelerated the search for clean and sustainable energy alternatives. Photo-fermentative bioenergy production is a promising, eco-friendly approach for generating renewable fuels such as biohydrogen and biomethane. This review critically examines photo-fermentation's biological and technological aspects using organic waste and wastewater as feedstocks, focusing on process efficiency and optimization. Key parameters – light intensity, carbon-to-nitrogen (C/N) ratio, microbial consortia, and reactor design – are analyzed for their influence on hydrogen and methane yields. The integration of dark fermentation, photo-fermentation, and anaerobic digestion is also explored to highlight synergistic benefits in energy recovery and waste reduction. Findings reveal that optimized photo-fermentative processes significantly enhance hydrogen yields, while integrated systems boost biogas productivity. Including less-studied photo-fermentative biomethane pathways underscores additional potential for circular waste management and energy diversification. This review concludes that combining biohydrogen and biomethane production improves feedstock utilization and enhances economic and environmental sustainability. It outlines recent innovations and suggests directions for future research, positioning photo-fermentation as a vital component in the transition to low-carbon, sustainable energy systems.

Link: https://doi.org/10.1080/17597269.2025.2523639

Since 1983

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Indian Legal Judgment Summarization using LEGAL-BERT and BiLSTM model with Adaptive Length

AUTHOR :

Naik V.; Rajeswari K.
.

JOURNAL NAME:

EPJ Web of Conferences (Vol.-328)

DETAILS:

Published on 18 June 2025

ABSTRACT:

The Indian legal system is vast and complex, rapid expansion of legal documentation has created a pressing need for reliable and efficient summarization tools to support legal professionals and researchers. To help reduce the cost and time spent on reading and retrieving critical information from the legal judgment, we introduce an automated summarization technique using deep learning models that helps legal professionals extract key rulings, arguments, and case outcomes quickly and efficiently. We compared two summarization techniques using deep neural networks, specifically LEGAL-BERT and bidirectional long short-term memory (Bi-LSTM) enhanced with an adaptive length mechanism that dynamically determines the optimal summary length based on the complexity and content of each document. We performed our experiment on an Indian Legal Corpus (ILC) dataset and we predict that the BiLSTM approach performs better on ROUGE scores than the LEGAL-BERT model with better recall and stronger fidelity to the original content.

Link: https://doi.org/10.1051/epjconf/202532801043

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Foreword

AUTHOR :

Sapre M.S.
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JOURNAL NAME:

Optimization Methods for Finite Element Analysis and Design (book -foreword written by Sapre M .S.)

DETAILS:

Published on 16 July 2025

ABSTRACT:

Optimization Methods for Finite Element Analysis and Design describes recent developments in Finite Element Methods (FEM). It gives a brief introduction of the applications of AI-based nature-inspired metaheuristic algorithms and machine learning (ML) at various stages of FEM. The book covers a range of state-of-the-art application areas including medical equipment, structural analysis and machinery products.

It explores the applications of optimization and ML techniques in mesh smoothing, quality improvement and Laplacian and Taubin smoothing. The book also discusses the optimization of cable nets and steel frames using nature-inspired metaheuristic methods.

(book -foreword written by Sapre M.S.) Book Preview Link:

Link: https://www.routledge.com/Optimization-Methods-for-Finite-Element-Analysis-and-Design/Kale-Bureerat-VenkataRao/p/book/9781032932101?srsltid=AfmBOoo2Eldacalbljy6VRNHpTD366iUXfkwlAJ-lhKjDRLqyVzYdSxN

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

DenoiseNet: An Efficient Image Denoising Using Convolutional Neural Networks

AUTHOR :

Patel H.; Jain A.

JOURNAL NAME:

2025 International Conference on Recent Advances in Electrical, Electronics, Ubiquitous Communication, and Computational Intelligence, RAEEUCCI 2025

DETAILS:

Published on 27 June 2025

ABSTRACT:

Image denoising is a crucial research area in image processing, with significant advancements made over the past decade. Recently, this field has gained renewed attention due to the advancement of deep learning method. With this work, we have proposed an optimized Convolutional Neural Network (CNN) architecture for image denoising (DenoiseNet). The model is designed to handle various types of noise, i.e. Gaussian, Poisson, and salt-and-pepper noise. To evaluate its performance, we tested DenoiseNet on the publicly available Flickr2k dataset, achieving high Peak Signal-to-Noise Ratio (PSNR) while preserving image quality. Moreover, DenoiseNet emphasizes computational efficiency, making it highly suitable for real-time applications where both speed and accuracy are critical. The results affirm that DenoiseNet is a robust solution for contemporary image denoising challenges.

Link:
https://doi.org/10.1109/RAEEUCCI63961.2025.11048355

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Advanced Neural Network Architectures for Accurate QRS Complex Analysis and Cardiac Abnormality Prediction Using ECG Data

AUTHOR :

Annadate P.; Annadate M.; Bedekar M.

JOURNAL NAME:

International Journal of Computing and Digital Systems (Vol.-18, Issue-1)

DETAILS:

Published on 6 July 2025

ABSTRACT:

Electrocardiogram (ECG) analysis, which focuses specifically on the QRS complex, is vital for the diagnosis of various cardiac conditions, such as arrhythmias and myocardial infarctions. This study aims to improve the detection and prediction of cardiac abnormalities through the application of neural network models. Using the MIT-BIH arrhythmia database, three distinct neural network architectures were developed and tested: a basic neural network, a deeper neural network, and a wider neural network. Each model was rigorously evaluated using performance metrics such as accuracy, precision, recall, F1 score, and the AUC-ROC curve. Among these, the wider neural network exhibited the highest performance, achieving an impressive accuracy of 94.84% and an F1 score of0.9457, highlighting its capacity to manage both false positives and false negatives effectively. The broader representation of features enabled by the increased width of this model enhances its predictive capabilities, making it particularly useful for complex analysis of ECG signals. These findings highlight the potential for advanced neural networks to improve cardiac abnormality detection, which offers important implications for clinical practice by reducing misdiagnosis and allowing timely interventions. Future research should focus on integrating these models into real-time monitoring systems and developing personalized neural network models that can adapt to individual patient characteristics, thus further enhancing the precision and efficiency of ECG-based cardiac abnormality detection

Link: https://www.scopus.com/inward/record.uri?eid=2-s2.0-105011839562&doi=10.12785%2fijcds%2f1571145626&partnerID=40&md5=14727fdcdd71eef48dba0c0c1cf7d3c7

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Tailoring ZnO–CdO Nanocomposite Photoanodes Mimicking Neural Web Like Structure for Optimized Solar Water Splitting

AUTHOR :

Chougale A.S.; Wagh S.S.; Waghmare A.D.; Jadkar S.R.; Shinde D.R.; Shaikh S.F.; Bulakhe R.N.; Man Kim J.; Patole S.P.; Pathan H.M.

JOURNAL NAME:

Advanced Energy and Sustainability Research

DETAILS:

Published on 30 June 2025

ABSTRACT:

The efficient photoelectrochemical (PEC) water splitting requires semiconductor photocatalyst with high light absorption, favorable band position, minimum electron-hole recombination, and high stability. Zinc oxide–cadmium oxide (ZnO–CdO) nanocomposites are among those candidates for PEC water splitting, offering the potential to harness solar energy for sustainable hydrogen generation. Here, this study first time reports the use of ZnO–CdO nanocomposites prepared using simple, robust, and affordable successive ionic layer adsorption and reaction method for PEC water splitting. The X-ray diffraction reveals the coexistence of ZnO and CdO crystallites with an average size of ≈10 nm, microstrain ≈14.4 × 10−3, and dislocation density ≈15.0 × 1015 m−2. The optical studies show increased absorption for the nanocomposite as compared to bare ZnO sample. The morphological studies reveal that the neural web-like structure with increased surface area effectively improves light harvesting through developing a light trap and significantly accelerates carrier kinetics processes because of its larger interface contacting zones with the electrolyte, which further provides direct paths for rapid carrier separation and transfer. The PEC studies shown a faster photo response and lower charge transfer impedance which resulted in better photoconversion efficiency and optimum photocurrent density of 0.52 mA cm−2, a 10-fold that of bare ZnO and four-fold of bare CdO.

Link: https://doi.org/10.1002/aesr.202500009

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Cohesive Zone Modeling of Epoxy Bonded Composite Lap Joints under Cyclic Loading

AUTHOR :

Khaliq S.; Chavande Y.U.; Ghadge R.R.

JOURNAL NAME:

Optimization Methods for Finite Element Analysis and Design

DETAILS:

Published on May 2025

ABSTRACT:

This study aims to evaluate the mechanical behavior of single lap epoxy-eglass composite joints bonded with epoxy resins, using cohesive zone modeling (CZM) to predict fracture and damage under cyclic loading. The CZM, based on the traction-separation law of fracture mechanics, uses the total fracture energy – represented by the area under the Force-Displacement curve – as a key variable. The study analyzes the effects of different stiffness values of epoxy resin, modified with various percentages of graphene oxide nanoparticles (GONPs), on joint performance. Properties are derived from literature, and the model's response to these varying stiffness values is recorded. Advances in nanotechnology enable improved mechanical properties at the macro level. Finite element analysis (FEA) is conducted using a 3D solid model of the lap joint, incorporating the material properties of the composite and adhesive. A cohesive element simulates the adhesive's behavior and interaction with the composite laminate during loading. The results show a positive influence of stiffness values corresponding to different percentages of GONPs, therefore resulting in improved mechanical parameters of the adhesive for fatigue strength under cyclic loading.

Link: http://dx.doi.org/10.1201/9781003564911-8

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Relationship between Income Inequality and Economic Growth A Re-examination

AUTHOR :

Muchahary P.; Sharma M.K.

JOURNAL NAME:

Economic and Political Weekly (Vol.-60, Issue-25)

DETAILS:

Published 21 June 2025

ABSTRACT:

Examining the relationship between income inequality and economic growth across different countries from 1991 to 2022, it is found that a positive and significant relationship between income inequality and growth exists overall. However, an opposite relationship is observed for high- and low-middle-income countries. This suggests that studying the levels of inequality within countries in aggregate tends to overpower the negative impact overall. They should be studied separately based on the level of income. The findings further revealed the vital role of education in economic growth.

Link: https://www.epw.in/journal/special-articles/relationship-between-income-inequality-and.html

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Advancements in Football Analytics: Optimising Expected Goals Modelling Using Machine Learning

AUTHOR :

Sonawani S.; Jacob J.S.; Desai U.; Deokar N.

JOURNAL NAME:

Lecture Notes in Networks and Systems (Vol.-1233 LNNS)

DETAILS:

Published on 15 July 2025

ABSTRACT:

Statistical models have been increasingly utilised in recent years in football, providing valuable insights into player performance, team tactics and overall match outcomes. Expected Goals (xG), a statistical measure, has been in the spotlight for development as it provides meaningful insights to analysts and coaches on a team's attacking efficiency and identifies areas for improvement. In this paper, the StatsBomb API open data was utilised and the imbalance in the dependent variable classes was addressed using Synthetic Minority Oversampling Technique for Nominal and Continuous characteristics (SMOTENC). Models such as Logistic Regression and Light Gradient Boosting machine (LightGBM) were employed to further improve the xG model. Through the evaluation using accuracy metrics such as the Brier Score, ROC AUC, and McFadden's pseudo R-squared, it was observed that LightGBM outperformed other models, achieving a Brier Score of 0.0684.

Link: https://link.springer.com/chapter/10.1007/978-981-96-3287-9_31

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Do Local Democratic Institutions Promote Citizens' Participation? - A Case Study Of Gram Sabhas In Odisha

AUTHOR :

Mohapatra B.P.

JOURNAL NAME:

Journal of Rural Development (Vol.-43, Issue-4)

DETAILS:

Published on 27 June 2025

ABSTRACT:

How do local democratic institutions reinforce the participation of citizens in the local-level decision-making processes? What potential challenges might citizens face while interacting with local democratic institutions? This paper critically examines the working of gram sabhas as local democratic institutions and their role in encouraging the direct involvement of citizens in local democracy in Odisha. The gram sabhas have been institutionalised in rural areas and are involved in fostering participation of citizens and shaping their views and experiences. These institutions have emerged as important spaces for encouraging citizens' participation in decision-making processes. The legal provisions enacted by the state in many ways have influenced the working of these institutions. However, the field-level findings, based on a primary survey conducted in 16 villages of Odisha, suggest that the institutional arrangement of gram sabhas and devolving powers to them has faced certain challenges. After three decades of constitutional reforms, the role of these institutions in promoting citizens' participation has not entirely been successful. Despite a better level of citizens' awareness about this institution, the level of participation remains low. On this basis, this paper proposes a few alternative strategies to enhance the role of gram sabhas as important democratic institutions promoting citizens' participation. This can be done effectively through democratic transformation and ensuring equity and fairness in participation and implementation of important decisions.

Link: https://nirdprojms.in/index.php/jrd/article/view/172824

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Securing Voice Software Applications Using 5G, WSN and AI Driven Privacy Preservation Protocols

AUTHOR :

Ghanimi H.M.A.; Swaroopa K.; Mishra A.; Papasani A.; Babu K.S.; Vijayarangan V.

JOURNAL NAME:

Journal of Machine and Computing (Vol.-5, Issue-3)

DETAILS:

Published on 5 July 2025

ABSTRACT:

The reality-based, dynamic, and context-aware user experiences provided by voice software applications have contributed to their common acceptance. But, problems with data privacy and computer performance are challenges. In order to process voice data reliably, the present research proposes a secure integrated model of 5G-Wireless Sensor Networks with Artificial Intelligence (5G + WSN + AI) to apply privacy preservation protocols. To train decentralized models, the model used Federated Learning (FL). To prevent unauthorized inference, it deployed Secure Multi-Party Computation (SMPC). In the end, to secure sensitive data, it applied adaptive encryption methods. Word Error Rate (WER), Feature Extraction Accuracy (FEA), End-to-End Delay (EED), Network Throughput (NT), Packet Loss Rate (PLR), and Encryption Overhead (EO) represent several of the key performance measures that the model is considered superior to conventional networks such as SVPS, BDPS, GACS, and cloud-based centralized models. Additionally, it proved that next-generation Voice Learning Systems (VLS) are reliable, leveraging AI + 5G setup and maintaining robustness against privacy breaches in real-world asymmetric scenarios.

Link: http://dx.doi.org/10.53759/7669/jmc202505142

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Biological Evaluation and Molecular Docking Study of (E)-N-(2-Aminophenyl)-3-(quinolin-4-yl)acrylamides as Potential Anticolon Cancer Agents

AUTHOR :

Gagare S.S.; Choudhari V.P.; Jain A.S.; Mali S.N.

JOURNAL NAME:

Russian Journal of Organic Chemistry (Vol.-61, Issue-5)

DETAILS:

Published on 11 July 2025

ABSTRACT:

This study reports evaluation of the earlier reported series of (E)-N-(2-aminophenyl)-3-(quinolin-4-yl)acrylamides as potential inhibitors of histone deacetylase 8 (HDAC8) with anti-colon cancer activities. The target compounds were synthesized via four-step procedure, starting with quinoline-4-carboxylic acid derivatives. All synthesized molecules were tested for HDAC8 inhibitory activity using in vitro enzymatic assays, and their antiproliferative effects were evaluated against HCT-116 and COLO 205 colon cancer cell lines using the MTT assay. Among the tested compounds, (2E)-N-(2-aminophenyl)-3-(2-phenylquinolin-4-yl)prop-2-enamide (A) was found to be the most potent HDAC8 inhibitor with an IC50 of 4.23 μM, and compound (2E)-N-(2-Aminophenyl)-3-(3-ethyl-2-phenylquinolin-4-yl)prop-2-enamide was the least active (IC50 = 23.43 μM). In terms of the antiproliferative activity, compound A again showed the strongest effect on HCT-116 cells (EC50 17.42 μM), whereas (2E)-N-(2-aminophenyl)-3-(2,3-dimethyl-6-nitroquinolin-4-yl)prop-2-enamide demonstrated significant efficacy against COLO 205 cells (EC50 12.77 μM). The molecular docking study using the crystal structure of HDAC8 (PDB ID: 1T69) provided evidence for the favourable binding interactions of compounds in the enzyme active site. These findings suggest that quinoline derivatives, particularly compound A represent promising lead scaffolds for the development of HDAC8-targeted anticolon cancer therapeutics.

Link: http://dx.doi.org/10.1134/S1234567824603966

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Predicting Mental Health Ailments Using Social Media Activities and Keystroke Dynamics with Machine Learning

AUTHOR :

Vishwarupe V.; Hankey A.; Pangaonkar S.; Shekhar S.; Sheena Rani R.; Alwazae M.; Sayyed H.; Pawar V.; Kamma V.; Kuklani P.

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JOURNAL NAME:

Studies in Big Data (Vol.-169)

DETAILS:

Published on 13 July 2025

ABSTRACT:

This paper is about the use of machine learning methods in the early detection and diagnosis of mental illnesses like anxiety, autism, depression, dementia, and insomnia. We are going to use social media activity and keystroke dynamics to build predictive models of users so that we can identify the signs of mental illness. All from Facebook and twitter and myspace and user behavior and typing rhythm. Logistic Regression, Decision Trees, Random Forest, KNN, SVM, XGB, and a hybrid Stacking Model are all fit and scored using accuracy, precision, recall, F1 score, ROC curve, and AUC. This research shows just how promising machine learning is in making mental illnesses more accessible to diagnose at an earlier age, so that intervention can occur at an early age, and hopefully mental health will be improved. Our findings have significant implications for mental health policy, intervention techniques, and funding allocation in order to achieve the goal of ameliorating the mental health crisis.

Link: http://dx.doi.org/10.1007/978-3-031-80656-8_4

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॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

TITLE:

Pedestrian Detection and Tracking

AUTHOR :

Dhawas P.; Gupta G.K.; Kokare A.S.; Pimpalshende P.; Pawar R.; Jangid J.

JOURNAL NAME:

Modern Advancements in Surveillance Systems and Technologies

DETAILS:

Published on November 2024

ABSTRACT:

Pedestrian detection and tracking are critical components of modern surveillance systems, playing a vital role in various applications such as public safety, autonomous driving, and urban planning. This chapter delves into the fundamental concepts, methodologies, and technological advancements that have shaped the field of pedestrian detection and tracking. Beginning with an overview of traditional methods, including background subtraction and feature-based approaches, the chapter transitions into contemporary deep learning techniques that have significantly improved detection accuracy and robustness. Key algorithms, such as Convolutional Neural Networks (CNNs), Region-based CNNs (R-CNNs), and more recent advancements like Transformer-based models, are explored in detail. The chapter also addresses the integration of these algorithms into real-time tracking systems, discussing object association techniques, motion models, and multi-object tracking strategies.

Link: http://dx.doi.org/10.4018/979-8-3693-6996-8.ch005

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

In-silico docking analysis of bioactive compounds sourced from Punica granatum peel extract: Approaching a precision solution for ovarian cancer

AUTHOR :

Hatolkar S.; Patil A.; Lahkar H.; Chakraborty P.; Gokhale B.V.; Shastri A.

JOURNAL NAME:

Journal of Ayurveda and Integrative Medicine (vol.-16, Issue-4)

DETAILS:

Published on July 2025

ABSTRACT:

Background The MAPK signalling pathways, particularly those involving EGFR and VEGFR, play a pivotal role in the initiation and progression of ovarian cancer. Inadequate regulation of these pathways may lead to uncontrolled cell proliferation, angiogenesis, and metastasis. Targeting mitogen-activated protein kinases (MAPKs), including the epidermal growth factor receptor (EGFR) and vascular endothelial growth factor receptor (VEGFR), has demonstrated significant potential in restraining cancer cell proliferation and angiogenesis, representing a promising avenue among various therapeutic strategies. Objectives This manuscript aims to investigate the possibility of Mashi a pomegranate peel extract for ovarian cancer treatment, specifically targeting MAPKs (EGFR and VEGFR). Pomegranate (Punica granatum) is a well-known fruit whose varied portions have been used in traditional medicine for ages. Materials and methods In silico docking of bioactive compounds extracted from the pomegranate peel extract was done using the Autodock 4.2.6 software. A total of 10 two-dimensional ligands were generated with Pubchem site. The targeted proteins VEGFR, EGFR, MAPK, and MAPK8 were docked with the ligands (Sphondin, Isorhamnetin, Lupinine, Ellagic acid, and Citric acid) which were bioactive ingredients identified from pomegranate peel extract. Results It was observed that the binding energy of protein MAPK 8, MAPK 14, and VGFR was higher to the ligand at ellagic acid at -8.25kcal/mol, -7.61kcal/mol, and - 5.85kcal/mol respectively. However, EGFR observed to bind with ligand Isorhamnetin at -7.48kcal/mol. Conclusion The MAPK signalling pathways, specifically involving EGFR and VEGFR, play a crucial role in the initiation and dissemination of ovarian cancer. Dysregulation of these pathways can lead to unrestrained cell proliferation, angiogenesis, and metastasis. Our study revealed favorable binding energy between targeted proteins and ligands. Consequently, we infer that proteins exhibiting robust binding energy with bioactive compounds from pomegranate peel extract may exert regulatory control over the signalling pathways.

Link: https://doi.org/10.1016/j.jaim.2025.101125

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।। विश्वशान्तिर्ध्रुवं ध्रुवा ।।

TITLE:

Functionally Graded Metallic Materials Via Additive Manufacturing: Research Progress on Processing, Challenges, and Applications

AUTHOR :

Jain R.; Sahoo B.; Jain S.; Mohan M.; Choudhary M.; Lee H.; Dewangan S.K.; Samal S.; Ahn B.; Jeon Y.

JOURNAL NAME:

International Journal of Precision Engineering and Manufacturing - Green Technology

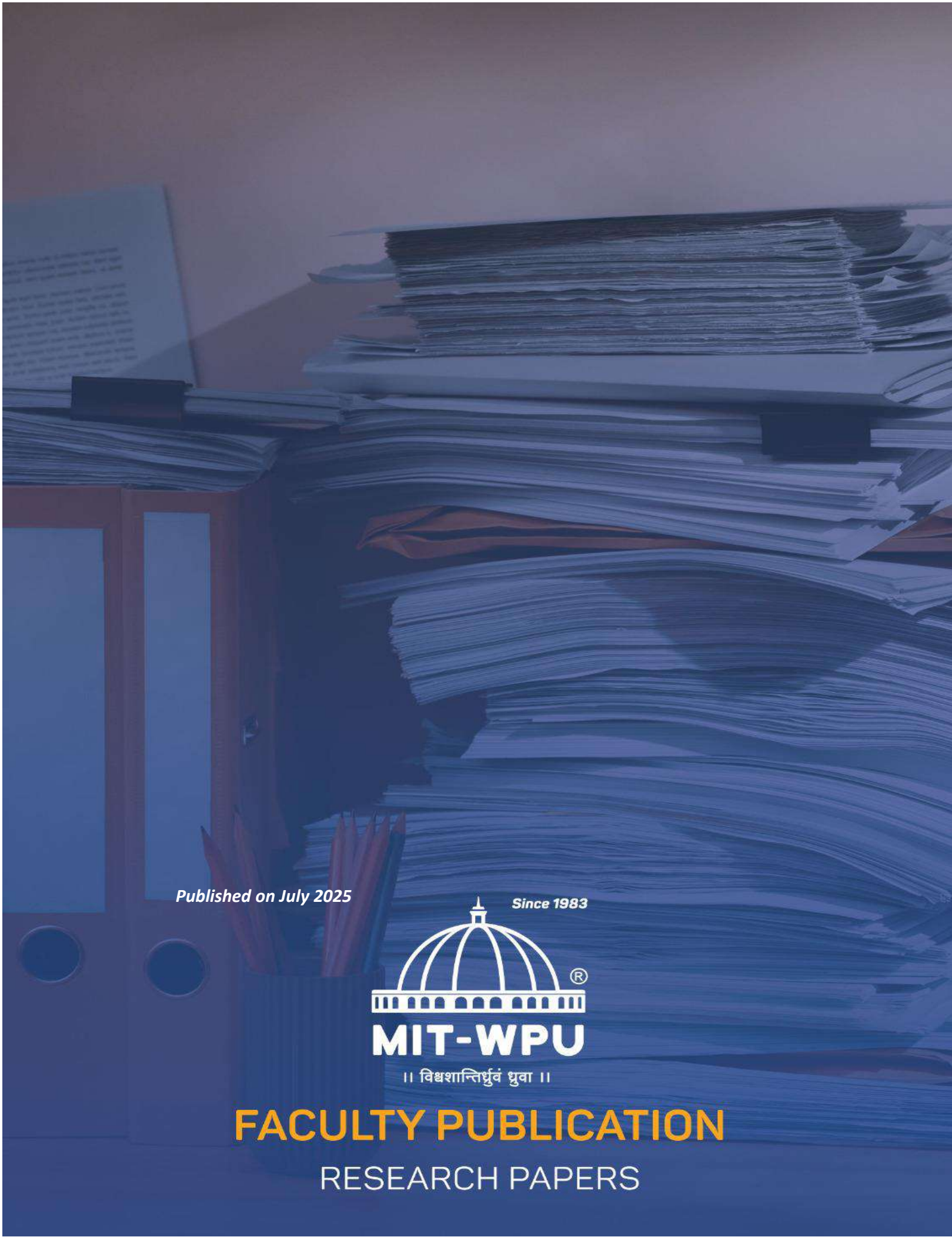
DETAILS:

Published on 21 July 2025

ABSTRACT:

Functionally graded metallic materials (FGMMs) represent an innovative category of metals, characterized by gradual variations in structure or composition, achieved by combining different elements. FGMMs differ from traditional materials as they enable the combination of diverse properties in a spatially tailored manner, offering extraordinary combinations of advanced functionalities. The unique capabilities of FGMMs make them highly desirable for various applications across different industries. The initiation of additive manufacturing (AM) has significantly progressed the advance of FGMMs by aiding specific control over material gradients, complex geometries, and optimized material utilization. This review delivers a comprehensive overview of FGMMs, including their fundamental principles, metallic alloys (alloys based on Al, Ti, Fe, superalloys, and emerging high-entropy alloys), and their integration with AM technologies. Challenges related to thermophysical mismatches, thermal stresses, and process monitoring are addressed with potential solutions. Further, Key modeling and simulation approaches, such as thermodynamic modeling, thermal-mechanical simulations, and machine learning-based design, are discussed in detail to highlight their role in optimizing FGMM performance. This review provides an in-depth exploration of recent advancements in FGMMs, highlighting their classifications, modeling and computational approaches, applications, challenges, and future prospects. The article includes a detailed analysis of the microstructure, texture, mechanical properties, and their applications in various sectors. It aims to benefit both general readers seeking an understanding of FGMMs and researchers dedicated to advancing this transformative field.

Link: http://dx.doi.org/10.1007/s40684-025-00766-5



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