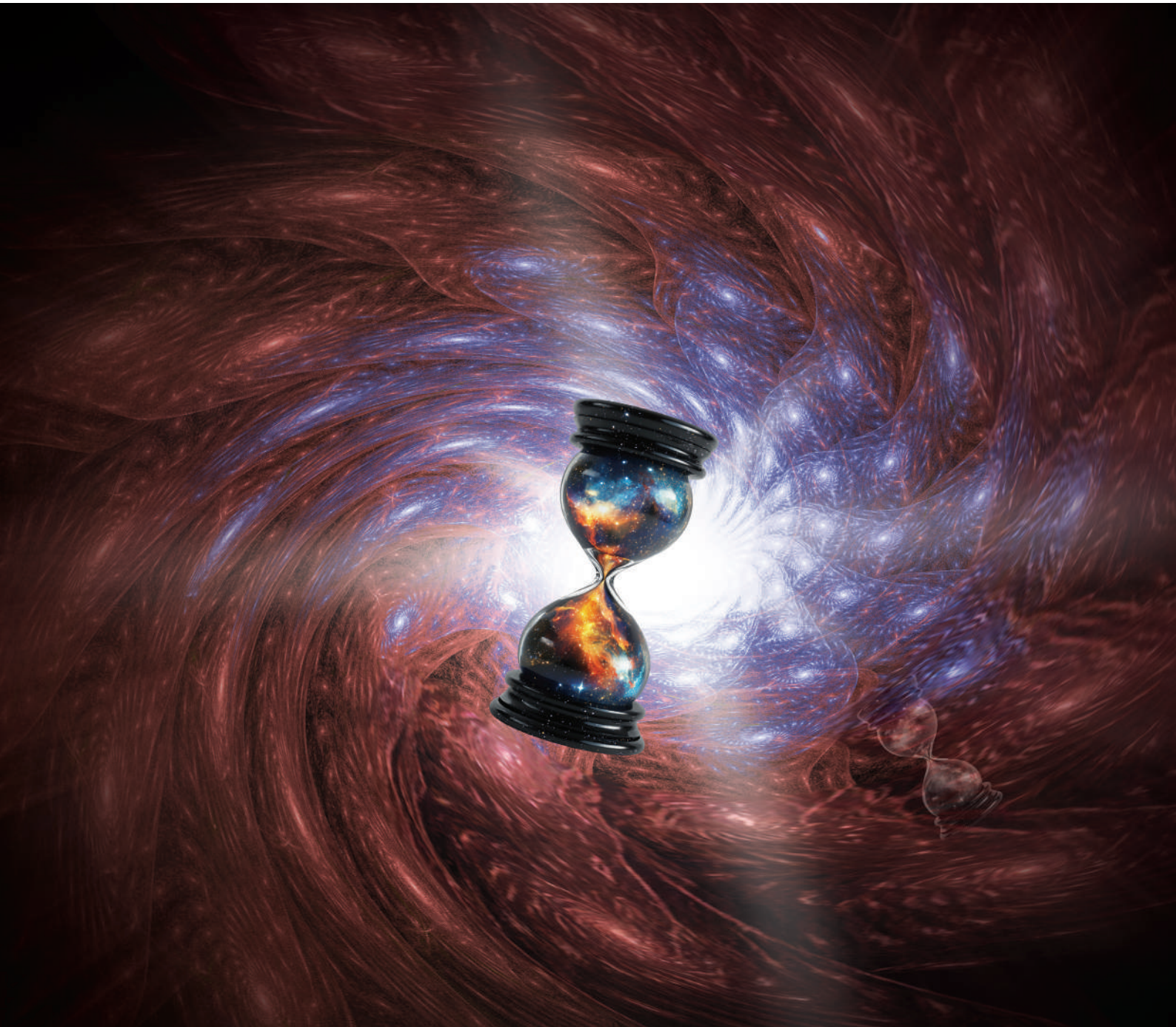
ALLIANCE UNIVERSITY
CENTRE for RESEARCH

DSIR RECOGNIZED SIRO
DEPARTMENT OF SCIENTIFIC & INDUSTRIAL RESEARCH GOVT. OF INDIA

ALLIANCE RESEARCH CHRONICLES

AUGUST 2025

Volume 8



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AUGUST 2025
Volume **8**

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TABLE OF CONTENT

C/ Patents

D/ Design

ABOUT ALLIANCE UNIVERSITY

Alliance reimagines the idea of the university by creating a community that leads the charge against the complex challenges of the 21st century. The university conceives research to be the essence of all teaching and learning practices. A unity between research and teaching is promoted to extend the frontiers of knowledge in order to solve real world problems at the local, national, and global scale. For this purpose, the university seeks to be the nerve centre of interaction between the industry, the government, the civil society, and the community at large.

In times when technological and social change is transforming the very idea of employability, the university embraces the increasing diversity of specializations while retaining the impulse to unify all knowledge.

A designed convergence of the business, engineering, law and liberal arts units precipitates transdisciplinarity as the core academic philosophy.

Freely working across divergent streams of knowledge like psychology and data science, technology and law, physics and philosophy or businesses and rhetoric, transdisciplinarity nurtures a dynamic foundation for the spirit of collaboration, inquiry, and enterprise.

VISION

Alliance University's vision is to be a world-class University that nurtures talent and catalytically transforms the lives of millions through excellence in teaching, research, service and community development. To uphold a commitment to shaping lives through scholarly teaching and learning, and that which contributes to an equitable and holistic transformation of society at large.

MISSION

The mission of the University is to create and sustain a community of lifelong learners in an environment that emphasizes literacy, critical thinking, and humanistic and scientific inquiry.
The University provides a dynamic, challenging and ethical environment for pursuing high quality teaching, research, learning and service across all areas of University, where students, faculty and other key constituents can interact, collaborate and partner with the global community for creation and dissemination of knowledge and transform lives of people through innovation and excellence in higher education.

ABOUT CENTRE *for* RESEARCH

The Centre for Research of Alliance University has been established to oversee the doctoral program and promote quality research through various Centres of Excellence (COEs) and publications.

The Centre for Research will be the nodal research center for Alliance University and will be committed to facilitating and promoting all academic research related activities. The Centre seeks to focus on providing a platform to Researchers and Academicians for thought provoking research on new and emerging fields and revolves around advancing knowledge and innovation within specific fields or interdisciplinary areas.

VISION

To pioneer transformative research initiatives that propel Alliance University to the forefront of global academia, driving innovation, societal advancement, and contributing to global progress and well-being.

MISSION

1. **Knowledge and Innovation:** Conduct cutting-edge research across disciplines to expand the frontiers of knowledge and drive innovation that addresses global challenges.
2. **Foster Collaborative Partnerships:** Cultivate partnerships with academic institutions, industries, and organizations worldwide to facilitate knowledge exchange, collaboration, and impactful research outcomes.
3. **Empower Research Scholars:** Provide a supportive environment, resources, and mentorship to empower researchers to pursue ambitious research agendas, develop critical skills, and become leaders in their fields.
4. **Address Global Challenges:** Tackle pressing global challenges such as climate change, healthcare disparities, food security, and technological advancement through interdisciplinary research that generates actionable solutions.
5. **Promote Societal Impact:** Translate research findings into real-world applications and policies that positively impact society, foster sustainable development, and contribute to the betterment of humanity and the planet.

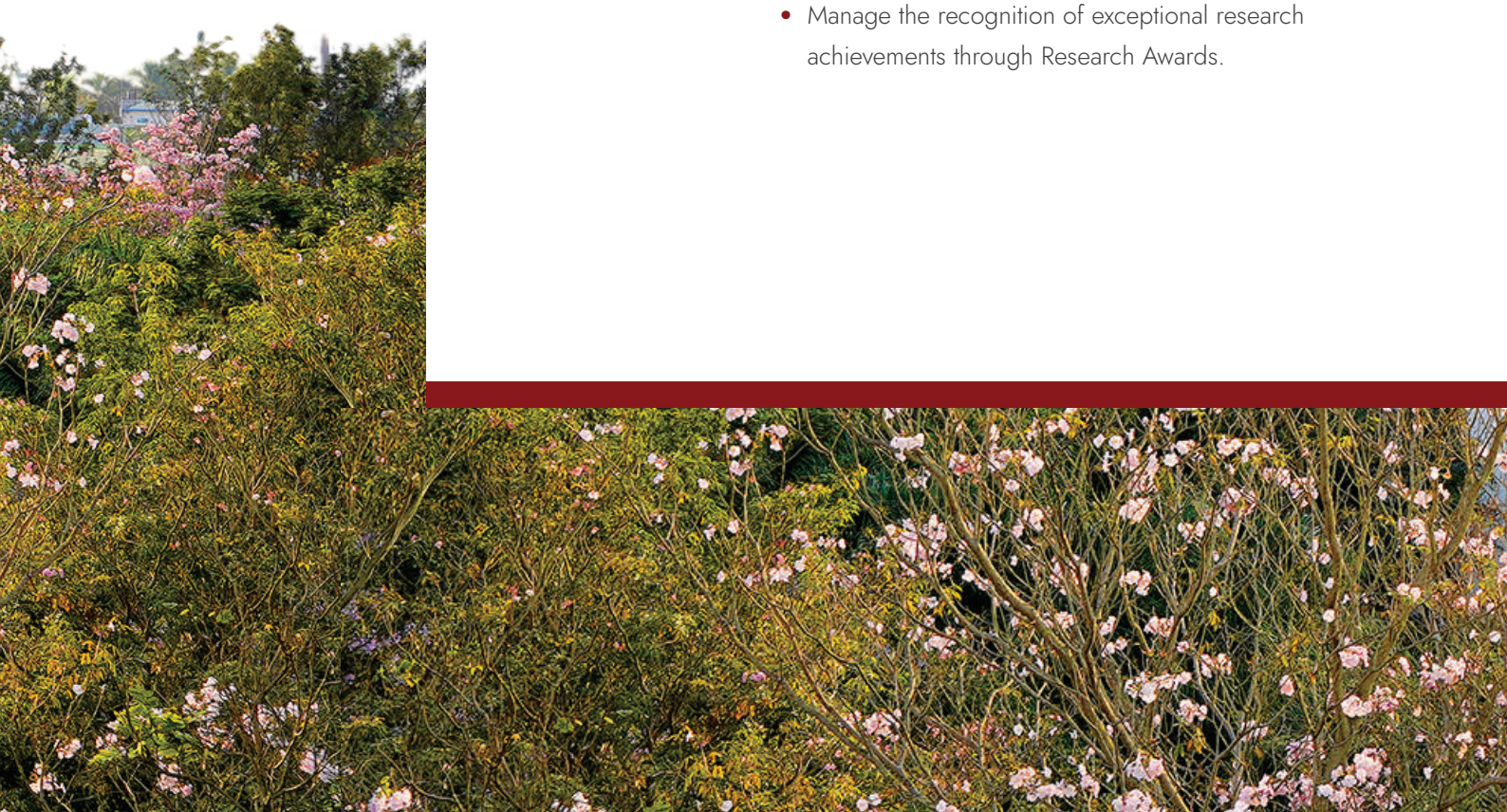
ABOUT CENTRE *for* RESEARCH (Contd.)

CORE VALUES

- **Collaboration:** Foster a culture of collaboration, inclusivity, and openness, recognizing the value of interdisciplinary teamwork and partnerships in addressing complex global challenges.
- **Innovation:** Embrace creativity, curiosity, and innovation, encouraging bold and unconventional approaches to research that lead to breakthrough discoveries and advancements.
- **Integrity:** Uphold the highest ethical standards in all research activities, demonstrating honesty, transparency, and accountability in the conduct and dissemination of research.
- **Agility:** Embrace agility and adaptability in response to evolving research landscapes and emerging challenges, fostering a culture of flexibility, innovation, and continuous improvement.
- **Diversity and Inclusion:** Value and celebrate diversity in perspectives, backgrounds, and experiences, fostering an inclusive research environment where all voices are heard, respected, and valued for their contributions.

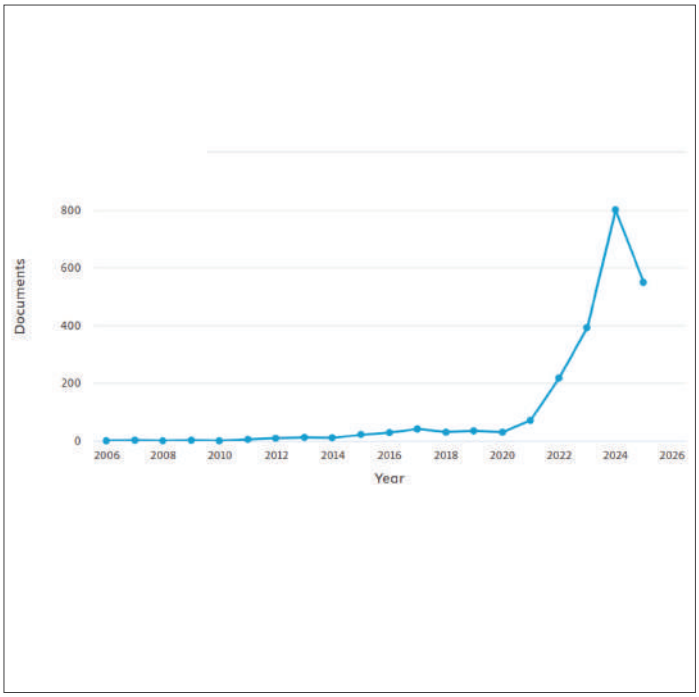
OBJECTIVES

- Support the Ph.D. Admission process and facilitate the Ph.D. Program across all academic units of Alliance University.
- Providing resources and support for faculty, students, and visiting/full-time scholars engaged in research activities.
- Contributing to the advancement of knowledge through publications, presentations, and other forms of dissemination.
- Fostering collaboration among researchers within and outside the institution.
- Conducting cutting-edge research in specific fields or interdisciplinary areas.
- Addressing societal challenges and promoting solutions through research and innovation.
- Enhancing the reputation and impact of the institution through high-quality research outputs.
- Supporting the professional development of researchers and students through training, mentorship, and networking opportunities.
- Serving as a hub for intellectual exchange, seminars, workshops, and conferences to promote interdisciplinary collaboration and knowledge sharing.
- To oversee the working of Academic Integrity bodies which includes the Department Academic Integrity Panel (DAIP) and Institution Academic Integrity Panel (IAIP).
- Manage the recognition of exceptional research achievements through Research Awards.

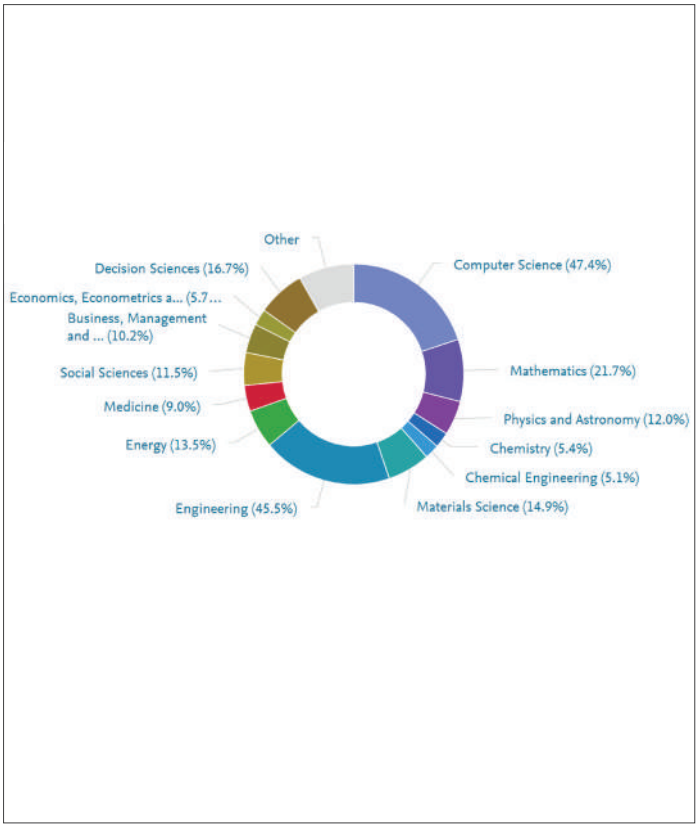


2326	809
Documents	Authors

Documents by Year



Documents by Subject Area

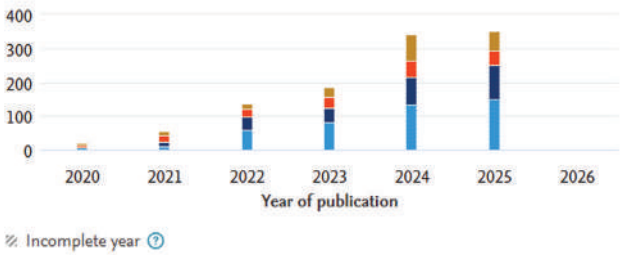


Summary

2326	809	11190	4.8	1.93	46
Scholarly Output	Authors	Citation Count	Citations per Publication	Field-Weighted Citation Impact	H-index

Note: Scholarly output, Authors and Citation Count are Taken from SCOPUS, and other Metrics are taken from SCIVAL.

Publication by Journal Quartile



Quartiles	Publications	Publication share (%)
Q1 (top 25%)	440	40.2
Q2 (26% - 50%)	277	25.3
Q3 (51% - 75%)	172	15.7
Q4 (76% - 100%)	205	18.7

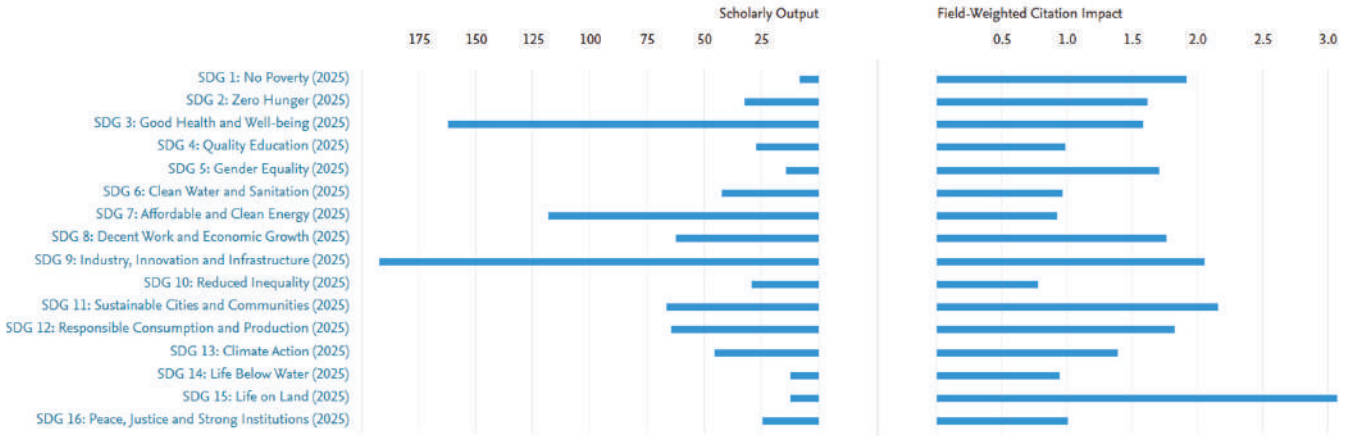
Cumulative shares	Publications	Publication share (%)
Q1 to Q2 (top 50%)	717	65.5
Q1 to Q3 (top 75%)	889	81.3

Geographical Collaboration Overall

national and institutional collaboration by Alliance University in the selected year range.

Metric	Publication share	Scholarly Output	Citations	Citations per Publication	Field-Weighted Citation Impact
International collaboration	30.9%	630	4,826	7.7	2.09
Only national collaboration	48.7%	992	3,437	3.5	2.28
Only institutional collaboration	14.6%	297	342	1.2	1.02
Single authorship (no collaboration)	5.9%	120	131	1.1	0.44

Publication by SDG



* The Publication metrices and the author affiliations are taken from SCOPUS/SciVal as on Aug 15, 2025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JOURNALS


Clarivate™
Web of Science

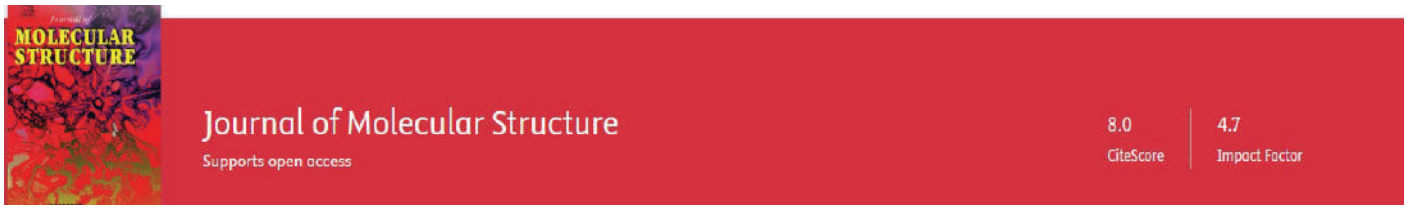
Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	**84th**	**4.7**	03 GOOD HEALTH AND WELL-BEING

SYNTHESIS, CYTOTOXICITY, MOLECULAR DOCKING, DFT ANALYSIS AND ADMET STUDIES OF IMIDAZO[1,2-B][1,2,4] TRIAZINE BASED PYRIMIDINE DERIVATIVES AS PI3K(α) SELECTIVE INHIBITORS

Alhamzani, Abdulrahman G.; Abou-Krisha, Mortaga M.; , Abdelrahman, Ehab A.; Aljlil, S. A.; **Kumar, K. Yogesh**; Kumar, Ch Bharath Pradeep;Raghu, M. S.;Prashanth, Maralekere Krishnegowda

Journal of Molecular Structure Article 2025

Kumar, K. Yogesh
Professor & Research Faculty
Department of Science Alliance School of Sciences



Abstract

Phosphoinositide 3-kinase (PI3K) is crucial for both carcinogenesis and cell regulation, making it a key target in cancer therapy. To find new anticancer agents with significant efficacy and reduced toxicity, this study shows the design and synthesis of a novel series of imidazo[1,2-b]triazine based pyrimidine derivatives (5a-c). Structural characterization was performed using spectral analysis. The anticancer potential was assessed against cancerous MCF-7, HCT116, and A549 cell lines and the non-cancerous WI-38 cell line. Notably, derivatives 5a, 5b, and 5c shown no toxicity to the normal WI-38 cell line up to 45 μM, but they had strong antiproliferative activity against MCF-7, HCT116, and A549 cell lines with IC50 values in the range of 2.75-5.19 μM, 2.48-4.35 μM, and 1.15-2.81 μM, respectively. Meanwhile, kinase enzyme inhibitory activity was evaluated against PI3K isoforms. The results showed that, in comparison to reference drug ZSTK-474, which had an IC50 value in the range of 3.26-24.77 nM, the compounds' IC50 values ranged from 1.55 nM to 53.29 nM. Molecular docking studies against the target PI3K (PDB ID: 7K6O) protein were carried out to gain a deeper comprehension of the potential mechanism behind the biological impacts. The findings showed that hydrophobic interactions and hydrogen bonds sustained the molecules binding to the target PI3K protein. The electronic characteristics which contributed to biological activity were validated by density functional theory (DFT) studies. Additionally, good bioavailability has been confirmed by ADMET and drug-likeness predictions. Based on both computational and experimental data, the newly synthesized imidazo[1,2-b]triazine-based pyrimidine derivatives are thought to be important structures for improving the design of prospective candidate molecules for the creation of novel PI3K inhibitors. © 2025 Elsevier B.V.

Author keywords- Cytotoxicity; Imidazo[1,2-b]triazine; Molecular docking; Pyrimidine

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q2	55th	1.6	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

SPECTRUM SENSING FRAMEWORK FOR WIRELESS INFORMATION TRANSMISSION WITH A NOVEL LCGT BASED DL APPROACH FOR COGNITIVE RADIO SENSOR NETWORKS

Vijay, E. Vargil; Aparna, K.; **K M V Madan Kumar**

Engineering Research Express Article 2025

Dr. M V Madan Kumar Kukunuri
Professor Computer Science and Engineering Alliance School of Advanced Computing

Engineering Research Express

INCLUSIVE PUBLISHING TRUSTED SCIENCE

Abstract

Spectrum sensing is essential for identifying radio frequency bands available for interference-free communication in today's cognitive radio systems context for providing efficient spectrum management. It is very important to ensure seamless wireless device operation in the dynamic and congested spectrum environments. In this paper, we propose a novel deep learning (DL) based LCGT (LMS-CNN-GRU-TN) approach combining a Least Mean Squares (LMS) equalizer, Separable Convolutional Neural Network (CNN), Gated Recurrent Unit (GRU), and Transformer Network (TN), leading to an improved spectrum sensing scheme. LMS equalization mitigates the distortions induced by the channel to improve performance. The temporal signal features are extracted by the separable CNN, GRU learns the sequential dependency from the signal pattern, while the TN utilizes attention mechanisms to model the complex signal dynamics. The proposed integrated architecture is robust, adaptable, and performs better with regard to spectrum sensing in noisy environments. Results from the proposed method show improvements in probability of detection, false alarm, sensing error, F1 score, and Cohen's Kappa Coefficient (CKC), indicating that proposed method can effectively analyse and sense the spectrum in wireless sensor networks (WSNs).
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Author keywords- cognitive radio; Cohen Kappa coefficient; F1 Score; spectrum management; spectrum sensing; wireless sensor networks

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	**85th**	**0.6**	10 REDUCED INEQUALITIES

CAPABILITY ENHANCEMENT OF PEOPLE WITH DISABILITY THROUGH LEADERSHIP-DRIVEN CARE

Verma, Pratima; Stocchetti, Andrea; D., Dev, Devpriya

Journal of Human Values Article 2025

Dr. Pratima Verma
Professor & Area Chair Human Resources Management Alliance School of Business

Journal of Human Values

Impact Factor: **0.6** / 5-Year Impact Factor: **0.9**

Abstract

This article aims to explore the conditions of people with disability (PwD) integration through the analysis of best practices of a successful Indian company that has adopted a singular PwD involvement policy since it was started. Our research question can be stated as follows: 'What enablers or factors helped Vindhya in the successful inclusion of PwDs and simultaneously achieve commercial success?' An exploratory study consisting of data triangulation of secondary data and in-depth interviews was done to get a detailed and deep understanding of the company's successful inclusion of disabled employees. We found that a transformational leadership style prevents prejudice and expands the horizon of PwD's capability. This is concretely implemented through a set of organizational practices involving communication, ambience, relationships, empathy, ethics and other aspects that are highlighted in this article. We briefly call the overall approach of the company 'CARE' (Communication, Ambience, Respect/Relatedness with employees/Recruitment, Ethics/Empathy/Enthusiasm/Engagement). The adoption of CARE-organizational practices at the studied company increased the capability set of PwDs, enhanced organizational citizenship behaviour and, as a whole, improved the organizational performance.
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Author keywords- Capability approach; equal opportunity; people with disabilities; transformational leadership

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	86th	7.9	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

STIFFNESS DEGRADATION AND FATIGUE DAMAGE EVOLUTION IN TREATED RAMIE FIBRE-REINFORCED EPOXY COMPOSITES

G M, Yash; Shankar, Methil Vivek; Acharya, Prashantha; Thara, Reshma I.V.; Kini, Chandrakant R.; **Shahapurkar, Kiran**; Padmaraj, N. H.

Results in Engineering Article 2025

Dr. Kiran Shahapurkar
Assistant Professor & Research Faculty
Mechanical Engineering Alliance School
of Applied Engineering

Abstract

The service life of the engineering structures and materials depends on the cyclic loading applied or acting at different operating conditions. This study investigates the fatigue performance of Ramie fibre-reinforced epoxy composites at various stress levels (0.6, 0.7 and 0.8). The bidirectional Ramie fibre was treated with Potassium Hydroxide (KOH) to improve the surface characteristics and interfacial bonding with the epoxy matrix. The Ramie/Epoxy laminates were fabricated using the hand lay-up technique followed by the vacuum bagging technique. The effect of fibre treatment on Ramie fibre was studied by performing Fourier-transform infrared spectroscopy (FTIR) analysis and X-ray diffraction (XRD) on the untreated and treated fibres. The FTIR and XRD results showed the removal of hydroxyl groups and non-cellulosic amorphous materials from the fibre surface. The stress-strain curve was plotted to evaluate the mechanical behaviour of the composite, and the average tensile strength and modulus of the composite were noted to be 83.54±3.98 MPa. and 5.36 ± 0.15 GPa, respectively. During the digital image correlation analysis, the localized strain map along the loading direction revealed the failure region and the average Poisson's ratio of 0.40. The stiffness degradation and fatigue damage evolution were analyzed at different stress levels. The stiffness of the Ramie/Epoxy depended on the stress level, and a higher rate of degradation was observed at a stress level of 0.8. The failure surface morphology study using the scanning electron microscope (SEM) showed that the surface treatment had significantly improved the bonding between the fibre and matrix. © 2025

Author keywords- Crystallinity Index; Fatigue damage; Fibre treatment; Hydroxyl group; Stiffness

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	**86th**	**7.9**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

HEMODYNAMIC ANALYSIS OF NON-NEWTONIAN BLOOD FLOW IN A DOUBLY BRANCHED, SHALLOW-BULGED ILIAC ARTERY

Singh, Digamber

Results in Engineering Article Open Access 2025

Dr. Digamber Singh
Assistant Professor Mechanical
Engineering Alliance School of Applied
Engineering

Abstract

The article presents insights into non-Newtonian blood flow analysis in the shallow-bulged, doubly branched iliac artery under rest, light and moderate activity. Using pulsatile modelling to evaluate the distinct velocity fields, vorticity, helicity, wall shear stress (WSS), and viscosity distributions. The arterial geometry was reconstructed based on patient-specific imaging data to ensure anatomical fidelity. Under moderate exercise (peak velocity ≈ 1.8 m/s), coherent flow structures emerge, including Dean Vortices (Dean number ≈ 350), elevated helicity (H ≈ 0.45 m4/s^2), and vorticity stretching, enhancing momentum transfer and minimising stagnation. However, localised acceleration near the bulge induces transient recirculation and oscillatory shear, linked to endothelial stress. In contrast, light activity (velocity ≈ 1.2 m/s) and rest (≈ 0.4 m/s) amplify adverse pressure gradients, shear layer instabilities (∂u/∂y > 300 s ^{1}), and near-wall viscosity (≈ 6.0 × 10 ^{3} kg/m. s), fostering prolonged residence time (RRT > 3.5 s) and high oscillatory shear index (OSI > 0.45), conditions conducive to atherogenesis. The bifurcation geometry drives asymmetric secondary flows, with counter-rotating vortices and helical structures (Q > 0.1), while low Reynolds number flows (Re < 800) during rest promote viscous dissipation and quasi-uniform low WSS (< 0.4 Pa). Shear-thinning rheology reduces core viscosity during exercise (≈ 3.5 × 10 ^{3} kg/m. s) but elevates near-wall viscosity in low-shear regions. Elevated WSS (>10 Pa) under exercise supports endothelial protection, whereas rest expands low-WSS zones (<1.5 Pa), enhancing thrombogenic risk. This patient-specific approach enables the identification of atheroprone sites and informs tailored therapeutic strategies.
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Author keywords- Apostolides & Beris model; CFD simulation; CT-scan; non-Newtonian; Shallow-Bulged Iliac Artery

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q2	72nd	4.5	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

FACILE SYNTHESIS OF NOVEL STANNOUS NIOBATE PYROCHLORE: MORPHOLOGICAL, STRUCTURAL, CYTOTOXICITY, DNA BINDING AND MOLECULAR DOCKING STUDIES

Alhamzani, Abdulrahman G.; Abou-Krisha, Mortaga M., Abdelrahman, Ehab A.;Aljlil, S. A.; **Kumar, K. Yogesh**; Kumar, Ch Bharath Pradeep; Raghu, M.K., Prashanth, Maralekere Krishnegowda

Materials Today Communications Article 2025

Kumar, K. Yogesh
Professor & Research Faculty
Department of Science Alliance School of Sciences

Abstract

In this work, we prepared and thoroughly characterized stannous niobate ($Sn_2Nb_2O_7$) in the pyrochlore structure, then examined two key aspects: its ability to interact with calf-thymus DNA (ct-DNA) and its effect on cancer cell viability. To assess biological activity, HCT116 (human colorectal cancer) and MCF-7 (human breast cancer) cell lines were exposed to $Sn_2Nb_2O_7$, and their metabolic viability was evaluated through the MTT assay, which involves the reduction of 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide. With IC50 values of 54.19 and 48.07 μg/mL, respectively, Sn2Nb2O7 had a substantial cytotoxic effect against the HCT116 and MCF-7 cell lines. The interaction of $Sn_2Nb_2O_7$ with ct-DNA was explored using multiple analytical techniques, including viscosity measurements, cyclic voltammetry (CV), UV–visible absorption, fluorescence spectroscopy, and circular dichroism (CD) spectroscopy. According to the results of the absorption and emission spectra, Sn2Nb2O7 interact with calf thymus-DNA (ct-DNA) through a probable groove mode of binding. Studies on viscosity, CD and CV further supported these conclusions. To further investigate the interactions between the DNA's (PDB ID: 1BNA) active sites and stannous niobate, molecular docking was employed. The Sn2Nb2O7 crescent shape within the DNA groove was revealed by molecular docking studies, confirming the hydrogen bonding interactions and the experimental results. Taken together, the findings suggest that $Sn_2Nb_2O_7$ holds significant promise for biomedical applications, particularly in DNA interaction studies and as a candidate for anticancer therapy. © 2025 Elsevier Ltd

Author keywords- Ct-DNA; Cytotoxicity; Fluorescence; Molecular docking; Sn2Nb2O7 pyrochlore

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	**79th**	**3.2**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

STRONTIUM-DECORATED AG2O NANOPARTICLES OBTAINED VIA GREEN SYNTHESIS/ POLYVINYL ALCOHOL FILMS FOR WOUND DRESSING APPLICATIONS

Ghatti, Vanita; Sharanappa, Chapi; **Kumar, K. Yogesh**; Nandihalli, Nagaraj; Kasai, Deepak Ramesh

Material Article 2025

Dr. Yogesh Kumar K
Professor & Research Faculty
Department of Science Alliance School of Sciences

Materials
Scientific journal
materials

Abstract

This study involved the fabrication of poly (vinyl alcohol) (PVA) nanocomposite films using the solution-casting process, which incorporated strontium-coated silver oxide (Sr-Ag2O) nanoparticles generated by a plant-extract assisted method. Various characterization techniques, such as XRD, SEM, TEM, UV, and FTIR, showed the formation and uniform distribution of Sr-Ag2O nanoparticles in the PVA film, which are biocompatible nanocomposite films. The presence of hydroxyl groups leads to appreciable mixing and interaction between the Sr-Ag2O nanoparticles and the PVA polymer. Mechanical and thermal results suggest enhanced tensile strength and increased thermal stability. In addition, the sample of PVA/ Sr-Ag2O (1.94/0.06 wt. ratio) nanocomposite film showed decreased hydrophilicity, lower hemolysis, non-toxicity, and appreciable cell migration activity, with nearly 19.95% cell migration compared to the standard drug, and the presence of Sr-Ag2O nanoparticles favored the adhesion and spreading of cells, which triggered the reduction in the gaps. These research findings suggest that PVA/Sr-Ag2O nanocomposite films with good mechanical, antimicrobial, non-toxic, and biocompatible properties could be applied in biological wound-healing applications. © 2025 by the authors.

Author keywords- antimicrobial activity; cytotoxicity; haemolysis; PVA; Sr-coated Ag2O nanoparticles; wound healing

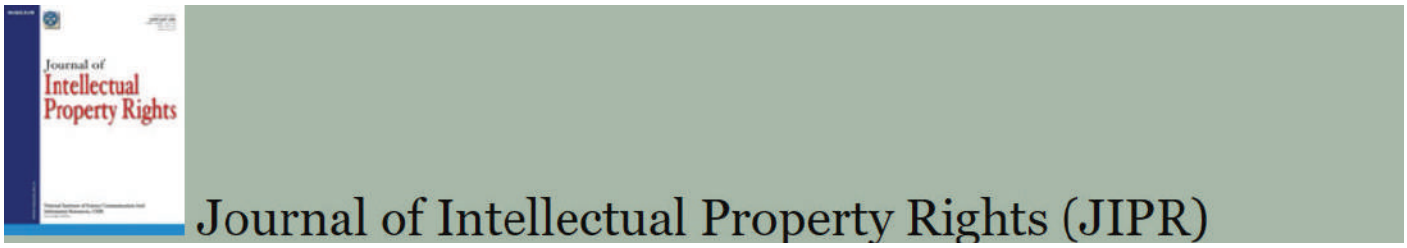
Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q2	**55th**	**0.29**	08 DECENT WORK AND ECONOMIC GROWTH

BETWEEN FANDOM AND COPYRIGHT: NAVIGATING THE MAZE OF FAN FICTION COMMERCIALIZATION

Adawadkar, Nupur; **Chutia, Upankar**

Journal of Intellectual Property Rights Article 2025

Dr Upankar Chutia
Associate Professor, Law
Alliance School of Law



Abstract

Fanfiction is a creative narrative set in an amateur capacity by fans featuring charaters and settings of popular novels, TV series, movies, games or even podcasts. However, this form of creative expression by fan communities have transformed by a hobby to a thriving subculture with commercial potential owing to the rise of digital platforms like wattpad. This research examines the intricate relationship between fanfiction and copyright law. It focuses on key aspects such as fair use, transformative works, and potential copyright infringement while assessing how copyright principles may be applied to fan-created content. This paper evaluates a fanfiction through a legal lens of the four factor test which includes purpose, nature, the amount of copyrighted work used, and the market impact. The findings indicate that while fanfiction often qualifies for the "fair use" exception, its derivative nature conflicts with the execlusive rights awarded to the original author by the law, raising legal as well as ethical concerns. This research proposes an adaptive framework suggesting clearer guidelines that could offer a balanced approach that addresses copyright of original creators and fan communities driving digital creative innovations/ practices in contemporary media.
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Author keywords- Copyright Law; Fair Use; Fan Creativity; Fanfiction; Four-Factor Test; Infringement

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	75th	2.6	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

AL-CR-SI-N COATING: SUBSTRATE TEMPERATURE EFFECT ON MECHANICAL AND SCRATCH BEHAVIOUR

Kumar, Abinash; **Soni**; Mishra, Suman Kumari Pathak

Surface Engineering Article 2025

Dr. Soni
Assistant Professor Department of Science
Alliance School of Sciences

Surface Engineering

I·M3 Institute of Materials Minerals & Mining

Impact Factor: **2.6** / 5-Year Impact Factor: **2.3**

Abstract

The demand for advanced coating materials in high-temperature and wear-resistant applications has led to the exploration of multicomponent systems that offer superior mechanical properties. Among these, AlCrSiN has emerged as a promising candidate owing to its ability to blend the thermal stability and hardness of AlCrN aided by grain refinement along with the presence of amorphous phase as a result of silicon addition. In this study, SS 304 substrates were used to deposit AlCrSiN thin films through magnetron sputtering process. This work focuses on the structural, hardness, scratch, wear and adhesion properties of AlCrSiN thin films as a function of substrate temperature. The AlCrSiN coating deposited at 400°C exhibited a hardness of 23 GPa and an (H/E) ratio of 0.08, which is an apparent measure of good wear-resistance coating. The work of adhesion significantly increased from 18 to 150 Jm−2as the substrate temperature was gradually boosted from 30 to 500°C. Coatings facricated at room temperature and 300°C displayed an amorphous structure, while those deposited at 400°C and 500°C developed CrN/AlN crystallites averaging 16 nm in size within the amorphous matrix. Furthermore, the coefficient of friction (COF) was maintained between 0.27 and 0.30. These findings underscore the potential of AlCrSiN coatings to enhance the wear resistance and mechanical performance of substrates in demanding industrial applications, with substrate temperature playing a key role in optimizing coating properties.
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Author keywords- al-Cr-Si-N; hardness; magnetron sputtering; nanocomposite coatings; scratch adhesion

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q4	15th	2.33	11 SUSTAINABLE CITIES AND COMMUNITIES

WHAT MAKES INDIAN CAMPUS FICTION A BESTSELLING GENRE: AN EXPLORATION OF ITS LANGUAGE AND THEMES

Namhata, Rima

IUP Journal of English Studies Article 2025

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Assistant Professor, Department of
Language & Literature
Alliance School of Liberal Arts

IUP Journal of English Studies

Abstract

The study of contemporary Indian campus fiction (ICF) has remained underexplored in academic literature, despite its bestselling status for over two decades. Hence this study seeks to explore ICF's features and salience. ICF's popularity prompts two key objectives: (i) to evaluate contemporary ICF by identifying and assessing its essential features integral to ICF; and (ii) to explore how these features reflect an underlying youth culture that contributes to its bestselling status. The methodology follows a two-step approach. First, it employs a systematic review of ICF, building on Robert F. Scott's 2004 paper, "It's a Small World, After All: Assessing the Contemporary Campus Novel", which examines secondary literature to define the style of ICF, analyzing its themes, tone, settings, characters, authors, and language. Second, the paper adopts the Theme Framework Analysis (Ritchie & Spencer, 1994) to identify emerging themes linked to youth culture and their correlation with ICF's bestselling status. The paper highlights how language and themes in ICF resonate with youth identity, driving both cultural relevance and market production.
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Author keywords- Bestsellers; Indian campus fiction; Language-use; Theme framework analysis; Themes

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q4	8th	5	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

NAVIGATING IN THE DIGITAL AGE: UNCOVERING INSIGHTS ON TALENT MANAGEMENT FOR SUSTAINABLE PERFORMANCE

Bataineh, Mohammad Jamal; **Varadaraj, A.**; Mohan Raj, M. Prasanna; Sengodan, Ananth

International Review of Management and Marketing Article 2025

Dr. A Varadaraj
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International Review of Management and Marketing

Abstract

Realizing that human capital is a critical factor in today's strategic management, the study aims at analysing the possible ways through which organisations can improve organisational performance through talent management. This study examines the effects of talent management on sustainable organisational performance in corporate firms, India. For this study the quantitative method was used, and the subjects were 218 managers and executives from different organisations using an online questionnaire. The study focuses on effective Talent Management practices that include talent acquisition, employee training, career progression, training and development, and employee turnover. Research findings show that policies such as remunerations, promotions, professional networking and flexible working hours are considered as antecedents of talent management. Additionally, the study establishes a strong positive correlation between talent management practices and organisational performance with reference to competitive advantages, morale and sustainability. A one-sample t-test and Pearson's correlation test also provided strong support for the effect of talent management on short-term performance and long-term sustainable performance of the organisation. The article finds that 77% of participants agree that talent retention in their organization has led to an increase in sales. The study's findings are important in the existing literature because there is limited research on talent management in emerging economies such as India. This paper therefore emphasizes the importance of the adoption of strategic talents management in organisations to guarantee organisational success in today's more globalized economy. The research has relevance to practicing managers who seek to improve performance through the management of human capital.

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Author keywords- Career Development; Competitive Advantage; Emerging Economy; Employee Retention; Organisational Competitiveness; Sustainable Organisational Performance; Talent Management

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q2	67th	2	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

SYNTHESIS OF CO–CU DOPED BA–SR FERRITES: STUDY OF STRUCTURAL, MORPHOLOGY, DIELECTRIC/ELECTRIC MODULUS, CHARGE TRANSPORT DYNAMICS, AND AC CONDUCTIVITY METRICS

Aherrao, Disha Sunil; Srivastava, Ajeet Kumar; Jotania, Sandhu, **Charanjeet Singh**

Journal of Sol-Gel Science and Technology Article 2025

Dr. Charanjit Singh
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Abstract

This investigation employed the sol-gel technique to prepare Co2+-Cu2+ doped M-type barium-strontium hexagonal ferrite. X-ray diffraction (XRD), along with field emission scanning electron microscopy (FESEM), have been utilized to investigate the crystal structure and morphology of the grains, respectively. An impedance analyzer was utilized to evaluate electrical parameters at room temperature. The formation of an M-type hexagonal crystal *-structure was confirmed by the X-ray diffraction profile, along with minor traces of hematite. In SEM analysis, it was seen that as doping levels are increased, the small size of each grain becomes prominent in the grain clusters, giving rise to a prominent rice-grain shape. The dielectric loss tangent is increased, and the dielectric constant is decreased as doping levels rise. The interplay between grain boundaries and grains has a notable impact on relaxation characteristics across various doping concentrations, leading to the presence of both strong and partial relaxations in low and high-frequency domains. This behavior contributes to the development of either depressed or expanded semicircles influenced by the interactions at grain and grain boundary levels. Analysis of the Cole-Cole plots for electric modulus indicated significant conductivity relaxation. Different relaxation periods were observed in correlation with the conductivity relaxation, and spectra of the electric modulus confirmed the material's non-Debye behavior. © The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2025.

Author keywords- AC Conductivity; Electric Modulus; Impedance Spectroscopy; M-type hexagonal ferrites; Sol-Gel method

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q2	**68th**	**2.1**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

FABRICATION OF CO-HF DOPED BA-SR HEXAGONAL FERRITE FOR ECONOMICAL AND LIGHTWEIGHT MICROWAVE ABSORBER APPLICATION: FUNCTIONALIZATION OF STRUCTURAL, MORPHOLOGICAL, HYSTERESIS, ELECTROMAGNETIC METRICS AND TUNABLE BANDWIDTH

Joshi, Rajat P.; Singh, Jasbir; Dhruv, Preksha N.; Jotania, R. B.;Ammar-Merah, Souad; Sombra, Antônio Sérgio Bezerra; Sandhu, **Charanjeet Singh**

IEEE Transactions on Magnetics Article 2025

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IEEE Transactions on Magnetics

Abstract

Microwave absorbers are used to mitigate the unwanted wireless/electromagnetic signals that interfere with the functioning of electrical/electronic devices. In this paper, Co2+-Hf4+ doped M-type Ba-Sr hexagonal ferrite samples have been synthesized using a solid-state ceramic method. The phase structure and surface morphology were studied using X-ray diffraction (XRD) and scanning electron microscopy (SEM), respectively. The magnetic hysteresis was investigated with a vibrating sample magnetometer. A two-port vector network analyzer characterized the microwave absorption in terms of frequency, dopants, and geometrical thickness of the samples. XRD confirmed that the produced powders are of M-type hexaferrite structure without any additional phases. SEM revealed inhibition of grain growth with dopants and small grain size as well as grain cluster formation. This morphological behavior caused a reduction in coercivity and enhanced microwave absorption. As a consequence, the dopants caused a better soft magnetic nature with a room temperature (r.t.) coercivity (Hc) varying between 788 Oe (x=0.0) and 489 Oe (x=1.0). The measured dielectric constant/dielectric loss and permeability/magnetic loss parameters were increased with dopants. The dopants caused an increase in the absorption from -20.67 dB at 6.5 mm in undoped composition (x=0.0) to -40.21 dB at 1.6 mm in doped composition (x=1.0). Additionally, -10 dB absorption bandwidth of 3.13 GHz was exhibited in x=1.0 from 8.47-11.60 GHz frequency band, while x=0.4 revealed -10 dB absorption bandwidth of 1.92 GHz from 10.48-12.40 GHz. Microwave absorption has been substantiated by impedance matching/ /4 mechanism and absorption peaks have been tuned in the desired frequency spectrum by careful selection of thickness/dopants. Significant variations were seen associated with dopants-based tuning of absorption peaks in the frequency spectrum, an increase in microwave absorption, and a decrease in the thickness of the samples. The tunable performance metrics and economical synthesis imply the potential application of prepared compositions for microwave absorbers and passive device applications for wireless communication. © 1965-2012 IEEE.

Author keywords- Ceramic processing route; Hysteresis; M-type Hexaferrites; Microstructure; Microwave Absorption

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	87th	2.1	11 SUSTAINABLE CITIES AND COMMUNITIES

ARTIFICIAL NEURAL NETWORK MODELING TO PREDICT COMPRESSIVE STRENGTH AND STATIC MODULUS FOR SELF-COMPACTING CONCRETE USING DIFFERENT PERCENTAGE OF RECYCLED CONCRETE AGGREGATE

Thapa, Sheetal; Pradhan, Shashwati Soumya;Gupta, Sonu Kumar;Raju, **Asha Rani Nagondanahalli; Fayaz, Danish**; Ganasen, Nakkeeran

Environmental Science and Pollution Research Article 2025

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Abstract

This study uses recycled concrete aggregate (RCA) available in Tripura, India, as a coarse aggregate for self-compacting concrete (SCC). The region suffers from the scarcity of normal stone aggregate (NSA) and using RCA decreases the demand–supply gap and promotes sustainability. The specimens were cast using different percentages of RCA (0, 25, 50, 75, and 100%) in replacement of NSA. The study compares different models and their abilities to forecast concrete's compressive strength and static modulus using both artificial neural networks (ANN) and normal linear regression. The developed model incorporated age (14, 28, and 90 days), grade of concrete (M25, M30, and M35), and type of aggregate (RCA and NSA) into consideration. This study shows the effect of using RCA on the workability (slump test, J-ring test and L box test) property of SCC. The study also shows that incorporating the initial sorptivity coefficient in SonReb (ultrasonic pulse velocity and rebound number) models, and the use of ANN increases the prediction of both compressive strength and static modulus of SCC. The test results demonstrate that ANN-based models significantly enhance the prediction of compressive strength and static modulus compared to traditional models. Incorporating RCA in SCC maintains workability within acceptable limits while promoting sustainability by reducing construction waste and lowering carbon emissions. The study also presents the reduction in carbon emission in Tripura, India, due to the application of recycled concrete as a coarse aggregate. These insights provide a strong basis for adopting RCA in practical construction applications, addressing both environmental and material scarcity challenges.
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Author keywords- Artificial neural network; Non-destructive testing; Recycled concrete aggregate; Sorptivity coefficient; Static modulus

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	85th	0.6	04 QUALITY EDUCATION

A REVIEW OF THE 28 YEARS JOURNEY OF THE JOURNAL OF HUMAN VALUES

Roche, Joseph; Anand, Vivek

Journal of Human Values Article 2025

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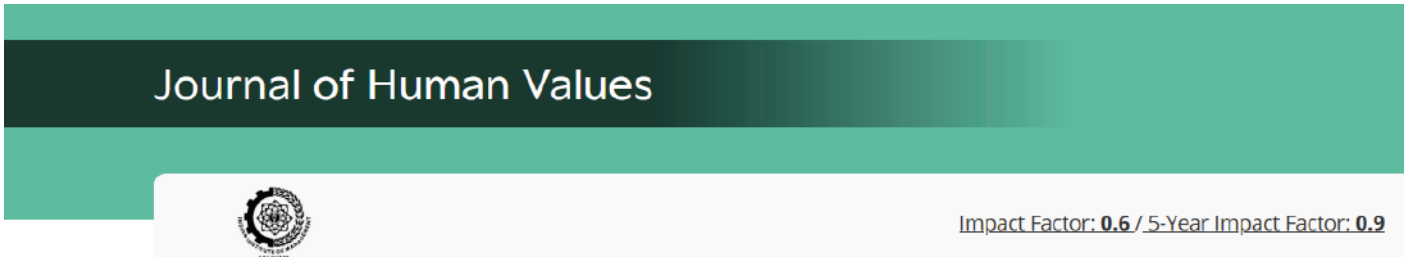

Abstract

Purpose: Over the past 28 years, studies relating to human values in the Journal of Human Values (JHV) have grown significantly both in numbers and impact. This study aims to map the major intellectual structure of research published in the JHV and suggest a way forward for prospective researchers to make meaningful contributions to the study of human values. Design/Methodology/Approach: A bibliometric analysis of 431 articles and reviews published in the JHV since the inception of the journal in 1995 till date of this study was carried out. The list of publications was sourced from the Scopus database. VOSviewer, an open-source software was used for analysis that included citation analysis, cluster analysis and keyword analysis. Findings: The findings include the identification of key themes and impactful researchers contributing to the JHV. Science mapping was performed using a co-occurrence analysis of 942 keywords, across 431 articles. One-hundred six articles met the threshold of at least two similar keywords. The analysis reveals seven clusters and major themes. Fifty percent of the publications are from India, where the journal is based; however, significant global contributions are made from across the United States, United Kingdom, Europe, Asia, Africa and Oceania. Originality/Value: This analysis offers insights on the themes and trends of research published in the JHV using bibliometric techniques and can be a useful resource for prospective researchers.
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Author keywords- Bibliometric; citation analysis; co-occurrence analysis; human values

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q2	65th	2.1	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

DEVELOPMENT OF CO2+ AND ZN2+ CO-DOPED HEXAFERRITES FOR MICROWAVE APPLICATIONS: STRUCTURAL, MAGNETIC, AND ABSORPTION TRAITS

Naqvi, Sayed Tathir Abbas; Godara, Sachin Kumar;Ray, Bishakha;Datar, Suwarna S.; Sandhu, **Charanjeet Singh**

Journal of Electronic Materials Article 2025

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Abstract

Co-Zn co-doped M-type hexaferrites SrCoyZnyFe12−2yO19 have been developed employing the sol–gel method. X-ray diffraction (XRD) was carried out to analyze the phase purity, and scanning electron microscopy (SEM) was used to investigate the morphology of the developed ferrite. The magnetic characterization was performed by determining various magnetic parameters including saturation magnetization (Ms), coercivity (Hc), remanence (Mr), and anisotropy field (Ha). The microwave absorption performance was investigated by utilizing reflection loss (RL) versus frequency graphs. The impact of relaxation peaks in complex permittivity/permeability and eddy current loss on absorption performance has also been investigated. The crystallite size reduces with the increase in the doping level of Co-Zn and ranges between 38.77 nm and 26.42 nm. Morphology suggested good inter-grain connectivity with decreased particle size at a higher doping level. A decrease in coercivity (Hc) from 3026 Oe to 948 Oe was observed. On a similar note, saturation magnetization (Ms) decreased from 90.29 emu/g to 76.59 emu/g. Absorption characteristics were enhanced by doping with Zn2+ and Co2+. The highest RL of −41.72 dB at a thickness of 1.9 mm with an input impedance (Zin) of 379.55 Ω (Zreal = 379.50 Ω, Zimg = −5.68 Ω) was obtained for y = 1.0. It also possessed the highest bandwidth of 2.02 GHz among all the compositions. The developed ferrites can be the prime applicant as an absorber in the field of defense and commercial applications due to their broad bandwidth, low thickness, and high absorption. © The Minerals, Metals & Materials Society 2025.

Author keywords- bandwidth-to-thickness ratio; eddy current loss; Hexaferrites; microwave absorber; reflection loss

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	**77th**	**10.9**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

NEURAL FORENSIC ANALYSIS FOR PRIVACY AND INTEGRITY PROTECTION IN BIOMETRIC AUTHENTICATION SYSTEMS

Gupta, Sachin Kumar; Zaidi, Abdelhamid Taieb;Avacharmal, Rajiv; **Ezil Sam Leni, A.**; Prasad, K. D.V.; Singh, Pavitar Parkash; Dahan, Fadl; Abdullayev, Abror Bozarboyevich; Khan, Mohammad Rafeek

IEEE Transactions on Consumer Electronics Article 2025

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IEEE Transactions on Consumer Electronics

Information

Impact factor: **10.9** (2024)

Abstract

This paper proposes a digital forensics-driven approach to ensure the integrity and privacy preservation of biometric systems in consumer electronics. Specifically, we develop a neural network-based forensic model to detect and analyze disguised speech attacks, which pose a significant threat to biometric authentication. The model leverages Multi-Layer Perceptron (MLP) architecture to identify speaker gender based on key acoustic parameters such as formant center frequency, bandwidth, and sound intensity. To enhance forensic accuracy, we employ L-BFGS optimization during model training. Experimental validation is conducted using SoundTouch-modified speech samples, simulating real-world biometric spoofing attempts. We further analyze the impact of network structure and activation functions on detection performance, as well as the model's adaptability to various electronic disguise techniques. Results demonstrate that the proposed MLP-based forensic framework effectively differentiates between genuine and electronically disguised speech, providing a robust solution for biometric security in consumer electronics.
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Author keywords- Biometric Security; Consumer Electronics; Digital Forensics; Disguised Speech Detection; Multi-Layer Perceptron (MLP); Speaker Authentication

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	80th	4.7	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

ENHANCEMENT OF THE FUNCTIONAL PROPERTIES OF VINYL ESTER COMPOSITES USING ALKALI-TREATED COCOS NUCIFERA SHELL BIOCHAR FOR SUSTAINABLE APPLICATIONS

Pradeep, R.;Balavairavan, B.; **Senthamaraikannan, P.**; R., Kumar, R.;Parrthipan, B. K.; P., Narayanasamy, Palanisamy; S., Thangakasirajan, S.; M., Aravindkumar, M.; K., Ashwin, K.

Polymer Composites Article 2025

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spe INSPIRING PLASTICS PROFESSIONALS
POLYMER COMPOSITES

Abstract

The objective of this study is to enhance the mechanical, thermal, dielectric, and functional characteristics of vinyl ester composites by adding environmentally friendly alkali-treated Cocos nucifera shell (CNS) biochar for high-performance, sustainable material applications. Six combinations of composite plates were prepared by incorporating 5%, 10%, and 15% of untreated and alkali-treated CNS biochar into a vinyl ester matrix using the solution casting technique. Alkali treatment improves the surface structure of CNS biochar through the removal of non-cellulosic components and enhanced compatibility and bonding. FTIR analysis verifies structural changes, and XRD analysis indicates enhanced crystallinity (34%–49%) and crystallite size (15–27 nm) with the elimination of amorphous parts. The fabricated composites are thermally stable up to 558°C with a residual mass of 16.45% and 23.25% for 15% untreated and alkali-treated biochar composites, respectively. DSC analysis reveals a rise in glass transition temperature (156°C–164.8°C) and degradation temperature (255.54°C–263.76°C) for alkali-treated CNS biochar-loaded vinyl ester composites. A greater storage modulus (E) of 17,445 Pa reflects enhanced load transfer. Water uptake is higher with CNS biochar content, up to 5.5% for VE/15% CNS composites, but decreases with alkali-treated composites by stripping off polar groups. The water contact angle (WCA) of VE/15% CNS and VE/15% at-CNS composites are 98.6° and 123.4°, respectively, which ensures the hydrophobicity. Alkali-treated CNS biochar also increases the dielectric constant of vinyl ester composites via charge accumulation and polarization, enhancing charge storage and minimizing energy loss. © 2025 Society of Plastics Engineers.

Author keywords- alkali treatment; CNS biochar; composites; electrical conductivity; farm industrial waste

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q4	3rd	0.20	03 GOOD HEALTH AND WELL-BEING

ASSESSING THE IMPACT OF PUBLIC HEALTH INTERVENTIONS ON COMMUNITY HEALTH OUTCOMES: A MULTICENTER STUDY

Dwivedi, Anurag;Jeevitha, Gowda R.;Khanna, Sukriti; Ganiya, Rajendra Kumar; P., Singh, Priyansha; J., Kaur, Jasneet

Journal of Applied Bioanalysis

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Journal of Applied Bioanalysis

Abstract

Public health interventions are critical tools in addressing global health inequities, yet their effectiveness often varies depending on context. This multicenter study addresses the lack of comparative, cross-contextual evaluations by assessing sanitation, maternal-child health (MCH), mental health, and digital health interventions across six socio-economically and geographically diverse regions. Guided by the RE-AIM framework and systems thinking, the study employed a mixed-methods design, integrating quantitative analysis of health outcomes with qualitative insights from community stakeholders. Data were collected from 2,470 households using structured surveys, administrative records, and focus group discussions. Multivariable regression and Bayesian hierarchical models were applied alongside Propensity Score Matching to estimate intervention effects. Findings revealed that MCH and sanitation programs consistently achieved high coverage and substantial reductions in under-five mortality, regardless of setting. In contrast, digital and mental health interventions exhibited performance disparities, with effectiveness strongly influenced by infrastructure, governance, and community engagement. The study highlights the importance of aligning intervention strategies with local capacities and sociocultural realities. Its findings offer actionable guidance for policymakers and global health practitioners seeking to design equitable, scalable, and context-responsive public health programs. This research contributes rare comparative evidence and supports the broader application of participatory and adaptive implementation models in diverse health systems.
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Author keywords- Community health outcomes; Context-sensitive health programs; Implementation science frameworks; Multicenter comparative analysis; Public health intervention evaluation

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	95th	2.4	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

VIDEO SENTIMENT ANALYSIS ON SOCIAL MEDIA USING AN ADVANCED VADER TECHNIQUE

Dixit, Muskan; Bali, Malvinder Singh; Kour, Kanwalpreet; Ioannou, Iacovos I.; **Pradeep Ghantasala, G. S.**; Vassiliou, V.

International Journal of Data Science and Analytics Article 2025

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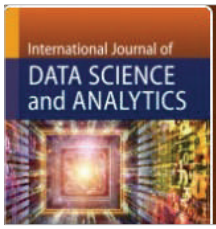

International Journal of Data Science and Analytics

Publishing model
Hybrid

Abstract

Manually gaging public sentiment in the millions of informal, multilingual comments posted on social media vlogs is infeasible, and existing models often falter on slang, code-switching, emojis, and rapid shifts in tone. To address this challenge, we compile a 36 000-comment corpus drawn from India's most-viewed channels on YouTube, Twitter (X), TikTok, Reddit, Instagram, and Facebook, then build an end-to-end Python NLP pipeline that blends deep learning–based preprocessing (tokenization, misspelling correction, code-mix detection) with an enhanced version of VADER (Valence Aware Dictionary for Sentiment Reasoning). The lexicon is augmented with 276 domain-specific slang terms and emojis, and custom rules capture sarcasm, negation, and intensity cues. The upgraded VADER attains an F1-score of 1.00 on the in-sample corpus and 0.92 on an external hold-out set, surpassing fine-tuned BERT (F1 = 0.94) and zero-shot GPT-3.5 (F1 = 0.91). Regression metrics (MAE = 1.4, MSE = 3.1, R2=0.99) confirm precise sentiment intensity estimation, while temporal analysis reveals highly polarized reactions within the first 24 h that converge toward neutrality over time. Content-type analysis shows strong positivity for technology and fashion vlogs (51–57%) but 61% disapproval for travel content. Overall, the framework generalizes across comedic, scientific, and satirical contexts (36.8% positive, 57.3% neutral) and offers a transparent, scalable solution for real-time sentiment monitoring in multilingual social media environments.
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Author keywords- Deep Learning; Economic Growth; Natural Language Processing; Sentiment Analysis; Social media

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q2	**72nd**	**5.4**	06 CLEAN WATER AND SANITATION

MULTIFUNCTIONAL RE-MOFS IN WATER DECONTAMINATION: FROM DETECTION TO DEGRADATION

Priyanka; A., Kumar, Ambika; V., **Bahadur, Vijay**; P., Kumar, Pramod

Inorganic Chemistry Communications Review 2025

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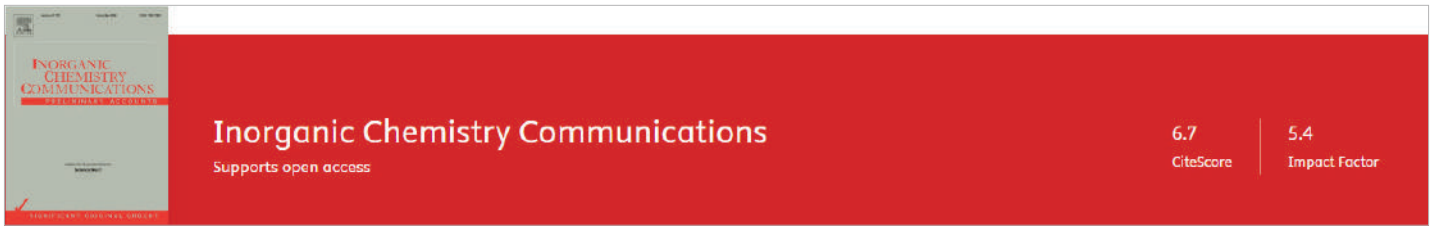

Abstract

This article explores on the growing relevance of rare earth-based metal-organic frameworks (RE-MOFs) in treating polluted water, especially wastewater. These materials are specially designed with a strong and flexible structure, large surface area, and the unique ability to glow under certain conditions, making them very effective for detecting and removing harmful substances. The review explains how RE-MOFs are carefully formulated and tailored to enhance their performance in environmental cleanup. It highlights their applications in sensing and removing heavy metals like lead and mercury, eliminating inorganic pollutants such as fluoride and phosphate, and detecting antibiotics and pharmaceutical residues in water. These MOFs work through fluorescence sensing, which allows for easy and real-time detection, and adsorption mechanisms that help trap and remove contaminants. The review also covers their role in breaking down toxic dyes using light, a process called photocatalysis. Among the compiled MOFs, the Eu3+@1 exhibited the highest fluorescence enhancement for Cd2+ detection with an 8-fold intensity increase, Ce-MOF-270 showed superior fluoride removal capacity (208.3 mg/g) with >94 % efficiency, while 1-Eu demonstrated an outstanding RhB adsorption capacity of 735 mg/g, highlighting their exceptional performance in both sensing and remediation of inorganic and organic pollutants.Overall, RE-MOFs provide a smart, reusable, and eco-friendly approach to improving water quality and maintaining public health and ecological well- being.
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Author keywords- Fluorescence sensing; Luminescent materials; Metal organic frameworks; Photocatalytic degradations; Post synthetic modifications; Rare earth

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	90th	9.6/CS	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

GLOBAL TRENDS IN INNOVATION ACROSS HYDROGEN PRODUCTION, SUPPLY AND DEMAND CHAINS

Bal, Sasmita

International Journal of Thermofluids Review 2025

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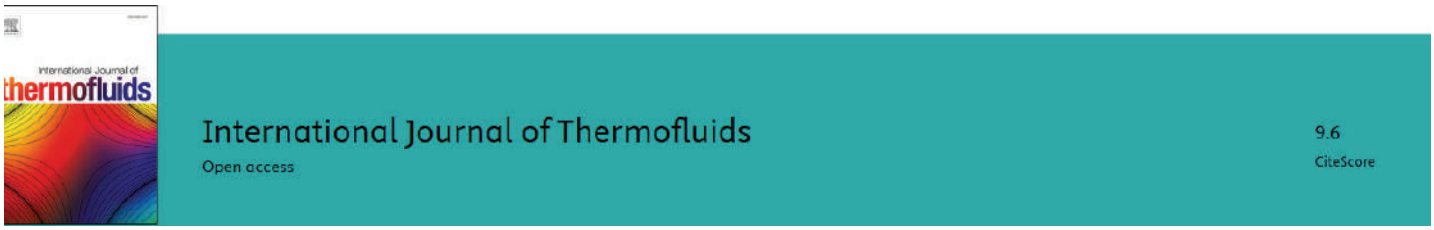

Abstract

The global shift away from fossil fuels necessitates swift and transformative action, underscoring the need for timely and accurate insights into emerging low-carbon technologies. This review provides a comprehensive and systematic analysis of innovation trends within the hydrogen technology ecosystem. Drawing on global patent data as a key indicator of industrial innovation, the study offers a forward-looking assessment of technological developments spanning the entire hydrogen value chain like production, storage, distribution, transformation, and end-use applications across various sectors. By evaluating patent activity over time and across regions, the review highlights significant innovation trends, identifies leading industrial contributors, and maps the evolving global competitive landscape. Particular attention is given to regional dynamics and sector-specific breakthroughs, offering a nuanced perspective for policymakers, investors, and stakeholders engaged in energy transition planning. As hydrogen becomes increasingly central to decarbonization strategies worldwide, this study serves as a critical intelligence resource, illuminating current trajectories and signalling potential technological inflection points in the ongoing energy transformation. © 2025 The Author(s)

Author keywords- Carbon neutrality; Clean energy; Electrolysis; Green hydrogen; Hydrogen; Supply chain

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	**77th**	**4.3**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

ADVANCES IN BIO-MICROELECTROMECHANICAL SYSTEM-BASED SENSORS FOR NEXT-GENERATION HEALTHCARE APPLICATIONS

Priya, Sahariya; Mohan, Sakar; Kuppusamy, Radhika; **Suyambulingam, Indran**;Baby, Bindhu; Ramesh, R.;Han, Sungsoo

ACS Omega Review 2025

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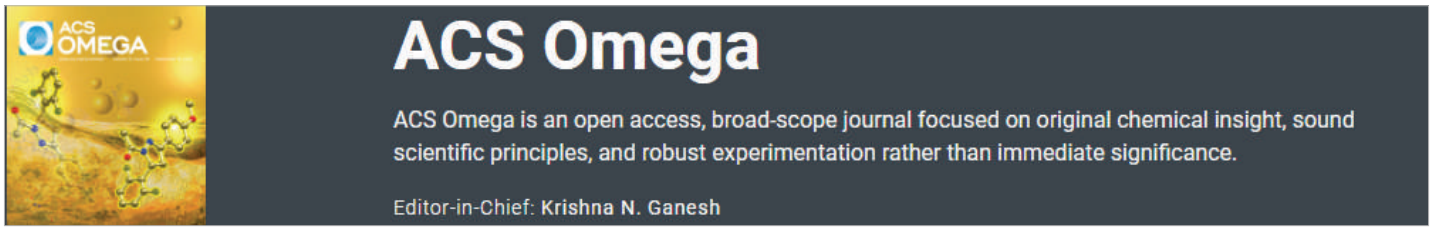

Abstract

Microelectromechanical system (MEMS)-based sensors have become essential in various fields, including healthcare, automotive, and industrial applications. These sensors integrate mechanical structures and electronics on a single chip, allowing precise, compact, and efficient measurements of parameters like pressure, force, acceleration, and chemical reactions. In this context, this review article presents the essential role of MEMS sensors in healthcare applications. In healthcare, MEMS sensors are widely used for monitoring vital signs, detecting glucose levels, managing cardiovascular and intracranial pressure, and enhancing drug delivery systems. They are also key in tactile sensing during surgeries and in improving neuromuscular monitoring through electromyography (EMG). Despite their advantages, such as small size, low energy consumption, and high performance, MEMS sensors face challenges like sensitivity drift, durability concerns, and long-term calibration stability. This article addresses these limitations and highlights ongoing advancements aimed at improving sensor accuracy, energy efficiency, and adaptability to diverse environments. By examining current trends and innovations, this review provides insights into how MEMS technology is driving breakthroughs in biomedical research, early cancer diagnosis, and bioimaging treatment. We have discussed inertial sensors, MEMS-based glucose sensors, intraocular pressure (IOP) sensors, intracranial pressure sensors, cardiovascular pressure sensors, tactile sensors, and smart inhalers. In addition, we have explored recent advancements in MEMS technologies applied to healthcare, particularly in microfluidic MEMS chips and brain−machine interfaces, with a focus on developments from the last five years. Future research directions focus on enhancing the flexibility, reliability, and energy efficiency of MEMS sensors, positioning them as key components in the next generation of healthcare and medical devices. © 2025 The Authors. Published by American Chemical Society

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q4	8th	NA	16 PEACE, JUSTICE AND STRONG INSTITUTIONS

A COMPREHENSIVE BIBLIOMETRIC ANALYSIS OF MONEY LAUNDERING AND RELATED SCAMS: TRENDS, INFLUENCES, AND RESEARCH GAPS

Gangwar, Anubhav Singh; Shukla, Anurag; Sharma, Manu; Kumar, Anil

International Research Journal of Multidisciplinary Scope Review 2025

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Abstract

This study presents a comprehensive bibliometric analysis of global research trends related to money laundering and associated scams, aiming to map the intellectual structure and development of scholarly contributions in this critical area of financial crime. Using data extracted from the Scopus database, a total of 262 relevant publications up to February 12, 2025, were analyzed with the help of VOSviewer software. The analysis identifies the most influential authors, countries, journals, funding agencies, and collaborative networks that have shaped the discourse around money laundering and related frauds. The study uncovers significant growth in academic attention to this domain over the past decade, reflecting rising concerns about illicit financial flows and regulatory loopholes. Despite this increase in scholarly output, substantial research gaps remain—particularly in cross-border comparative studies, enforcement mechanisms, and the integration of digital tools in detection and prevention. This review not only consolidates existing knowledge but also offers a roadmap for future investigations by highlighting underexplored dimensions of the topic. As the first in-depth bibliometric exploration of money laundering literature, this paper provides original and valuable insights for academics, financial regulators, and policy stakeholders. By shedding light on both the concentration and fragmentation in existing research, it serves as a foundational reference for those seeking to understand or address the evolving challenges posed by financial fraud and money laundering practices.

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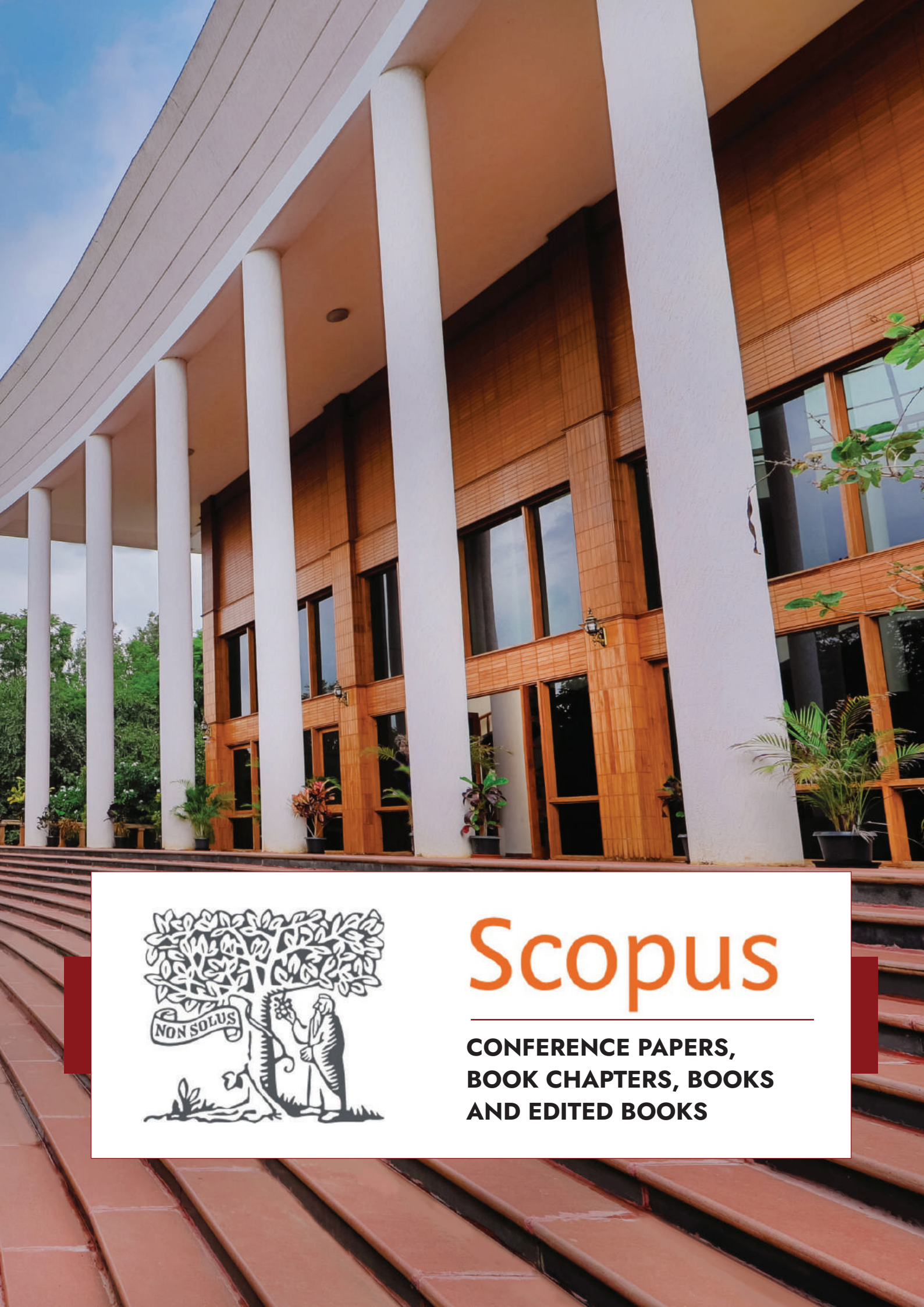
Author keywords- Bibliometric Analysis; Cyber Security; Financial Crime; Money Laundering; Risk Management



Scopus

CONFERENCE PAPERS, BOOK CHAPTERS, BOOKS AND EDITED BOOKS

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	12 RESPONSIBLE CONSUMPTION AND PRODUCTION

DECODING THE IMPACT OF INFLUENCERS ON Q-COMMERCE PURCHASE DECISION OF GEN Z

Gupta, Hemant; Sengupta, Swarnava; **Bhattacharjee, Mrinmoy;** Ghadi, Sugandha Gajanan

Methods and Applications of Quick Commerce (Q-Commerce) Book Chapter 2025

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Methods and Applications of Quick Commerce (Q-Commerce)
Quick Commerce and Sustainability

Abstract

Influencer marketing, a growing trend in the digital age, significantly impacts the q-commerce landscape in these modern times. The present paper highlights the role of an influencer's credible, relatable opinion during the online purchase of goods or services by (Gen Z) consumers who make decisions through characteristics like authenticity, transparency and relatability. The influencers for this generation are family, friends, co-workers, social media influencers, celebrities. Using the modified theory of planned behaviour (TPB), this paper considers individual and social factors that shape purchase decisions. A structured questionnaire was developed and through convenience sampling, data was collected from 422 Gen Z participants who were online shoppers and made their own purchasing choices. The findings show that the influence of friends, co-workers and social media influencers or celebrities significantly impact Gen Z buying behaviour and family has some influence. Online communities do influence them.
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Indexed keywords-
Engineering controlled terms: Electronic commerce; Marketplaces; Online systems; Purchasing; Social networking (online)
Engineering uncontrolled terms: Digital age; Individual factors; Modern time; Online shops; Purchase decision; Sampling data; Social factor; Social media; Theory of Planned Behavior; Workers'
Engineering main heading: Sales

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	16 PEACE, JUSTICE AND STRONG INSTITUTIONS

ETHICAL CHALLENGES AND BIAS IN AI-DRIVEN MARKETING: EDUCATIONAL IMPERATIVES AND POLICY PERSPECTIVES

Alam, Ashraf

Impacts of AI-Generated Content on Brand Reputation Book Chapter 2025

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Abstract

As artificial intelligence (AI) becomes increasingly embedded in the architecture of contemporary marketing, it raises profound ethical concerns that transcend technical malfunction and touch upon foundational questions of justice, autonomy, and democratic integrity. This chapter interrogates the ethical challenges posed by AI-driven marketing systems - particularly those related to algorithmic bias, surveillance-based personalization, and manipulative consumer targeting - and argues that these concerns cannot be adequately addressed through technical refinement or regulatory compliance alone. Rather, they necessitate a paradigmatic shift in management education and public policy that foregrounds ethical literacy as a core professional competency. Drawing upon interdisciplinary theories and emblematic case studies, the chapter proposes a pedagogical model that integrates critical inquiry, reflexive learning, and regulatory awareness into the marketing curriculum.
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Indexed keywords-
Engineering controlled terms: Artificial intelligence; Commerce; Ethical technology; Marketing; Public policy; Teaching
Engineering uncontrolled terms: Algorithmics; Case-studies; Ethical concerns; Management education; Pedagogical model; Personalizations; Professional competencies; Technical malfunctions
Engineering main heading: Regulatory compliance

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

AI FOR MULTIMEDIA HEALTHCARE APPLICATIONS

Babu, Tina;Nair, Rekha R.;Kishore, S.

AI Techniques for Multimedia Data Processing Book Chapter 2025

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Abstract

This book chapter explores the profound impact of Artificial Intelligence (AI) on multimedia healthcare applications, showcasing its transformative influence on patient care and clinical practices. The narrative unfolds across several key domains, beginning with the revolutionary role of AI in enhancing medical imaging through advanced algorithms and deep learning models. The integration of AI into wearable devices for remote patient monitoring is examined, emphasizing its potential for continuous health assessment and early anomaly detection. The chapter delves into the realm of predictive analytics, highlighting how AI processes vast datasets to predict disease risks, progression, and outcomes, ultimately contributing to disease prevention and early intervention. The chapter serves as a guide for researchers, healthcare professionals, and policymakers navigating the dynamic intersection of AI and multimedia healthcare, offering valuable insights and exploration in this critical field. © 2025, IGI Global Scientific Publishing.

Indexed keywords-
Engineering controlled terms: Artificial intelligence; Health care; Medical imaging; Multimedia systems; Patient monitoring
Engineering uncontrolled terms: Anomaly detection; Clinical practices; Disease prevention; Disease risks; Health assessments; Health care application; Learning models; Patient care; Risk progression; Wearable devices
Engineering main heading:

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

FROM POLICY PITFALLS TO PROFITABLE PATHWAYS: UNVEILING SUSTAINABLE INNOVATION

Wani, Showkat Ahmad; Gupta, Jay Kumar

Finance, Innovation and Corporate Sustainability: the Impact of Proactive Environmental Strategy on Firm Performance Book Chapter 2025

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Abstract

India's terrain is a captivating weave comprising magnificent views, a wide variety of ecosystems, and a rich cultural past. India's varied scenery is unmatched, ranging from the sun-kissed coastlines of the Indian Ocean to the majestic summits of the Himalayas, and from the lush plantations of the Western Ghats to the parched dunes of Rajasthan. The living canvas of this nation is not only made up of strokes of natural wonders but also bedazzles with entrepreneurial sustainable innovation. It makes sense that when judicial bodies are relied upon to address difficult and urgent societal issues, there is a propensity to overlook the intrinsic limitations of the power of the legal system. This trend has been most noticeable in situations where there is a recognized immediate requirement for interventions, as there is right now with regard to the regulation of the environment. The understanding that sustainable practices provide competitive advantages in the market in addition to reducing environmental hazards is essential to this conversation. Businesses can achieve long-term profitability and sustainability by appealing to socially conscious consumers, drawing in like-minded investors, and reducing operating costs through resource efficiency. This chapter explores the limitations of a regulation strategy that the Indian parliament has been using a lot lately: persuading individuals and organizations to work in good faith—that is, to "aspire"—in carrying out national environmental policy. This includes the establishment of National Green Tribunals along with the mandatory Corporate Social Responsibility compliances laid on the businesses, which are an unwise effort to challenge profit maximization. The chapter delves into successful policies implemented by other jurisdictions to ensure sustainable innovation via "Protect, Respect and Remedy" frameworks and alike. To conclude, the chapter presents the argument that in today's increasingly ecologically sensitive global world, sustainable innovation is a feasible route to profit maximization.
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Indexed keywords-
Engineering controlled terms: Competition; Environmental regulations; Investments; Profitability; Social aspects
Engineering uncontrolled terms: Competitive advantage; Himalayas; Indian ocean; Legal system; Power; Profit maximization; Rajasthan; Societal issues; Sustainable practices; Western ghats
Engineering main heading: Sustainable development

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	04 QUALITY EDUCATION

AN INTEGRATED APPROACH TO PUBLIC POLICY EDUCATION IN INDIA

Saxena, Mukul; Saxena, Gaurav

Routledge Handbook of Public Policy in the Global South Book Chapter 2025

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Book

Routledge Handbook of Public Policy in the Global South

Abstract

In order to create more opportunities for public policy experts and to increase their positive impact on society in the Global South, it is necessary to integrate STEM (science, technology, engineering, and mathematics) with SHAPE (social sciences, humanities, the arts, for people and the economy). This means shifting the focus towards SHAPE while still incorporating STEM. This chapter discusses public policy education—including pedagogy and practical relevance for development. It explains the public policy perspective using Laswell's view of public policy as a social science discipline. It also discusses the concepts of STEM and SHAPE. Doing so examines India's public policy-making history since independence as a case of analysis aligned with the social revolution envisioned by the constituent assembly. The assembly relied heavily on economics to measure its success. Moreover, it briefly touches upon the trade-off in policy education between data sciences, quantitative analysis, and economics and social science disciplines. Finally, the chapter proposes a policy curriculum to equip policy students with a multidisciplinary perspective to approach public policy problems while keeping the substantive and structural process and outcomes at the core of policy-making. © 2025 selection and editorial matter, Gedion Onyango and Ishtiaq Jamil; individual chapters, the contributors. All rights reserved.

Indexed keywords-

Engineering controlled terms: Behavioral research; Curricula; Economics; Engineering education; Public policy

Engineering uncontrolled terms: Engineering and mathematics; Integrated approach; Multidisciplinary perspectives; Policy making; Policy problem; Science disciplines; Science technologies; Trade off

Engineering main heading: Economic and social effects

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

APPLICATIONS OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING IN INDUSTRY 4.0

Babu, Tina; Nair, Rekha R.; Kishore, S.

Artificial Intelligence and Machine Learning for Industry 4.0 Book Chapter 2025

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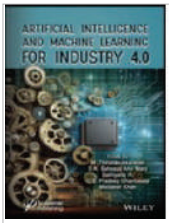

Artificial Intelligence and Machine Learning for Industry 4.0

Abstract

Industry 4.0, sometimes referred to as the fourth industrial revolution, has brought about a major transformation in the manufacturing processes through the use of smart technologies for innovation, including artificial intelligence, machine learning, and the internet of things. This chapter covers various aspects of using AI and ML in managing complex and reformed operations with emphasis on smart manufacturing, prediction in maintenance, supply chain, quality, robotics and automation, data analytics, cybersecurity, human centric operations and energy efficiency as well as sustainable industry 4.0. The chapter also looks at the application of these technologies in synergy where the convergence of the technologies leads to predictive maintenance, proper planning of production, identification of flaws and moreover the formulation of intelligent decision support systems. The chapter also explores future developments and innovation areas that can apprehend AI and ML in AM, digital twin, and cyber-security. In addition, it stresses the imperative to adopt the sustainable principles in Industry 4. For its part, the IT industry considers zero value parts of frameworks, such as energy efficiency, renewable energy integration, and circular economy principles. In conclusion, this chapter seems to offer valuable pieces of knowledge about the use of AI and ML in industry, potential changes in its functions, increased efficiency, and environmentally friendly endeavors within the paradigm of Industry 4.0.
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Author keywords- Artificial intelligence; Industry 4.0; Machine learning; Predictive maintenance; Smart manufacturing; Sustainable practices

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

SURVIVABLE AI FOR DEFENSE STRATEGIES IN INDUSTRY 4.0

Reddy, Anuradha; **Pradeep Ghantasala, G. S.**; Sharma, Ochin; Kurra, Mamatha; Dilip, Vidyullath, Pellakuri

Artificial Intelligence and Machine Learning for Industry 4.0 Book Chapter 2025

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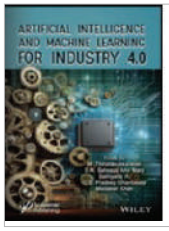

Artificial Intelligence and Machine Learning for Industry 4.0

Abstract

The rapid progression of Industry 4.0 brings forth new opportunities and defies the defense segment, dictating the expansion of survivable artificial intelligence (AI) schemes. These systems play a vital role in preserving security, protecting precarious infrastructure, and improving the adeptness and efficacy of defense operations. This chapter discusses the key considerations for building survivable AI schemes that can endure and adapt to various threats and disruptions within the defense strategies of Industry 4.0. Mobility stands as an essential quality of survivable AI systems, requiring the depiction of discharged contraptions, fault-tolerant designs, and dispersed contrivances to lower predilections and reduce the likelihood of errors. Security measures, including encryption, access control, and invasion recognition, are essential in preventing unauthorized access, tampering, and manipulation. Provocative heftiness is vital for protecting AI systems against malicious attacks. Practices such as refining training data and implementing anomaly detection help in fortifying AI models against adversarial tactics. Moreover, examination and situational attentiveness abilities are essential, authorizing unremitting valuation of device portrayal, real-time hitch recognition, and human clench of the device's enactment. Survivable AI arrangements should preserve the capability for ceaseless facts and change to revolve the self-encouraged nature of Industry 4.0 environs. This enmeshed leveraging reinforcement learning approaches, ceaseless learning agreements, and data-driven decision-making practices to acquaint imitations and approaches based mostly on developing instances. Virtuous observations are prevailing, protection clarity; explicate skill, and detachment in AI decision-making. Mitigating preconceptions and discrimination, regarding isolation and records safety concords, and conforming to virtuous philosophies and actual instances are dangerous for responsible AI temperament. Severance and gridlock classifications play a massive role in making sure decisions of operations throughout gadget calamities, cyberattacks, or interruptions. Retentive discharged modules, dispersed strategies, and failover devices permit backup competencies and structure flexibility. The elaboration of survivable AI for safety strategies in Industry 4.0 compels interdisciplinary collaboration among AI specialists, cybersecurity experts, safety professionals, and ethicists. Together, they can address the progressing challenges and safeguard responsible and effective use of AI in security applications.
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Author keywords- Artificial intelligence (AI); Cyber-physical systems; Industrial automation; Industrial IoT (I IoT); Industry 4.0; Machine learning (ML); Predictive maintenance; Smart manufacturing

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

AI ML EMPOWERED SMART BUILDINGS AND FACTORIES

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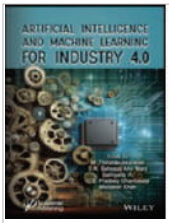

Artificial Intelligence and Machine Learning for Industry 4.0

Abstract

This chapter examines machine learning's important role in automating numerous tasks. In "intelligent" buildings, the use of mobile devices and computers may greatly simplify tasks like monitoring security, regulating the interior climate, and carrying out routine maintenance. The World Wide Web or Internet of Things is used by intelligent buildings to create connections between the various parts that comprise the building. The chapter also covers the development of artificial intelligence at smart buildings, with a focus on global issues. Specifically, energy conservation and consumption pose the biggest obstacles for all industries, but particularly for the home and industrial sectors. The foundation of Production 4.0 is founded by an innovative knowledge termed the internet of everything (IoeT). The IoT makes it possible for mechanisms and devices to communicate seamlessly. In the context of building engineering and construction industry 4.0, the chapter explores in detail the claims made by the domains of computing (artificial intelligence), informed machine learning techniques (ML), as well as deep learning algorithms (DL). It also looks at the idea of intelligent manufacturing for smart cities. These applications comprise architectural enterprise besides picturing, structural analysis and plan, material design in addition to optimization, off-site manufacturing while automation, construction supervision and progress tracking, longevity, life cycle assessment, smart functioning, building administration, and the circular economy are all included. Insights into the Smart building technology is based on the integration of devices, large information, with AI. To support smart building applications, a thorough examination and categorization of machine learning approaches are provided. A new era in city energy efficiency may result from this. Artificial intelligence (AI) can be used in intelligent structures to improve control, automation, and dependability—all of which will lead to a decrease in energy usage. Within the broader architecture, technology, and construction sector, the chapter highlights how IoT, big data, through artificial intelligence have become more integrated; thanks to the quick advancement of technology, which has been fueled by machine learning as well as IoT. Innovation besides technological advancement in the manufacturing have accelerated due to this convergence. This book chapter gives a thorough overview of how "smart" manufacturing is becoming the norm and how the traditional production-oriented manufacturing environment is soon to give way to one that is more data-oriented, automated, and smart.
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Author keywords- Data; Energy; IoT; Sensors; Smart buildings

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

INDUSTRIAL PREDICTIVE MAINTENANCE FOR SUSTAINABLE MANUFACTURING

Rihan, Mohamed; Muchherla, Ethiswar;Shri, Shwejit; Jasoria, Kushagra; Judeson Antony Kovilpillai, **Pradeep Ghantasala, G. S.**

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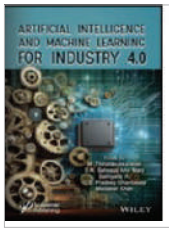

Artificial Intelligence and Machine Learning for Industry 4.0

Abstract

As industries have moved towards growth, the incorporation of advanced technologies is very crucial. One of the most important benefits of these technologies is the possibility of using them for scheduling, in particular, for the prediction of failures and the optimal planning of maintenance work. This chapter focuses on the impact of predictive maintenance in a variety of industries, and its value in reducing or avoiding costly breakdowns, increasing the profitability of the business, and increasing the overall performance indicator of industrial processes. Compared with traditional strategies, predictive maintenance is a completely different approach to perform maintenance. Condition monitoring of equipment is done continuously to check on the equipment's state and if it is operating differently from the usual state, then it is time for equipment maintenance. After a particular equipment has been identified as likely to fail in the near future, it is possible to plan the maintenance at the best time that will not interrupt the production process while at the same time making the best use of the maintenance resources available. A comparative analysis of different research works is also done to show the efficiency of predictive maintenance in various fields. Within manufacturing, one example showed a 30% improvement of the effective use of machines by applying IoT sensors and using machine learning models to anticipate the failure of key machines. The use of predictive maintenance has been implemented in the energy sector specifically in wind turbines, where it has cut the cost of maintenance by a quarter, besides increasing the lifespan of the turbines. Automotive manufacturing has also been positively impacted as predictive maintenance has helped in detecting possible failures in robotic arms and other components; this has realized a 20% improvement in the overall equipment effectiveness (OEE) and cost savings. However, as is often the case with new methodologies, the introduction of predictive maintenance is not without its challenges. Some challenges include high initial costs associated with the installation of IoT devices and sensors, integration of the predictive maintenance systems and architectures with the current system architecture, and the need for skilled personnel to manage as well as to analyze data from the systems. The chapter also describes the application and examples of using the predictive maintenance in practice and other industries, showing that this approach can provide tangible benefits and bring considerable improvements in companies' performance. The automotive industry has been able to use predictive maintenance in improving the operational efficiency of production lines and minimize equipment failure.
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Author keywords- Condition monitoring; IoT sensors; Machine learning models; Operational efficiency; Predictive maintenance; Sustainable manufacturing

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

INDUSTRY 4.0 AND THE AI/ML ERA: REVOLUTIONIZING MANUFACTURING

Nachiappan, Balusamy; **Viji, C.; Rajkumar,** A., Mohanraj, Karthikeyan, J., Judeson Antony Kovilpillai, Vidyullatha, Pellakuri

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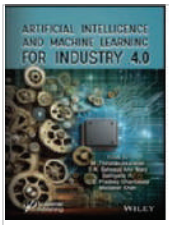

Artificial Intelligence and Machine Learning for Industry 4.0

Abstract

The emergence of enterprise 4.0 signs a transformative era in manufacturing, wherein digital technology seamlessly merges with traditional business methods. This precis explores the profound impact of Industry 4.0, highlighting the synergy of the various Industrial Internet of Things (IoT) and its implications for clever production. At its core, business enterprise 4.0 allows the mixing of physical and virtual structures, fostering heightened interconnectivity and transparency. The IoT permits actual-time facts change among interconnected gadgets, supplying manufacturer with comprehensive insights into their production ecosystems. Decentralized selection-making, a key function of enterprise 4.0, is made viable with the aid of cyber-physical systems, empowering machines with independent choice-making capabilities and enhancing operational performance. Even as AI is absent from the narrative, the point of interest stays at the transformative electricity of enterprise 4.0. Predictive preservation algorithms preemptively understand and prevent device failures, making sure ultimate performance and minimizing downtime. Actual-time quality manipulation mechanisms contribute to product consistency through early illness detection. The concept of smart automation outcomes in adaptive and self-optimizing manufacturing strategies involves responding in real-time to changing conditions. Past the manufacturing facility, the strategic integration of the digital era optimizes delivery chain dynamics, facilitating smart forecasting, stock management, and logistics.
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Author keywords- Artificial intelligence; Big data analytics; Business intelligence; Industry 4.0; Machine learning

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

APPLICATION OF AI AND ML IN INDUSTRY 4.0

Vinaya Kumari, **Pradeep Ghantasala, G. S.,** Sahaaya Arul Mary, Thirunavukkarasan, M.; Sathiyaraj, R.

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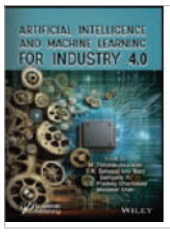

Artificial Intelligence and Machine Learning for Industry 4.0

Abstract

The emergence of Industry 4.0 marks a transformative alternative in commercial practices pushed through the convergence of cyber-physical structures, the Internet of Things (IoT), and superior computing technology. Artificial intelligence (AI) and Machine Learning (ML) are at the core of this commercial revolution, playing a pivotal role in making production techniques extra green, productive, and innovative. This chapter explores the huge variety of packages of AI and ML within the Industry 4.0 paradigm and explains their effect on diverse components which include predictive upkeep, great management, deliver chain optimization, and the improvement of self-reliant structures. Predictive upkeep makes use of AI and ML algorithms to investigate records from gadget sensors and expect gadget disasters earlier than they occur. This not only minimizes downtime but also reduces upkeep expenses and extends the carrier existence of the gadget. Quality management makes use of AI-powered imaginative and prescient structures and ML fashions to discover defects and anomalies in real time, ensuring better product requirements and lowering waste. Additionally, AI and ML facilitate delivery chain optimization by reading big quantities of records to expect demand, manipulate inventory, and optimize logistics. This technology permits organizations to reply quickly to marketplace changes, enhancing operational agility and patron satisfaction. Another key application, self-reliant operations, is seeing the combination of AI and ML in robotics and clever factories, permitting machines and structures to self-organize and adapt to special manufacturing wishes without human intervention. The integration of AI and ML in Industry 4.0 additionally enables the introduction of virtual twins (digital replicas of bodily assets) that allow superior simulation, monitoring, and optimization of techniques. These virtual representations enhance decision-making and operational performance by presenting a deep perception of the device's overall performance and ability issues. This evaluation highlights the transformative effect of AI and ML on Industry 4.0 and emphasizes their position in riding shrewd production, shrewd automation, and human empowerment.
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Author keywords- AI and ML; Cyber-physical systems; IoT; Supply chain optimization

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

BUSINESS INTELLIGENCE AND BIG DATA ANALYTICS FOR INDUSTRY 4.0

Rajkumar, N.; Viji, C.; Nachiappan, Balusamy; Mohanraj, Karthikeyan, N.; Judeson Antony Kovilpillai, J.; Sathiyaraj, R.

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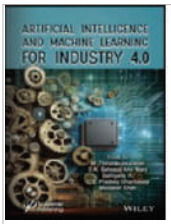

Artificial Intelligence and Machine Learning for Industry 4.0

Abstract

Industry 4.0 industries are experiencing extensive changes pushed by way of statistics-pushed choices, new technologies, and connectivity. This looks at and explores how the complexity of Industry 4.0 is typically driven by business intelligence (BI) and large records analytics. We live in a generation packed with large amounts of dynamic and diverse statistics because of the convergence of cyberbodily systems, smart devices, and the net of factors (IoT). For organizations to efficaciously leverage those large quantities of information, commercial business intelligence (BI) and statistics analytics are essential technologies. Business intelligence normally entails the collection, evaluation, and presentation of corporation information, forming the premise for knowledgeable selection-making. Business intelligence (BI) in Industry 4.0 consists of real-time analytics and predictive insights that move beyond widespread reporting. To this leap forward, agencies can now leverage insights gleaned from the considerable amounts of statistics generated by using connected devices and processes. Huge statistical analytics, however, is essential to studying large amounts of data and finding interesting patterns. Due to the volume, velocity, and style of data produced through Industry 4.0, advanced analytical methods which include machine-gaining knowledge of artificial intelligence are required. By the usage of these strategies, corporations can expect new traits, locate previously ignored connections, and significantly enhance their operations. © 2025 Scrivener Publishing LLC.

Author keywords- Artificial intelligence; Big data analytics; Business intelligence; Industry 4.0; Machine learning

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q2	**53rd**	**0.60**	12 RESPONSIBLE CONSUMPTION AND PRODUCTION

GREEN VERSUS GREENWASHING: HOW CONSUMERS DIFFERENTIATE AUTHENTIC GREEN MARKETING FROM DECEPTIVE PRACTICES

Chadichal, Shilpa; Raj, Prasanna Mohan; **Padashetty, Sanjeev**

Studies in Systems, Decision and Control Book Chapter 2025

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depending on context. This multicenter study addresses the lack of comparative, cross-contextual evaluations by assessing sanitation, maternal-child health (MCH), mental health, and digital health interventions across six socio-economically and geographically diverse regions. Guided by the RE-AIM framework and systems thinking, the study employed a mixed-methods design, integrating quantitative analysis of health outcomes with qualitative insights from community stakeholders. Data were collected from 2,470 households using structured surveys, administrative records, and focus group discussions. Multivariable regression and Bayesian hierarchical models were applied alongside Propensity Score Matching to estimate intervention effects. Findings revealed that MCH of setting. In contrast, digital and mental health interventions exhibited performance disparities, with effectiveness strongly influenced by infrastructure, governance, and community engagement. The study highlights the importance of aligning intervention strategies with local capacities and sociocultural realities. Its findings offer actionable guidance for policymakers and global health practitioners seeking to design equitable, scalable, and context-responsive public health programs. This research contributes rare comparative evidence and supports the broader application of participatory and adaptive implementation models in diverse health systems.
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Author keywords- Community health outcomes; Context-sensitive health programs; Implementation science frameworks; Multicenter comparative analysis; Public health intervention evaluation

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE FUNDAMENTALS FOR FEDERATED SYSTEMS

Vinaya Kumari, Nalli; **Pradeep Ghantasala, G. S.**;Vidyullatha, Pellakuri; **Rajesh Sharma, R.**

Federated Intelligent System for Healthcare: A Practical Guide Book Chapter 2025

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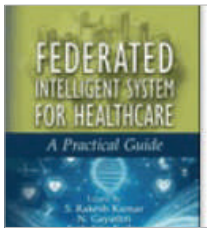

Federated Intelligent System for Healthcare: A Practical Guide

Abstract

Federated learning (FL) is a notable tool for a reading paradigm designed to train models collaboratively through decentralized devices or servers holding a network of information samples without changing them. This approach addresses key challenges in data privacy, security, and utilization. Unlike traditional centralized tool learning, where data is aggregated into a central server, FL allows model training on network data, thereby mitigating privacy risks and reducing latency and bandwidth consumption. This explores critical concepts of tool learning and artificial intelligence as applied to federated systems. It delves into the architectural framework of federated learning, highlighting its core components, including the network training process, aggregation algorithms, and communication protocols. It also covers several types of federated learning, which encompass horizontal FL, vertical FL, and federated transfer learning, emphasizing their applicability based on the nature of data distribution across clients. Furthermore, the discussion extends to the key challenges faced by federated systems, such as dealing with non-independent and identically distributed (IID) statistics, ensuring model robustness against adverse attacks, and maintaining efficient data communication. Solutions to these challenges, including federated averaging, differential privacy, and secure multi-party computation, are also reviewed. This offers a comprehensive assessment of how tool learning and AI principles underpin the federated learning framework, fostering advancements in efficient, privacy-preserving, and collaborative learning systems. Through this examination, the potential of federated learning to revolutionize industries reliant on extensive, distributed datasets is underscored, paving the way for innovative applications in healthcare, finance, and beyond.

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Indexed keywords-

Engineering controlled terms: Differential privacy; Distributed computer systems; Learning algorithms; Learning systems; Network security; Personnel training; Privacy-preserving techniques; Transfer learning

Engineering uncontrolled terms: Bandwidth consumption; Central servers; Centralised; Decentralised; Federated systems; Machine-learning; Model training; Network data; Privacy risks; Train model

Engineering main heading: -

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q2	**53rd**	**NA**	10 REDUCED INEQUALITIES

THE IMPACT OF ECONOMICALLY WEAKER SECTION RESERVATION IN INDIA: A STUDY ON THE SYRO MALABAR COMMUNITY IN KERALA, INDIA

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Studies in Systems, Decision and Control Book Chapter 2025

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India is renowned for its multifaceted unity amid diversity, which proves the harmonious fusion of different communities. This harmony is rooted in the Indian Constitution by ensuring social justice to all citizens regardless of their individual differences and unique characteristics. It is crafted with empathy and foresight to benefit the most disadvantaged sections of society. It includes provisions for reservation programs under Articles 15 and 16 to combat discrimination and promote inclusiveness in the present Indian societal scenario. The 103rd amendment to the Indian constitution expanded the concept of backwardness to include more marginalized and disadvantaged sections of society. It reflects the United Nations' sustainable development goals (SDG 10) in India to reduce inequalities. The amendment introduced a 10% reservation in government employment and education for the Economically Weaker Sections (EWS) ensuring equitable development of all the sections of society. The study examines the impacts of the economically weaker sections (EWS) reservation in India by analyzing data collected from the Syro Malabar Community in Kerala, India.

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Author keywords- Economically weaker section (EWS); Equitable society; Minorities; Reservation; SDG 10

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

THE IMPACT OF GENERATIVE AI IN GAMING: EXPLORING IMMERSIVE EXPERIENCES

Kumari, Nalli Vinaya; **Pradeep Ghantasala, G. S.; Ananthanagu U.,** Vidyullatha, Pellakuri; Khan, Mudassir

Generative AI: Disruptive Technologies for Innovative Applications Book Chapter 2025

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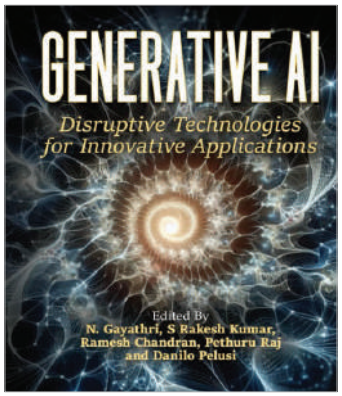

Abstract

The integration of generative AI into video games and digital environments is ushering in a generation of transformation in virtual interactions, growing realism, creativity, and engagement in digital worlds. In this chapter, we discover the various packages of generative AI in video games and display how those superior technologies are revolutionizing sports design, individual development, and immersive storytelling. Generative AI algorithms along with generative adversarial networks (GANs) and variational autoencoders (VAEs) are used to create enormously practical textures, landscapes, and dynamic environments that evolve in reaction to participant actions, supplying an extra-immersive and customized gaming experience. One of the important things to focus on is procedural content material generation, wherein AI-pushed structures autonomously generate full-sized and sundry game worlds, lowering the need for guide content material advent and permitting builders to provide rich, expansive universes at scale. This now not only best hurries up the improvement method but also allows for countless replay ability, as no gaming studies are identical. Moreover, generative AI is instrumental in growing wise, non-playable characters (NPCs) that show off realistic behaviors and adapt to players' strategies, improving the complexity and intensity of interactions inside the game. The chapter additionally explores the capability of generative AI in digital environments past conventional gaming. Applications in education simulations, academic platforms, and digital reality (VR) stories are examined, highlighting how AI-generated content material can create practical and pleasant situations to familiarize and explore. The integration of generative AI in VR allows the advent of dynamic and interactive digital areas that respond to personal inputs, fostering a more immersive and interactive experience. © 2025 Scrivener Publishing LLC.

Author keywords- Augmented reality; Gaming; Generative AI; Immersive experiences; Virtual environments

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

FUSION OF AUTOENCODER MODEL FOR GENE PREDICATION AND RNA DISEASE ASSOCIATION

Siva Sankari, S. A.; Keshamma, E.; Soni, Mukesh; Kumar, Anil; **Shekhar, R.;** Pande, Sagar Dhanraj

Computational Intelligence for Genomics Data Book Chapter 2025

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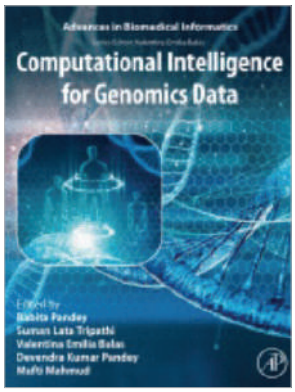

Abstract

Long noncoding RNAs (LncRNAs) that are expressed abnormally are intricately linked to the pathological and physiological mechanisms underlying gene predication-based diseases. The comprehension of the molecular pathogenesis of diseases is aided by the identification of potential associations between LncRNAs and such conditions. Prior approaches have proven inadequate in effectively integrating heterogeneous gene predication data from multiple sources and acquiring high-dimensional feature representations. Consequently, the present study introduces a novel approach known as Fusion Neural Networks for LncRNA-Disease Association Prediction (FNNLDA). By incorporating various datasets pertaining to long noncoding RNAs (LncRNAs), diseases, and microRNAs (miRNAs), FNNLDA implements the concept of multimodel fusion and makes use of two deep learning models—stacked autoencoders and fusion neural networks—to autonomously acquire sophisticated features of LncRNA-disease pairs. Ultimately, the correlation between LncRNAs and maladies is predicted by fusing the prediction scores of the two modules. The AUC values of the FNNLDA method increase by 12.5%, 15.1%, 3.4%, and 5.8%, respectively, when compared to SIMCLDA, MFLDA, CNNLDA, and LRLSLDA, as determined by fivefold cross-validation. These results indicate that the FNNLDA method significantly enhances the predictive performance of associations between LncRNA and diseases. Case studies involving gastric cancer provide evidence that FNNLDA is a proficient method for identifying potential LncRNAs that are linked to various diseases.
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Author keywords- autoencoder; Computational intelligence; fusion neural network; gene predication; pathological data; RNA

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q2	**62nd**	**2.66**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

IMAGE PROCESSING BASED MACHINE VISION SYSTEM FOR DATUM SETTING IN COMPUTER NUMERIC CONTROL MACHINE

Radhakrishnan, Jayabhaduri; Balachandar, Sathyavarthan; laganathan, Sadana; Ramesh, Shivanee; Ponnuvel, S.;Sridharan, V.

Procedia Computer Science Conference Paper 2025

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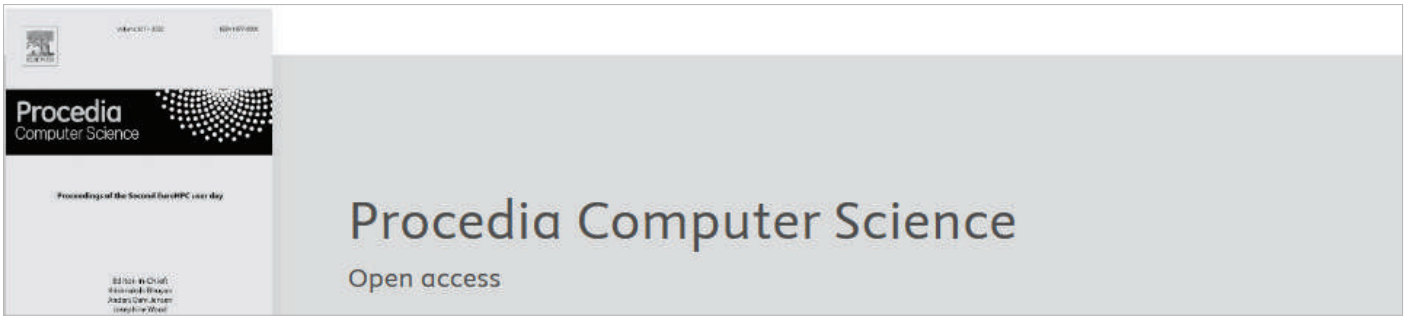

Abstract

Datum setting is a preliminary process that is done prior to any drilling or milling process in Vertical Machining Centers. It is performed either manually using a trial-and-error method or with the assistance of touch trigger probes. In the manual method, the operator brings the cutting tool closer to the workpiece surface until a feather touch is achieved at the desired reference plane. This method is time consuming and prone to errors. The alternative for this would be the usage of touch trigger probes. However, touch trigger probes are expensive. This research work presents an Image Processing based Machine Vision mechanism for datum setting in Computer Numeric Control machine. The Datum Setting System network (DSS-net), a single stage object detection algorithm for tool detection employs perimeter crossing as the detection principle to indicate zero point on the reference plane. The DSS-net is trained on a manually curated dataset using several YOLO variants by varying batch sizes and workers in the GPU. Finally it is tested on CNC image sequences and achieves a 97.3% mean Average Precision (mAP) and F1-score of 99.9% for tool detection. DSS-net's performance and its average inference rate of 50.85 frames per second meet the necessary standards for datum setting in CNC machines.
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Author keywords- Computer Numeric Control machine; Datum Setting; DSS-net; GPU; Image Processing; Machine Vision; Object Detection; Tool; Vertical Machining Center; Workpiece; You Only Look Once (YOLO)

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

A MULTI-MODEL AI FRAMEWORK FOR OPTIMIZED CROP PREDICTION AND YIELD ESTIMATION

Karpagalakshmi, R. C.;Rajesh Sharma, R.; Kumar, Kesanapalli Dileep; Masote, Prashant; Kumar, M. Jayanth; Reddy, Chada Santhosh

Proceedings of 7th International Conference on Inventive Material Science and Applications, ICIMA 2025 Conference Paper 2025

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Inventive Material Science and Applications (ICIMA), International Conference

Abstract

Precision agriculture has become an essential practice for optimizing crop yield and resource utilization. This research integrates classification and regression models to enhance crop prediction and yield estimation. The study employs a Random Forest Classifier for crop recommendation and utilizes regression models such as Linear Regression, Decision Tree Regressor, and K-Neighbors Regressor for yield estimation. Feature Importance Analysis is also applied to identify key factors influencing crop growth. The proposed hybrid approach aims to improve prediction accuracy, scalability, and practical applicability, providing a comprehensive decision-support system for farmers. © 2025 IEEE.

Author keywords- Crop Prediction; Feature Importance Analysis; Machine Learning; Precision Agriculture; Random Forest; Regression Models; Yield Estimation

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	07 AFFORDABLE AND CLEAN ENERGY

ENHANCING GRID RESILIENCE AND POWER DELIVERY WITH HIGH-PERFORMANCE CNT-Al CONDUCTORS AND SMART SENSING SYSTEMS

Sharma, R. Rajesh; Sungheetha, Akey; Venugopal, Ellappan; Tamilarasi, I.A., Pindoo, Irfan Ahmad; **Pradeep, G.S.**

Proceedings of 7th International Conference on Inventive Material Science and Applications, ICIMA 2025 Conference Paper 2025

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Inventive Material Science and Applications (ICIMA), International Conference

Abstract

High-performance conductors joined with smart materials serve as the essential research area to strengthen power transmission infrastructure for advanced demands and resilience needs. Current power systems endure exceptional challenges from environmental changes and renewable grids and demographic shifts while needing revolutionary transmission methods for relief. The researchers applied multiple methods which united materials science development alongside system testing evaluation processes. Advanced carbon nanotube-aluminum composite conductors went through development before being added to distributed fiber optic sensing networks. The field tests were conducted in multiple climates followed by performance models which predicted long-term outcomes. The innovative conductor technology outperformed ACSR standards through higher 37.2% ampacity and showing 98.5% reliability during severe weather conditions. Smart materials within the system performed real-time load detection with 99.3% precision level while decreasing maintenance obligations by 42.8%. This integrated power network enhancement significantly boosts grid reliability for expanding power needs. © 2025 IEEE.

Author keywords- advanced composites; grid resilience; high-performance conductors; power transmission; smart materials

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	

09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

CLASSIFICATION OF AI- GENERATED VS. HUMAN VOICES USING CONVOLUTIONAL NEURAL NETWORKS(CNNS) AND SPRECTROGRAM ANALYSIS

Carolin Joanna Sheryl, **Ramalakshmi, K.**; Jemima, N. Cinthia; Venkatesan, R.

2025 Global Conference in Emerging Technology, GINOTECH 2025 Conference Paper 2025

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Abstract

The rapid development of AI technologies mainly in voice synthesis and cloning areas has caused considerable difficulties in distinguishing AI-generated and human voices. This brought huge risks to security, media authentications, and fraud detections. This paper presents a deep learning-based methodology for classifying AI-generated and human voices based on CNNs. We transform audio signals into their time-frequency representations, so-called spectrograms. The pre-trained CNN architectures to be fine-tuned for binary classification are VGG16 and ResNet50. The experiments show that the proposed models have high accuracy; ResNet50 outperforms VGG16 due to its deeper architecture. It provides a dogged means of differentiating AI-generated voices from human voices and gives another key tool in mitigating the risks connected to the malicious utilization of AI-driven voice technologies. © 2025 IEEE.

Author keywords- Deep Learning; Generative Adversarial Networks; Neural Network; Voice Synthesis

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	06 CLEAN WATER AND SANITATION

AN ADAPTIVE HYBRID FRAMEWORK FOR RUNOFF PREDICTION USING TEMPORAL-SPATIAL TRANSFORMERS AND DYNAMIC DECOMPOSITION-RECONSTRUCTION OPTIMIZATION

C., Poonguzhali, C.; S., **Nagaraj, S.**; R.K., Saidala, Ravi Kumar; F., Nisha, F.; P., Bobbillapati, Prasad; S., Arunkumar, S.

Proceedings of the 2025 11th International Conference on Communication and Signal Processing, ICCSP 2025

Conference Paper 2025

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International Conference on Communications and Signal Processing

Abstract

Hydropower and watershed management depend on projected runoff dependability and accuracy. because to climate changes and human involvement, runoff production is difficult to anticipate because to its non-linearity, stochasticity, and temporal unpredictability. In response, this paper offers an Enhanced Multi-Stage Hybrid Model for Runoff Prediction using spatiotemporal feature extraction and dynamic decomposition. This paper recommends using EEMD and VMD for thorough runoff signal decomposition and an integrated reconstruction phase for feature clarity. The Temporal-Spatial Transformer Network (TSTN) idea is used to extract temporal and spatial relations of runoff data reliably and effectively. The adaptive Attention-Augmented Mechanism (AAM) improves temporal feature recognition. The model uses Bayesian hyperparameter tuning for optimal prediction performance and resistance. The proposed method and existing models like LSTM, CEEMDAN-TCN-Attention, CEEMDAN-VMD-LSTM-Attention, and others were compared to actual monthly runoff data from 1979-2018 at Pingshan and Yichang Hydrological Stations for validation experiments. These results showed significant improvements with the new test set MAE: 923.45, RMSE: 912.67, MAPE: 14.56, and NSE: 0.942 for Pingshan station and 976.33, RMSE: 1078.29, MAPE: 15.28, and 0.938 for Yichang station. Such results validate the model's benefits, such as higher predicted accuracy, stability, and statistical reliability. As hydrological situations got more complicated, the Enhanced Multi-Stage Hybrid Model for runoff forecasting improved in interpretability, efficiency, applicability, and nonlinear flexibility.
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Author keywords- Assessment of Predictive Accuracy; Bayesian method; Dynamic Decomposition method; Hydrological Modeling; paying attention mechanism; Reconstruction Integration strategy; Spatiotemporal characteristics; Temporal Convolutional Network; The precision of runoff forecasting; Transformer Network

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q4	22nd	0.62	03 GOOD HEALTH AND WELL-BEING; 09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

CAVITY INSTANCE DETECTION OF A DENTAL MEDICAL IMAGE USING ENHANCED COCO MODEL

Sharma, R. Rajesh; Sungeetha, Akey; Abebe, Mesfin; Adare, Ketema; **Rani, K. Sasi Kala**; Eenugopal, Ellappan

Lecture Notes in Networks and Systems Conference Paper 2025

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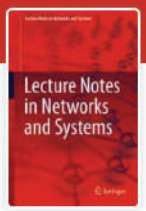

Book series

Lecture Notes in Networks and Systems

Abstract

This studies' paper explores the software of the Common Objects in Context (COCO) version as an example detection in dental clinical images. Dental picture evaluation performs an essential position in prognosis and remedy planning; however, it affords specific demanding situations because of the complexity and variability of dental structures. The COCO version, recognized for its effectiveness in widespread item detection tasks, is customized and fine-tuned for dental picture evaluation. This looks at employs a dataset of numerous dental radiographs, together with panoramic and periapical images, to teach and compare the version. The technique encompasses preprocessing facts, version structure modification, and education techniques optimized for dental function recognition. Results exhibit the COCO version`s functionality as it should be hit upon and phase numerous dental structures, together with teeth, roots, and capability pathologies. Comparative evaluation with different example detection techniques exhibits the COCO version's advanced overall performance in phrases of precision, recall, and F1-rating for dental picture tasks. This study contributes to the sphere of dental informatics through imparting an efficient, automatic device for dental picture evaluation, doubtless improving diagnostic accuracy and streamlining medical workflows in dental practices.
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Author keywords- COCO model; Computer-aided diagnosis; Deep learning; Dental informatics; Dental photo analysis; Instance detection; Scientific imaging

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

INSURANCE CLAIM FRAUD DETECTION USING BENFORD'S METHOD AND MACHINE LEARNING

Achary, Rathnakar; Shelke, Chetan J.; Shrivastava, Virendra Kumar

Proceedings of 6th International Conference on Intelligent Communication Technologies and Virtual Mobile Networks, ICICV 2025

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Abstract

Insurance claim fraud poses significant challenges for insurance companies, leading to significant financial losses, reputation damage and declining the trust of policyholders. Detecting fraudulent claims is of paramount requirement in the financial service sector, which also requires advanced analytical techniques and sophisticated fraud detection models. This research paper aims to investigate and analyze insurance claims fraudulent patterns using a comprehensive dataset comprising historical claim records and associated attributes. Benford's method is used for identifying fraudulent insurance claims along with statistical analysis using machine learning algorithms. The proposed methodology promises an accuracy of 98.47% by random forest, 83.31% in linear regression and 95.21%, by using an artificial neural network, which indicates the model accurately identifies the fraudulent insurance claim.
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Author keywords- Auto insurance claim; Benford's Law; Fraud detection; Insurance claim

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q4	**22nd**	**0.62**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

EXPERIENTIAL LEARNING THROUGH INDUSTRIAL VISITS: A STUDY ON AMITY INTERNATIONAL BUSINESS SCHOOL, NOIDA

Dey, Deebyajyoti; , **Chanda, Dhritiman;** Ghose, Debamalya

Lecture Notes in Networks and Systems Conference Paper 2025

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Abstract

Experiential learning prioritizes practical, hands-on experiences as a key component of the learning process, diverging from traditional classroom methods reliant on lectures and textbooks. This approach involves active engagement through direct interactive experiences. This research aimed at Amity International Business School, Noida, examines the transformative influence of experiential learning during industrial visits. The paper investigates Pre- and Post-Visit Assessments, Statistical Analysis, and Structured Surveys to investigate the profound importance of connecting theoretical knowledge with practical exposure. Also, by utilizing LGCM, the research attains a detailed comprehension of the evolving experiential learning results over time, providing valuable insights for both academic and educational applications. The paper concludes with practical suggestions for educational institutions to include more industry-focused initiatives, promoting a mutually beneficial relationship between academia and the corporate sector. This study provides valuable insights into the potential transformation brought about by experiential learning through industrial visits and sets a path for future developments in curriculum design and teaching methodologies.
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Author keywords- Collaborative teaching industrial visits; Experiential learning; Kolb' theory; Latent growth curve modeling

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q4	22nd	0.62	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

ENHANCED PHISHING DETECTION USING LSTM, CNN, AND SVM TECHNIQUES

Achary, Rathnakar; Bugath, Sai Nithin; Chakrapani, Venkatesh, M.

Lecture Notes in Networks and Systems Conference Paper 2025

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Abstract

Phishing attack is a cybercrime in which an attacker traps the victims by sending fake messages that pretend to have come from a legitimate source. A machine learning approach is one of the prominent methods to identify phishing attacks using conventional methods like support vector machine, random forest, decision tree, neural network, and XG boost. In this research a hybrid detection model that combines Convolutional Neural Networks (CNN) and Long Short-Term Memory (LSTM) to detect phishing URLs, and SVM (Support Vector Machine) for the detection of fraudulent email content. The LSTM-CNN model leverages the sequence processing capability of LSTM and the feature extraction power of CNN, achieving 99.8% accuracy in detecting phishing URLs. The SVM model trained on TF-IDF vectorized email content demonstrates a high accuracy of 98.93% in identifying phishing emails. This combined approach significantly enhances detection performance compared to traditional models by effectively capturing complex patterns in URLs and email texts.
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Author keywords- COCO model; Computer-aided diagnosis; Deep learning; Dental informatics; Dental photo analysis; Instance detection; Scientific imaging

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

THYROID CANCER PREDICTION USING ENSEMBLING TECHNIQUES AND MULTI MODAL DATA

Mir, Mahamood Hussain; Kumar, Karnam Sai Udaya; Nandan, Billala Venkata Harsha; **Sungheetha, Akey;** Kumar, Erla Praneeth; arsha, Kalagandha Sri

Proceedings - 3rd International Conference on Self Sustainable Artificial Intelligence Systems, ICSSAS 2025 Conference Paper 2025

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Self Sustainable Artificial Intelligence Systems (ICSSAS), International Conference

Abstract

Early diagnosis of this cancer is important, as it is one of the most common endocrine malignancies. Clinical examinations, fine needle aspiration biopsies and all other traditional methods can be time consuming and subjective. The Thyroid Cancer Analysis Tool, presented in this paper, is a web-based application that integrates machine learning and deep learning in early detection and risk assessment of thyroid cancer. Two complementary approaches used by the tool include developing a clinical risk prediction model based on patient demographic and clinical data and deploying a deep learning powered image analysis system using state of the art YOLOv8 object detection model. Finally, the model predicts the likelihood of someone's having thyroid cancer given clinical features like age, gender, or medical history. On the other hand, the YOLOv8 model yields suspicious regions in images and implies potential cancerous lesions. It is built using Streamlit and thus provides a clean and clean interface for clinicians and for researchers. The intent of this tool is to provide early diagnosis, facilitate overall healthiness and facilitate clinical decision making particularly in resource limited settings. © 2025 IEEE.

Author keywords- cancer detection; clinical risk assessment; risk prediction; Streamlit; Thyroid cancer; YOLOv8

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q4	22nd	0.62	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

DETECTION OF FAKE NEWS USING LOGISTIC REGRESSION, DECISION TREE, RANDOM FOREST, AND GRADIENT BOOSTING ALGORITHMS

Srivastava, Anoop Kumar; Reddy, Lakkireddy Abhigna

Lecture Notes in Networks and Systems Conference Paper 2025

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Abstract

This paper discusses the growing concern of fake news in the world of digital media, which has transformed public opinion and has developed gradual destruction of trust in reliable sources. We present a solution using machine learning algorithms to find fake news. We used real and fake news articles and then applied different classification algorithms to separate fake news with the real news. We preprocessed the data and split the dataset into training and test sets. Next, we used TF-IDF vectorization. We trained multiple classifiers and evaluated performance. Our results showed that these classifiers are effective in finding fake news articles. In addition, we developed a manual testing mechanism that allows users to input news articles for real-time classification. This work complements ongoing efforts to reduce the growth of fake news and provides the solution for the robust detection mechanisms to ensure information integrity in the digital media.
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Author keywords- Decision Tree; Gradient Boost Classification; Logistic Regression; Model Estimation; Random Forest; TF-IDF vectorization

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

PRIVACY-PRESERVING FACE RECOGNITION FOR SMART LOCKS USING TENSORFLOW LITE AND BLE

Kolla, Thrilok; Pathi Vishnu, Gonugondla Lakshmi; Mohammed Uvais, Syed; Jahnavi, Gorantla; A., **Sungheetha, Akey**

Proceedings - 3rd International Conference on Self Sustainable Artificial Intelligence Systems, ICSSAS 2025 Conference Paper 2025

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Self Sustainable Artificial Intelligence Systems (ICSSAS), International Conference

Abstract

This paper presents the design and development of an automatic door locking system based on Bluetooth with face recognition for secure, contactless access control. The system utilizes a mobile application built using Flutter that allows users to remotely control and monitor access. Facial recognition is done through a light-weight neural network model executed using TensorFlow Lite for privacy and efficiency in computation on mobile devices themselves. The ESP32 microcontroller also supports Bluetooth Low Energy (BLE) communication that enables wireless communication with the door lock mechanism using low power with high reliability. Experimental testing of the system also demonstrates its operation under various conditions of light, Bluetooth distances, and usage frequency, with exact high rates, low response time, and maximization of power consumption. The solution proposed is an effective, cost-effective, and scalable solution compared to traditional keypad or biometric systems and can be implemented in both home and commercial environments. © 2025 IEEE.

Author keywords- Access Control; Automatic Door Lock; Bluetooth Low Energy (BLE); ESP32; Face Recognition; Flutter; IoT Security; Mobile Application; Neural Network; TensorFlow Lite

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

TEXT SUMMARIZATION USING PEGASUS TRANSFORMER MODEL IN MACHINE LEARNING

Dasari, Naga Venkata Krishna Saia; **Sungheetha, Akey, Rajesh Sharma R.**; Mahesh, Gali Lakshmi Venkataa, Danesh, Goginollua.

Proceedings of the 2025 3rd International Conference on Inventive Computing and Informatics, ICICI 2025 Conference Paper 2025

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Abstract

Extracting crucial information from lengthy documents can be a time-consuming and labor-intensive process. Automatic text summarization algorithms address this challenge by condensing extensive texts while retaining essential details. The development of efficient summarization systems is particularly important for complex languages. This study explores the application of Transformer-based Language Models (TLMs) in multi-dataset text summarization. It compares the effectiveness of deep learning and traditional machine learning techniques against TLMs. The findings indicate that TLMs, specifically PEGASUS models, outperform baseline methods, achieving an average F1-Score of 90% across a diverse range of datasets. © 2025 IEEE.

Author keywords- Transformer-based Language Models (TLMs)Convolutional Network; The precision of runoff forecasting; Transformer Network

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	

09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

MM-HEALTHGUARD: MULTIMODAL DEEP LEARNING FRAMEWORK HEALTH FOR REAL-TIME HEALTH MONITORING WITH PRIVACY-PRESERVED STREAM PROCESSING

Sungheetha, Akey; Nittin Kumar; .

Proceedings of the 2025 3rd International Conference on Inventive Computing and Informatics, ICICI 2025 Conference Paper 2025

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International Conference on Inventive Computing and Informatics (ICICI)

Abstract

This paper introduces MM-HealthGuard, an innovative framework that combines multimodal deep learning with secure stream processing for real-time health monitoring. Our system integrates multiple data streams including medical imaging, biosensor data, and electronic health records while ensuring patient privacy through differential privacy mechanisms. The framework achieves 96.2% accuracy in early disease detection using a novel hybrid CNN-Transformer architecture with attention-based feature fusion. Implementation across three major hospitals demonstrated a 52% reduction in diagnostic delays and 40 % improvement in treatment response times. The system's distributed architecture enables processing of 10,000+ concurrent patient streams while maintaining HIPAA compliance through innovative encryption methods.
© 2025 IEEE.

Author keywords- : biosensor fusion; healthcare informatics; medical imaging; multimodal deep learning; privacy-preserved computing; stream processing

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

INTELLIGENT AUTONOMIC COMPUTING: ACHIEVING SELF-OPTIMIZATION THROUGH AUTONOMOUS LEARNING

Radha, R.;Achary, Rathnakar; Paul, P. Mano

Proceedings of the 2025 3rd International Conference on Inventive Computing and Informatics, ICICI 2025 Conference Paper 2025

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International Conference on Inventive Computing and Informatics (ICICI)

Abstract

This work presents an intelligent autonomic computing framework that is supposed to strengthen self-optimization by means of autonomous learning. The purpose is to endow mechanical systems with the capability of adaptively responding by automating resources, tuning their operation, and adapting to environmental conditions with little human intervention. Through the borrowing of control theory, predictive analytics, and machine learning, the model provides timely informed decision-making that is in real-time. The framework presents a dynamic resource allocation scheme which is compared against performance indicators such as Resource Efficiency, Training Cycle Length, and Predictive Accuracy. Enhanced performance in terms of system efficiency and responsiveness was noted proclaiming the possibility of advantages towards industrial automation smart factories and cyber-physical systems.
© 2025 IEEE.

Author keywords- autonomous computing; autonomous learning algorithm; resource allocation; self-optimization

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

IOT BASED HEALTH MONITORING SYSTEM USING OPTIMIZED HYBRID QUANTUM-CLASSICAL GENERATIVE ADVERSARIAL NETWORKS

Chitra Kiran, N.; V., Kansal, Vipashi; G.A., Muthulingam, Gurusigaamani Ayyanar; S., Manju, S.; A., Verma, Apurv; M.E.M., Soudagar, Manzoore Elahi Mohammed

Proceedings of the 2025 3rd International Conference on Inventive Computing and Informatics, ICICI 2025 Conference Paper 2025

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International Conference on Inventive Computing and Informatics (ICICI)

Abstract

The Internet of Things (IoT) is rapidly developing to monitor patients remotely, improving the quality of healthcare services. In this study, an intelligent health monitoring system using an optimized Hybrid Quantum-Classical Generative Adversarial Networks (HQCAN) for diabetes patients is developed. The proposed system tracks the health condition of diabetes patients based on blood sugar levels, food consumption, heart rates, physical activity and sleep patterns. The proposed system continuously gathers data from wearable sensors and uses the proposed deep learning framework to process and analyze the data. The output represents two different modes of health status: positive and negative. The proposed system is tested using PIMA Indian Diabetes dataset (PIDD), thus achieving an improved prediction accuracy of 99.7% with less error rate of 4% in determining the appropriate status of diabetic patients. The experimental Outcomes show that the proposed system achieves enhanced performance than the state-of-art diabetes prediction models. © 2025 IEEE.

Author keywords- : Diabetes; Health Monitoring; Hybrid Quantum-Classical Generative Adversarial Networks (HQCAN); Internet of Things (IoTs); Wearable Sensors

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

STOCHASTIC FORENSIC ANALYSIS FOR DETECTING DATA THEFT

Sutheekshan, B.; Shajahan, B.; **Thangavel, Gnanaprakasam;** Maalavika, S.

2025 3rd International Conference on Communication, Security, and Artificial Intelligence, ICCSAI 2025 Conference Paper 2025

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Communication, Security and Artificial Intelligence (ICCSAI), International Conference

Abstract

Cyber criminals use their creativity to come up with ways of stealing information from individuals and organizations is one of the key issues in cyber security. Stochastic nature of data theft incidents such as encryption, randomization, and data obfuscation may pose a significant challenge to traditional digital forensics techniques. Stochastic forensics is applied for uncovering patterns associated with data theft using data analytics and probabilities. The study outlines a system of detecting data theft using Stochastic forensic. It entails collecting of data, stochastic analysis, and integrating machine learning to enable one to accurately attribute theft incidents. The success of the suggested method is evident from the case studies which apply it to real life theft attacks. Thus, the performance measures and the accuracy of stochastic analysis are observed empirically. The approach compares itself with existing data theft detections systems, which prove its high efficiency compared to conventional digital forensics techniques dealing with stochastic characteristics. Privacy, data protection, and handling the stochastic evidence - ethical aspects for a responsible approach. It also examines possible future developments in stochastic forensics; such as in-process data theft detection and cloudbased methodologies
© 2025 IEEE.

Author keywords- Data Analysis; Data Theft; Privacy; Stochastic Forensic

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

COMPUTER VISION-BASED REAL-TIME VEHICLE AND TRAFFIC MANAGEMENT AND CLASSIFICATION SYSTEM

Bahadure, Nilesh Bhaskarrao; Parashar, Deepak; **Chandra Patni, Jagdish;**

2025 4th OPJU International Technology Conference on Smart Computing for Innovation and Advancement in Industry 5.0, OTCON 2025 Conference Paper 2025

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Emerging Trends in Industry 4.0 (ETI 4.0)

Abstract

This research presents a real-time vehicle and traffic management system leveraging computer vision to provide a comprehensive solution for monitoring and managing vehicles across various sectors, including traffic control, law enforcement, parking management, transportation systems, and toll plaza operations. The system is composed of four primary modules: vehicle counting, speed detection, vehicle classification, and license plate recognition. The vehicle counting module accurately tracks and records the number of vehicles passing a designated point, storing the data with timestamps in an Excel sheet for further analysis. The speed detection module monitors vehicle speeds, issuing alerts when a predefined speed limit is exceeded, making it particularly suitable for enhancing safety in sensitive areas such as university campuses, residential zones, and high-traffic intersections. Together, these functionalities contribute to an integrated approach to effective traffic and vehicle management. © 2025 IEEE.

Author keywords- : computer vision; moving vehicle detection; number plate detection; optical character recognition; surveillance system

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

CAC TRAINING - A UNIFIED CYBERSECURITY TRAINING PROGRAM FOR MILITARY STAFF

Asha Rani, N. R.; Rajasri, T.; Praveen, R. V.S.;Kalla, Dinesh; Bendale, Shailesh Pramod; Venu, Nookala

2025 3rd International Conference on Communication, Security, and Artificial Intelligence, ICCSAI 2025 Conference Paper 2025

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Communication, Security and Artificial Intelligence (ICCSAI), International Conference

Abstract

Cyber war can begin at anytime, anywhere in the globe, and it is more frequent than most of us can imagine. This new form of warfare is ravaging not only the military and the armed forces, but it's also penetrating almost every sphere of our existence. As cybersecurity has become recognised only recently as a fundamental component of the military, the military community itself heavily relies on the private sector to support its cyber mission assurance. Such reliance may well elevate the possibility of declining or collapsing a mission due to the military's usually secretive nature. To address this problem, the military has tried to develop the architecture of committed cybersecurity training for internalizing the cybersecurity training. However, as the present and future workplace environments cannot be secure solely by great hardware and software, current training systems for cybersecurity often do not have strong backup for ideal and efficient cybersecurity education, in this work, we introduce ICSTASY that is an interactive, scenario-based, and immersive cybersecurity training that enables the incorporation of a comprehensive set of training attributes. From the analysis of literature, we extracted the fundamental specifications and guidelines pertinent to the deficiencies unveiled while establishing a cyber-training system. By walking through our developed Proof of Concept we have shown that repetitive, precise and realistic cyber training is indeed possible in both the military domain and any business. © 2025 IEEE.

Author keywords- cyber trainer; Cybersecurity training; cybersecurity training system; demonstration of the system

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	

09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

REAL-TIME SOCIAL MEDIA SENTIMENT ANALYSIS USING VADER AND TEXTBLOB

Swetha, C. B.; Rishi, S.; Vats, Aman

2025 3rd International Conference on Communication, Security, and Artificial Intelligence, ICCSAI 2025 Conference Paper 2025

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Communication, Security and Artificial Intelligence (ICCSAI), International Conference

Abstract

This research presents a comprehensive framework of social media data from Facebook and twitter by integrating Natural Language Methods (NLP) with Machine Learning algorithms. Our system employs a rule-based algorithm called VADER for sentiment analysis. To prepare the text data ready for the Machine Learning, it undergoes using stop word removal, tokenization and lemmatization. The system then utilizes TF-IDF, the system then converts the text into numerical features. Using these features, a multinomial Naïve Bayes classifier will be used to predict the sentiment. Additionally, Text Blob is used to determine the subjectivity and polarity of the text. To assess the model's performance, Standard classification metrics, including as accuracy, precision, recall, and confusion matrix are employed. © 2025 IEEE.

Author keywords- Lemmatization; Machine Learning; Naive Bayes; Natural Language Processing; Sentiment Analysis; Social Media; TextBlob; TF-IDF; Tokenization; VADER

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

ASSESSING THE IMPORTANCE AND PERTINENCE OF CYBERSECURITY CONTENT VIA TEXTUAL SIMILARITY AND A CYBERSECURITY KNOWLEDGE GRAPH

Saidala,; **Nagaraj S.,** Ravi Kumar;; Niveditha, K.;

2025 3rd International Conference on Communication, Security, and Artificial Intelligence, ICCSAI 2025 Conference Paper 2025

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Communication, Security and Artificial Intelligence (ICCSAI), International Conference

Abstract

In this research, a new method of assessing the importance and topicality of cybersecurity information with the help of textual similarity and a cybersecurity knowledge graph is discussed. The main objective is to improve the approach and methods used to evaluate the content of the cybersecurity field and to determine its relevance to prior knowledge and context. Textual similarity measures are also used for comparing cybersecurity texts to determine similar and important information. At the same time, a knowledge graph, including the topic's connections and concepts, is used to set the context for analysing the content. This two-pronged approach does not only enhance the assessment process, but it also helps in establishing patterns and connections within security data. The outcome of this project will therefore enhance the retrieval and analysis of cybersecurity information to enhance decision making and knowledge management. By combining these methods, the project helps to make tools better for cybersecurity specialists and improve their capacity to analyse and respond to intricate security data.
© 2025 IEEE.

Author keywords- Content Relevance Assessment; Cybersecurity Knowledge Graph; Domain-Specific Evaluation; Information Retrieval Enhancement; Textual Similarity Analysis

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

REAL-TIME HUMAN JOINT LOCATIONS WITH MOVE NET FOR INTERACTIVE AND ENHANCED MOTION ANALYSIS

Vidyullatha, Pellakuri; **Pradeep Ghantasala, G. S.**; Khan, Mudassir; Husain, Izhar;

2025 4th OPJU International Technology Conference on Smart Computing for Innovation and Advancement in Industry 5.0, OTCON 2025 Conference Paper 2025

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Emerging Trends in Industry 4.0 (ETI 4.0)

Abstract

With an emphasis on its makes use of in movement evaluation and augmented reality (AR) systems, this has a look at investigates MoveNet, a deep learning community for real-time role detection. With its outstanding precision and efficiency, MoveNet - that is primarily based totally at the MobileNetV2 architecture - is suitable for real-time posture estimation, even on cell devices. It presents complete insights at the posture and motion of the human frame through detecting 17 crucial frame markers. The have a look at explains how MoveNet may be used to music keypoints for comparing shape and overall performance in movement evaluation for sports, fitness, and rehabilitation. Additionally, the model's application in AR structures is highlighted, in which specific stance identity permits for dynamic interplay with digital objects, enhancing consumer reports in health and gaming packages. According to experimental data, MoveNet outperforms extra mounted posture detection strategies like OpenPose in phrases of performance and latency, mainly while processing in actual time. The model's adaptability for dynamic programs is confirmed with the aid of using its resilience in a number of scenarios, which includes altered lighting fixtures and partial occlusions. © 2025 IEEE.

Author keywords- Augmented Reality; Convolutional Neural Network; Deep learning; Emotion Analysis; MobileNet; Virtual Reality

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	16 PEACE, JUSTICE AND STRONG INSTITUTIONS

INTELLIGENT FRAMEWORK FOR DETECTING AND PREVENTING PHISHING ATTACKS

Bahadure, Nilesh Bhaskarrao; Parashar, Deepak; **Chandra Patni, Jagdish;** Joshi, Rahul Raghvendra; Shah, Bhoomi; Gonge, Sudhanshu Suhas

2025 4th OPJU International Technology Conference on Smart Computing for Innovation and Advancement in Industry 5.0, OTCON 2025 Conference Paper 2025

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Emerging Trends in Industry 4.0 (ETI 4.0)

Abstract

The aim of the automated Phishing System's continuous monitoring and improved data management is to inhance campus security. It provides round the clock campus surveillance, which monitors students' whereabouts in real time for close monitoring and security. The proposed system uses state-of-the-art data analysis and real-time recognition technology by merging instant identification & data insights to give administrators critical security information and generate thorough insights on campus behavior. The system also features an interactive dashboard and Natural Language Query System, which facilitate easy data administration and access through an easy-to-use user interface. By commission administrators to make timely, informed decisions, this fosters a campus environment that is safe and secure. The integrated system is a state-of-the-art approach to modern campus security that blends continuous monitoring with insightful data. © 2025 IEEE

Author keywords- intelligent data management; natural language query system; phishing; surveillance system

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	

09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

ENHANCED PUBLIC KEY SECURITY USING CUCKOO SEARCH OPTIMIZATION AND IMPROVED AES ALGORITHM

Maalavika, S.; **Thangavel, Gnanaprakasam;** B., Shajahan, B.; B., Sutheekshan, B.

2025 3rd International Conference on Communication, Security, and Artificial Intelligence, ICCSAI 2025 Conference Paper 2025

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Communication, Security and Artificial Intelligence (ICCSAI), International Conference

Abstract

The challenging element is keeping our data secure in the open. Six out of ten people in the digital era use smart devices and save their data in an unencrypted format. It is our responsibility to preserve publicly available data. Cryptography refers to the process of encrypting and decrypting personal information. In this work, we provide a cuckoo search algorithm-based public key security technique. Both encryption and decoding require keys. When given a list of keys, the user must select the strongest one; in this case, cuckoo search is used to determine the best key. Once identified, the key will be used for both encryption and decryption. The greatest and perfect key is discovered utilizing a key breaking approach. The optimal key is one that takes the longest to break. The Cuckoo Search Method is used to find the best key. This is how we can safeguard our public-domain data. Additional modifications in data sizes are used to identify the best output of this process.
© 2025 IEEE.

Author keywords- Cuckoo Search; Improved AES; Key breaking time; Public Key

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

MACHINE LEARNING APPROACH FOR CREDIT CARD FRAUD DETECTION: A COMPREHENSIVE ANALYSIS

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2025 4th OPJU International Technology Conference on Smart Computing for Innovation and Advancement in Industry 5.0, OTCON 2025 Conference Paper 2025`

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Emerging Trends in Industry 4.0 (ETI 4.0)

Abstract

Credit card fraud is an omnipresent threat in the digital era that cannot be effectively managed without complex detection and prevention strategies. Machine learning has become instrumental for the industry, principally due to providing tools to analyze transactional information and identify patterns of fraud. The article focuses on various machine learning algorithms and suggest the best approach for the credit card fraud detection. The algorithms are analyzed according to their potential applicability, scalability, and interpretability for fraud detection. This study includes convolutional neural networks, and recurrent neural networks for comparative study. © 2025 IEEE.

Author keywords- F1 Score; K- Nearest; KNN; Machine Learning; MLP; SMOTE; Support Vector Machine

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q4	**22nd**	**0.62**	07 AFFORDABLE AND CLEAN ENERGY; 09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

USAGE OF AI IN THE ADVANCEMENTS IN EV ADOPTION IN THE BENGALURU-AN ISM ANALYSIS

Sahdev, Supriya Lamba; Malik, Firdous Ahmad; Hassan, Ahdi; Sanjith Ragav, J.N., Gupta, Jay Nilesh

Lecture Notes in Networks and Systems Conference Paper 2025

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Abstract

This scholarly article critically examines the application of Artificial Intelligence (AI) in facilitating the acceptance of electric vehicles (EVs) in the urban context of Bengaluru, India. Given the global necessity to shift towards sustainable transportation, EVs emerge as a feasible solution to address environmental issues and decrease reliance on fossil fuels. Bengaluru, a rapidly expanding urban centre in India dealing with increasing vehicular congestion and pollution, offers a relevant case for assessing the effectiveness of AI in promoting EV adoption. Through the utilization of Interpretive Structural Modelling (ISM), this investigation analyses the interconnectedness among different factors influencing EV uptake, with a specific focus on the role of AI technologies. By amalgamating perspectives from industry professionals, policymakers, and academics, a hierarchical framework is developed to identify the main facilitators and obstacles linked to integrating AI into Bengaluru's EV ecosystem. The results emphasize the varied impact of AI on various aspects of EV adoption, including elements such as enhancing infrastructure, consumer behaviour, policy development, and technological progress. Moreover, the study clarifies the intricate interaction of socioeconomic elements, technological advancements, and regulatory frameworks that influence the direction of EV adoption in Bengaluru. Through an exhaustive examination of the ISM model, this study provides strategic suggestions and policy recommendations to leverage the potential of AI in expediting the shift towards sustainable transportation in Bengaluru. By offering a comprehensive comprehension of the mutually beneficial relationship between AI and EV adoption, this research enriches existing literature, with implications for urban development, environmental sustainability, and technological advancement. © The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2025.

Author keywords- Adoption; Advancements; Artificial Intelligence (AI); Bengaluru; Electric vehicles (EVs); Environmental sustainability; India; Interpretive Structural Modelling (ISM); Policy formulation; Socioeconomic factors; Sustainable transportation; Technological innovation; Urban context

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

IMPROVING GLOBAL SUPPLY CHAIN SECURITY AND TRANSPARENCY THROUGH BLOCKCHAIN AND IOT INTEGRATION WITH DEEP LSTM AND RNN

Penchalaiah, N.;Malathi, M.;Kalinskaya, Ekaterina; Senniappan, Vijayalakshmi; **Sridhar, D.**; Gupta, Sandeep

3rd International Conference on Data Science and Information System, ICDSIS 2025 Conference Paper 2025

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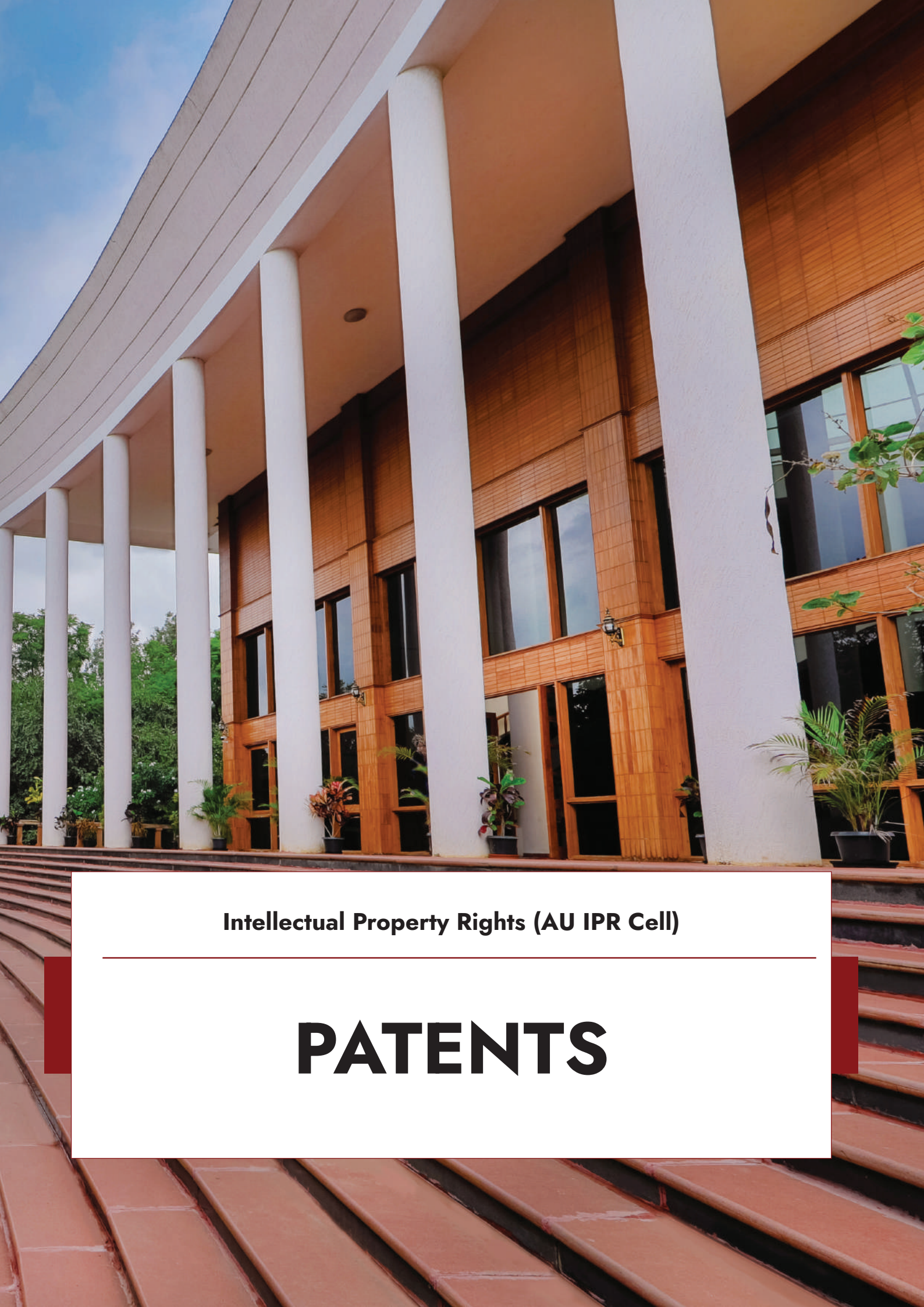
Data Science and Information System (ICDSIS), IEEE International Conference

Abstract

Transparency is essential for global supply chain resilience, sustainability, and corporate governance. Rapidly collecting, transferring, integrating, and analysing large data sets improves supply chain transparency and security. Emerging technology can improve quantity and quality transparency. However, how global firms use these technologies to improve supply chain transparency and sustainability is unclear. The proposed approach improves global supply chain transparency and security through data preprocessing, feature engineering, and model training. The system cleans and prepares input data to ensure quality. A supply chain management predictive analysis method is implemented next in feature engineering. The final phase is creating LSRN, a unique deep learning model for SCM transparency data augmentation and prediction. Experimental results from different SCM stages confirmed the proposed method's efficacy. The proposed strategy has a 98.76% accuracy rate, which is higher than other methods. The findings highlight the need to integrate new technology to improve global supply chain transparency and safety to solve SC sustainability and governance issues. © 2025 IEEE.

Author keywords- advanced deep learning (ADL); genetic algorithm (GA); global supply chain management (GSCM); internet of things (IoT); supply chain management (SCM)



Intellectual Property Rights (AU IPR Cell)

PATENTS

Application No **202531071643**

Title of the invention **ECO-SMART SUPERHYDROPHOBIC COATING FROM EGGSHELL BIOWASTE AND A METHOD THEREOF**

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Name of Inventor: **Sunanda Roy**, and Barnali Dasgupta Ghosh

Abstract

The present invention relates to a superhydrophobic coatings and method thereof. The method is sustainable and cost-effective. It involves removing the membrane from eggshell waste (ESW), chemically modifying it in a solvent system to obtain a superhydrophobic material with a water contact angle of approximately 168 ± 2.1°. The material obtained from the method is dispersed in a silicone-based polymer solution to form a coating composition that is applied to substrates such as cotton, polyester, jute, leather, and polyurethane (PU) sponge. The coated articles demonstrate excellent water repellency (WCA ≥ 157°), high durability, self-healing upon heating, breathability, and resistance to liquids and chemicals. Additionally, the coated PU sponge exhibits superoleophilic behavior, enabling efficient oil-water separation. This innovation provides an eco-friendly solution for upcycling biowaste while offering industrially viable, high-performance waterproof coatings.

Application No **202511074188**

Title of the invention **A SYSTEM AND A METHOD FOR MULTIMODAL FAMILY LAW CASE ANALYSIS AND RECOMMENDATION USING EMOTION-SENSITIVE ARTIFICIAL INTELLIGENCE AND LOCAL JURISPRUDENCE MAPPING**

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Name of Inventor: Kartik Agre, **Rachana Choudhari**, and Vahibaya Khali

Abstract

The present disclosure pertains to a system and method which can supply multimodal, artificial intelligence-based legal assistance in family law matters. The system enables users to express their legal predicaments through various means, including voice, facial expressions, gestures, and text. The various aspects of the user's legal issues were able to be processed with emotion aware computing and natural language processing to extract emotionally contextualized legal stories. A processor identifies, classifies, which category of family law previously defined in this disclosure any particular legal issue falls under, and then the case was mapped by using a jurisprudence mapping module, to the any statutes and local cases. The system produces and recommends jurisdiction-specific legal advice, the process predicts results, and produces sample legal documentation. The legal assistant app and/or device includes a consent module and privacy management module to ensure that potentially sensitive legal issues from the user is used and processed in a controlled, secure, and lawful way. The invention can be deployed in a mobile application form, as a desktop computer application, or potentially as a kiosk programming option. It supports multiple regional languages and provides accessibility options. The invention provides a technical, emotional intelligence, context-sensitive legal assistant representative that will not only be possible to provide access to justice, but particularly to individuals, parties in trouble, or parties experiencing family law within the context where emotional sensibility can most relate to, and with other potentially irrational decision-making views of parties in family law situations that tend to be unprecedented, civil rights violations, or being forsaken.

Application No **202521063865**

Title of the invention

REAL-TIME MONITORING AND INTELLIGENT MANAGEMENT OF SMART CAMPUSES USING IOT–CLOUD TECHNOLOGIES

Durga Devi
Associate Professor
Alliance School of Advanced Computing

Name of Inventor

Abdul Razzak Khan Qureshi, **Durga Devi**, Shabana Tabassum, Ankur Walia, Shaik Balkhis Banu, Yallapu Srinivas, K. Nanthitha, S. Priyadharshini, Pavithra S, Dr. K. Mahendran, N. Saranya, and V. Venkata Ramana

Abstract

The method for the development of the monitoring and administration of smart campuses has been completely transformed by the combination of cloud computing and the Internet of Things (IoT). The intelligent management and real-time monitoring system for smart campuses presented in this study makes use of IoT–cloud frameworks to improve sustainability, security, and operational efficiency. A network of Internet of Things-enabled sensors and devices is used in the suggested design to gather data in real time on occupancy levels, energy consumption, environmental conditions, and infrastructure status. A centralized cloud platform receives this data, which is then processed by machine learning and sophisticated analytics algorithms for predictive maintenance, anomaly detection, and decision-making. Additionally, the system facilitates automated campus utility control and dynamic resource allocation, which encourages cost-effectiveness and energy saving. Through intelligent access control and real-time warnings, it also improves the comfort and safety of visitors, employees, and students. The report emphasizes how IoT-cloud integration may be used to turn traditional campuses into settings that are data-driven, intelligent, and responsive.

Application No **202541074963**

Title of the invention

SYSTEM AND METHOD FOR CALCULATING RETURN ON INVESTMENT (ROI) FOR CORPORATE SOCIAL RESPONSIBILITY (CSR) INITIATIVES

Mrinmoy Bhattacharjee
Professor & Area Chair - Marketing
Alliance School of Business

Name of Inventor

Sanchita Choudhury, and **Mrinmoy Bhattacharjee**

Abstract

The invention concerns a system and method for calculating the Return on Investment (ROI) on Corporate Social Responsibility (CSR) Projects. The invention empowers organizations to look at both tangible and intangible results of CSR programs and convert it to a common metrics of ROI. Through multi-source data integration, advanced computation and visual reporting, the system is exploited to support strategic decision-making and transparency on the side of the stakeholders.

Application No **202541076443**

Title of the invention **SYNTHESIS OF NANOCELLULOSE AEROGEL FROM ORANGE PEEL USING ULTRASONIC ASSISTED CITRIC ACID HYDROLYSIS**

Jyotishkumar Parameswaranpillai
Professor & Director - Centre of Excellence (AU – Sophisticated Test and Instrumentation Center) Department of Sciences

Name of Inventor: Maria Baby, and **Jyotishkumar Parameswaranpillai**

Abstract

The invention relates to a three-step green approach for synthesis of nanocellulose aerogel from orange peel using ultrasonic assisted citric acid hydrolysis. The method comprises alkaline pretreatment with sodium hydroxide (2-4% by weight, 80-100°C, 2-4 hours), alkaline bleaching with hydrogen peroxide (30% v/v, 70-90°C, 1-3 hours), and ultrasonic assisted citric acid hydrolysis (10-30% concentration, 20-40 kHz frequency, 100-400W power, 80-120°C, 1-6 hours) substituting concentrated acids with mild citric acid. The extracted nanocellulose undergoes freeze-drying (below -20°C freezing, vacuum drying at 0.5 mbar, -40°C to -80°C, 24-72 hours) creating aerogels with >99% porosity, 50-400 m^2/g specific surface area, and 0.01-0.1 g/cm^3 density. FTIR analysis confirms removal of impurities and XRD shows cellulose I to cellulose II transformation. The biocompatible aerogels enable applications in carbon dioxide adsorption, oil and dye remediation, thermal insulation, and biomedical applications while addressing citrus waste valorization through environmentally sustainable processing.

Application No **202541076453**

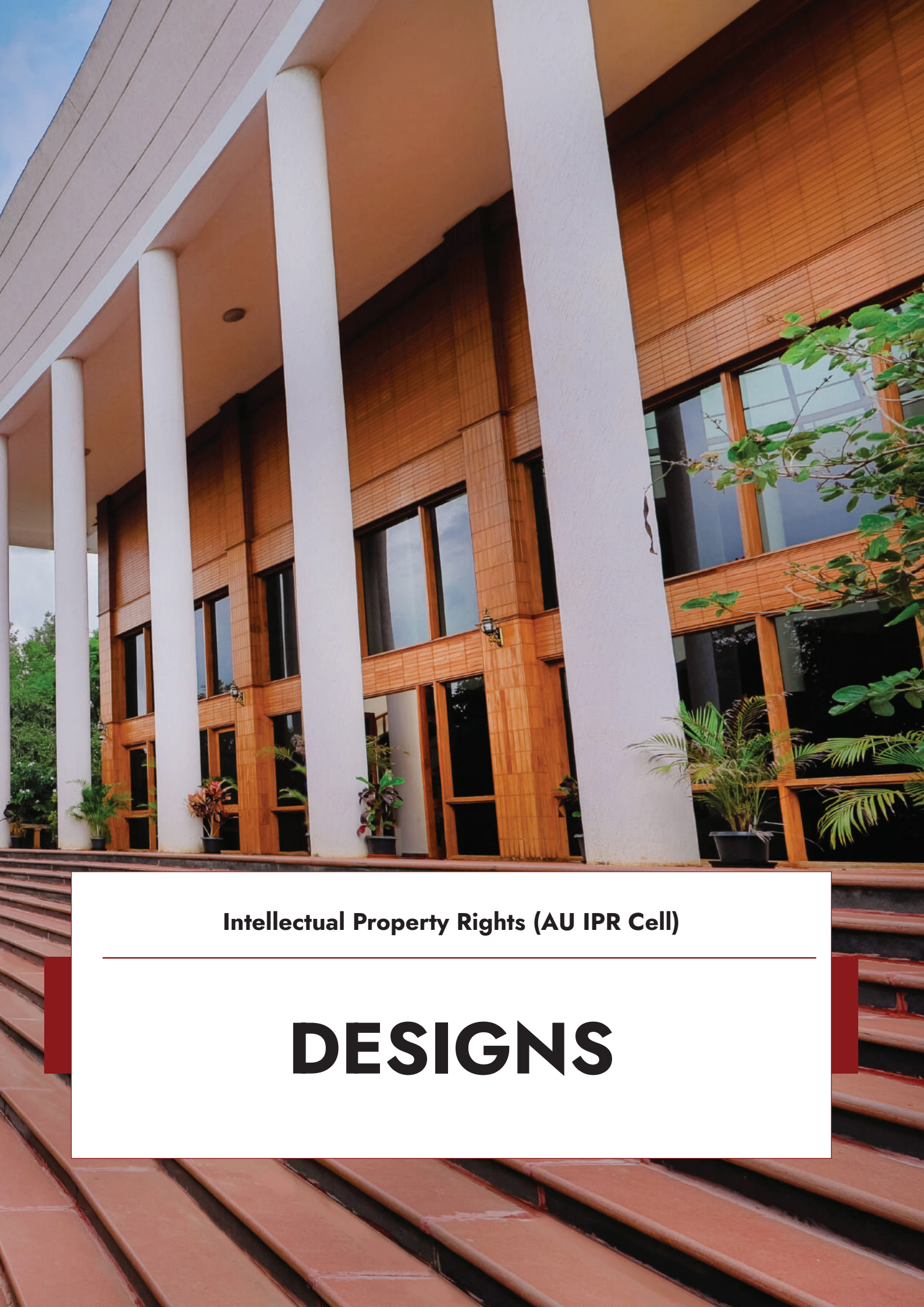
Title of the invention **SMART MIST FAN WITH INTEGRATED MULTI-FUNCTIONAL AUTOMATION SYSTEM**

Harinath Aireddy
Associate Professor & Director (In Charge) - Centre of Excellence (Additive Manufacturing), Director - Centre of Excellence (Maker Space) Alliance School of Applied Engineering

Name of Inventor: **Harinath Aireddy,** Sudhir R, Marriwada Harshavardhan, Nanditha D N, Joel Jaimon, Namitha Papishetty, Sheshadri K, and Gurramkonda Venkata Sai

Abstract

The invention relates to a smart mist fan comprising a 28W brushless DC motor (3) operating at 24V DC with fan blade (1), safety grill (2), integrated with comprehensive sensor automation including PIR motion sensor (10) providing 5-7 meter detection range, DHT11 temperature, humidity sensor (11) monitoring 0-50°C and 20-90% RH, MEMS odor sensor (12) detecting 1-1000 ppm volatile organic compounds. The system incorporates a 19W mist maker with 1.5-liter PLA water tank (13) producing 350 mL/hour output through 10 configured outlets (20), coordinated with ESP32 microcontroller providing dual-core processing, 4MB flash memory, and Wi-Fi/Bluetooth connectivity. Additional functionalities include integrated mosquito repellent system (5) with 5W heating element and automated air freshener (14) with 100mL capacity triggered by odor detection. The 4.1-feet tall system achieves 5-6°C temperature reduction over 10-15 square meters with 120-150W operation and 0.5-1W standby power, enabling IoT connectivity for mobile application control and cloud platform integration for residential and commercial applications.



Intellectual Property Rights (AU IPR Cell)

DESIGNS

Design No: **459670-001**

Title of the Design:

AI BASED ROAD ACCIDENT PREDICTION DEVICE

Name of Applicant:

A. Ezil Sam Leni, Prabhu G, Skanda M G, Pooja Gupta, M. Ramya, Ram Subbiah, Tarunika D Chaudhari, and Ashok Koujalagi

A. Ezil Sam Leni
Professor
Alliance School of Advanced Computing

Description

The AI Based Road Accident Prediction Device is designed as a vertical standalone unit consisting of a cylindrical orange housing mounted on a stable square base. The device integrates a sensor module with a protective rectangular casing that accommodates a camera, antenna, and electronic components. Multiple external connectors and indicator ports are provided for efficient data input and communication. The elevated cylindrical body ensures clear line-of-sight for monitoring, while the attached antenna enables wireless connectivity with vehicles and control centers. Compact, durable, and modular in structure, the design facilitates real-time accident prediction by combining visual sensing, data processing, and AI-based communication in a roadside installation format.

Design No: **435840-001**

Title of the Design:

AUTOMATED MEDICINE DISPENSING MACHINE

Name of Applicant:

Alliance University, Bengaluru, **Anirban Chowdhury**

Anirban Chowdhury
Professor
Alliance School of Design

Description

The Automated Medicine Dispensing Machine features a sleek, upright rectangular structure with a stable base for standalone installation. The design incorporates multiple display panels on the front surface, including a primary large screen for user interface and a smaller upper screen for notifications or identification. A dispensing slot is positioned at a convenient height for medicine retrieval, while integrated side sensors and camera modules support authentication and monitoring. The compact, modern, and ergonomic form ensures user-friendly operation, enabling automated medicine distribution with accuracy and efficiency. Its modular arrangement makes it suitable for hospitals, pharmacies, and public health facilities, ensuring secure and reliable access to prescribed medications.

Design No: **458810-001**

Title of the Design:

IOT REAL-TIME LITERARY TREND ANALYSIS DEVICE

Name of Applicant:

Rakesh Kumar Yadav, Manoj Kumar Malik, Girish M Desai, **Upankar Chutia, Gyanashree Dutta,** Lalit Jyani, and Nidhi Sharma

Upankar Chutia
Assistant Professor
Alliance School of Law

Gyanashree Dutta
Assistant Professor
Alliance School of Law

Description

The IoT Real-Time Literary Trend Analysis Device is designed in a compact octagonal form with a flat illuminated display surface, housed within a sleek metallic frame. The device features a smooth top interface for interactive visual outputs, while integrated side vents and control ports support connectivity and cooling. A front-mounted indicator module provides status updates, and built-in IoT capabilities enable continuous data exchange with cloud platforms and analytical systems. Portable yet robust, the design facilitates real-time monitoring, processing, and visualization of literary trends, offering researchers, publishers, and readers a modern tool to track dynamic shifts in literature consumption and analysis with efficiency and precision.

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