ALLIANCE UNIVERSITY
CENTRE for RESEARCH

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

ALLIANCE RESEARCH CHRONICLES

JANUARY 2025
Volume 1

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TABLE OF CONTENT


EXIT

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 Centre 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.

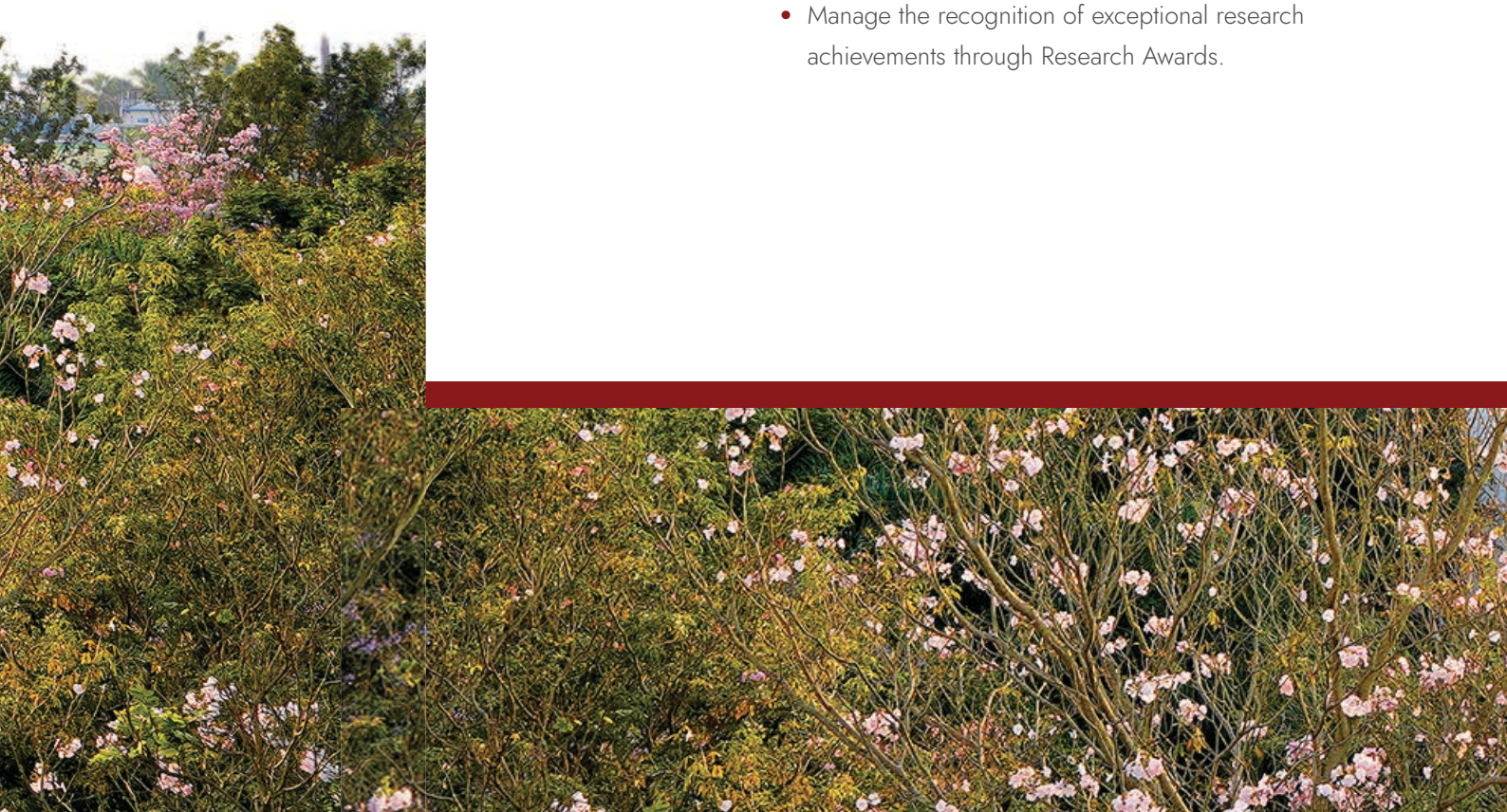
ABOUT CENTRE *for* RESEARCH (Contd.)

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.

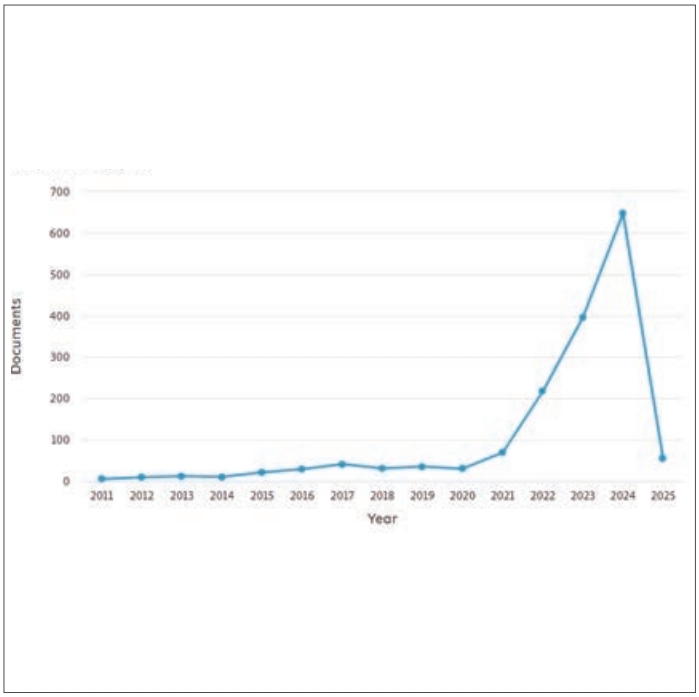
OBJECTIVES

- 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.

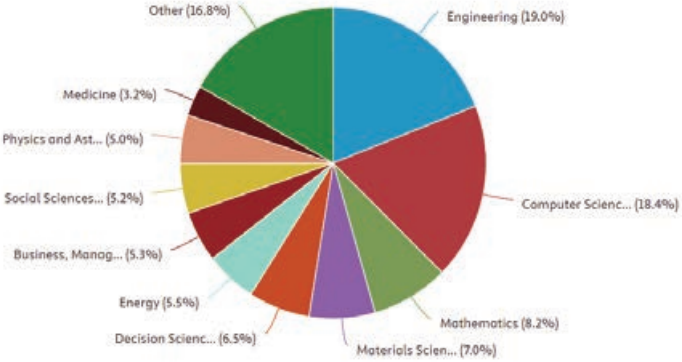


1,612	514
Documents	Authors

Documents by Year



Documents by Subject Area

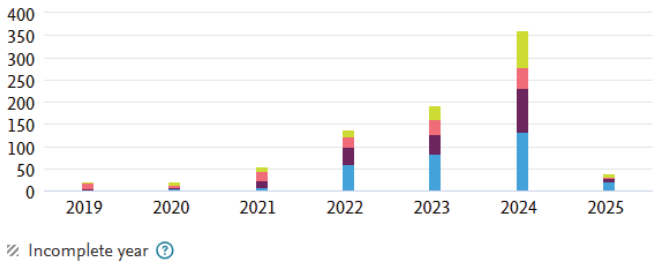


Summary

1419	571	5566	3.9	1.91	19
Scholarly Output	Authors	Citation Count	Citations per Publication	Field-Weighted Citation Impact	h-5 index

19.9%
All Open Access

Publication by Journal Quartile



Quartiles	Publications	Publication share (%)
Q1 (top 25%)	312	37.7
Q2 (26% - 50%)	208	25.2
Q3 (51% - 75%)	146	17.7
Q4 (76% - 100%)	161	19.5

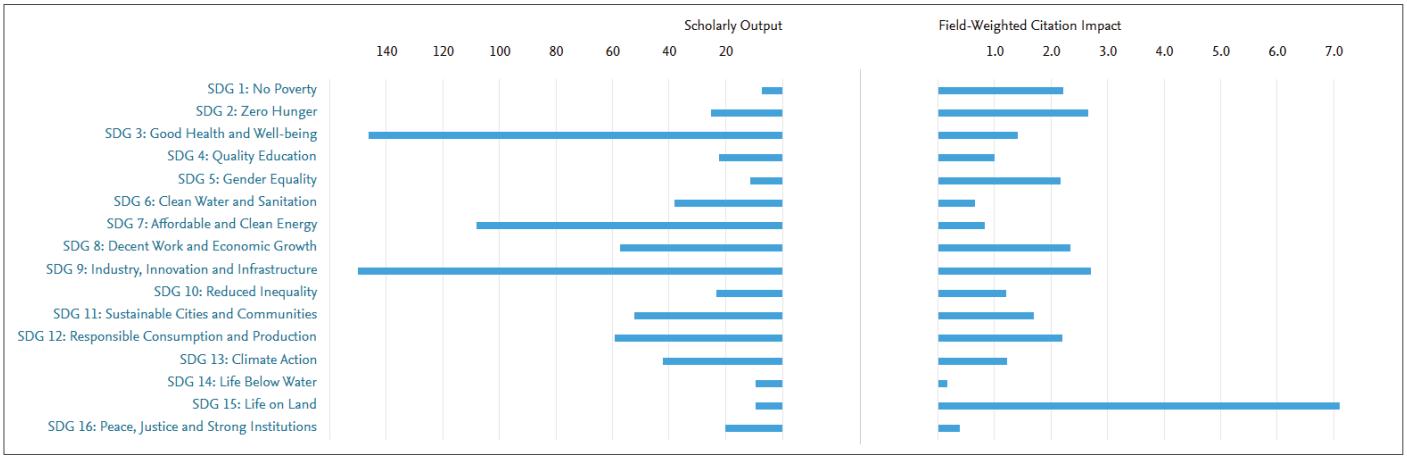
Cumulative shares	Publications	Publication share (%)
Q1 to Q2 (top 50%)	520	62.9
Q1 to Q3 (top 75%)	666	80.5

Geographical Collaboration Overall

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

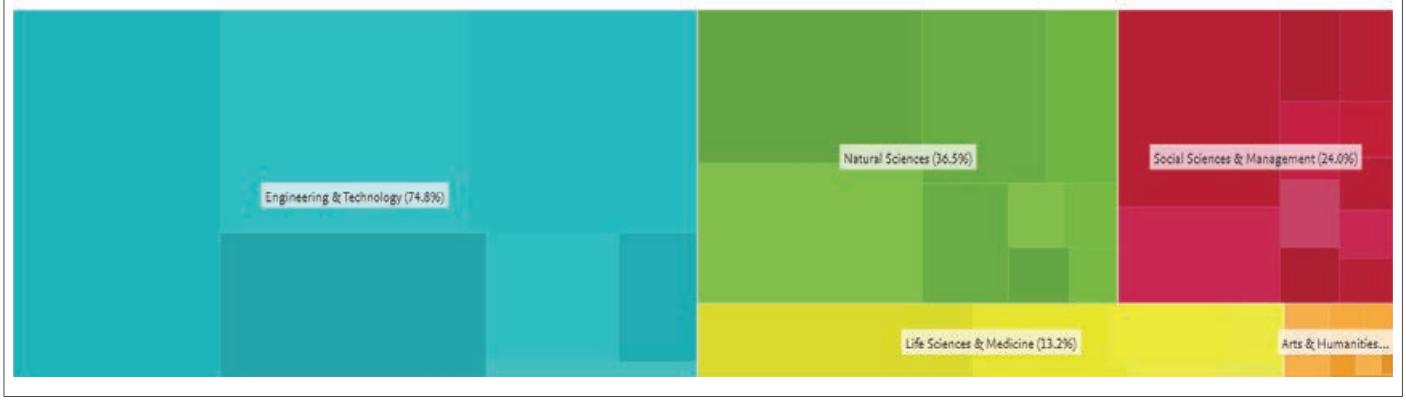
Metric		Scholarly Output	Citations	Citations per Publication	Field-Weighted Citation Impact
International collaboration	33.6%	477	3,147	6.6	2.14
Only national collaboration	47.5%	674	2,118	3.1	2.27
Only institutional collaboration	12.2%	173	202	1.2	0.69
Single authorship (no collaboration)	6.7%	95	99	1.0	0.47

Publication by SDG



Subject Areas

Segment size represents relative publication share per Subject Area. Note that a publication can be mapped to multiple Subject Areas. Learn more




NON SOLUS
Scopus
JOURNALS

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q2	**54th**	**NA**	07 AFFORDABLE AND CLEAN ENERGY

BOUNDS ON SOMBOR INDEX OF GRAPH OPERATIONS

Sarkar I.; Nanjappa M.; Cangul I.N.

Discrete Mathematics, Algorithms and Applications 2025 Article number 2550008

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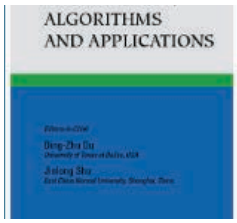
Assistant Professor
Alliance School of Sciences



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Supports Open Access

Abstract

Operations in graph theory have a significant influence in the theoretical and application aspect of the domain. Topological indices serve as a crucial component in chemical graph theory linked with some molecular structure. Recently, Gutman initiated the study on the Sombor index. In this paper, the computation of some bounds for Sombor index of graph operation notably join, cartesian product, corona product, lexicographic product, tensor product and strong product is carried out. The computation has been utilized to determine the upper bounds of the index for the specified graph operations for some standard graphs like the path and cycle graphs.

Author keywords- first general Zagreb index; general sum-connectivity index; graph operations; Sombor index

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	88th	9.0	07 AFFORDABLE AND CLEAN ENERGY; 13 CLIMATE ACTION

CONTEMPORARY PROGRESS ON MULTIFARIOUS COORDINATION POLYMERS FOR ORGANOCATALYTIC, SENSING, AND ENERGY-MIMETIC APPLICATIONS

Phukan S.J.; Goswami S.; Sah N.K.; Gupta P.K.; Rai A.; Ghatak T.; **Pathak C.**; Roy M.; Pai R.K.; Mishra L.; Garai S.

Materials Today Energy Volume 46 December 2024 Article number 101703

Dr. Chandni Pathak
Assistant Professor & Senior Associate - DoSS
Alliance School of Sciences

Abstract

Coordination polymers and their subgroup metal–organic frameworks are renowned as the esteemed categories of materials with multifarious properties and possess extensive advantageous applications in the domain of sensing and energy-mimetic applications on account of their expanded surface area, higher charge transfer ability, tunable porous framework, and flexible functionality. This review ruminates on a comprehensive analysis of contemporary outcomes regarding optimized synthetic protocols and structural modulations for various classes of coordination polymers, highlighting their deliberate implications as photoluminescent sensor materials and as energy-mimetic and organoconversion catalysts, along with outlining the significant applicative shortcomings. The additional coordination polymer–assisted exclusive applications have also been discussed, such as the development of ratiometric fluorescent-based probes for specific biological sensing, metal–organic complexes for efficient energy catalysis, and incorporation of bio-inspired photoactive linkers for maximum light harvesting, where the premeditatedly executed frameworks demonstrated augmented results in specialized scientific fields. Finally, a brief overview has been addressed on the effectually applied strategies for assessing electronic mobility, product scalability, and light stability–derived challenges in practical implementations, alongside reviewing the green approaches that expedite sustainable and industrially scalable synthetic pathways consisting potentialities for large-scale outcomes.

Author keywords- CO_2 reduction reaction; Hydrogen evolution reaction; Luminescence sensing; Organocatalysis; Synthesis protocols of cordination polymers

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q3	**37th**	**2.01**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

MACHINE CLASSIFICATION AND RECOMMENDATION SYSTEM FROM SPOTIFY

Bahadure N.B.; Vishwakarma M.; Kurhekar M.P.; **Patni J.C.**; Patil P.D.

International Journal of Computer Information Systems and Industrial Management Applications Volume 17, Pages 143 - 1546 January 2025

Dr. Jagdish Chandra Patni
Professor
Alliance School of Advanced Computing

Abstract

Music holds significant importance in our daily lives, serving as an earnest element. Amidst the vast expanse of available information, our objective lies in sieving through data to present users with relevant music or song content aligning with their interests and objectives. To improve music recommendation accuracy and real-time recommendation ability, we propose a hybrid music recommendation model based on a Popularity-based Song Recommender System, a Personalized Song Recommender System, and a Content-based Music Recommendation System. Our endeavor focuses on constructing a music recommendation system, which operates as a filtering mechanism predicting user preferences in music based on their inclinations. This approach employs content filtering techniques leveraging data characteristics to refine recommendations. Our model, tailored to accommodate diverse instances and datasets, demonstrates robust performance. The devised song recommendation system exhibits notable efficacy and sustained reliability. Encouraging outcomes, boasting an accuracy of 90.4%, furnish novel insights, laying the groundwork for future exploration in song recommendation systems.

Author keywords- content-based recommendation; elbow method; generative ai; K-NN; machine learning; personalized-based recommendation; popularity-based recommendation

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	82th	3.4	

A REVIEW OF RECENT ADVANCEMENTS IN THE IMPACT RESPONSE OF FIBER METAL LAMINATES

Muniyan V.; Vijay Kumar V.; **Suyambulingam I.**; Priyadharshini S.; Divakaran D.; Rangappa S.M.; Siengchin S.

Heliyon Volume 11, Issue 2 30 January 2025 Article number e41756

Dr. Indran Suyambulingam
Professor
Alliance School of Applied Engineering

Heliyon
Open access
3.4
Impact Factor

Abstract

Fiber metal laminates (FMLs) have garnered significant attention due to their exceptional impact resistance, making them attractive for various structural applications. This review presents recent advancements in understanding the impact behavior of FMLs under low- and high-velocity impact scenarios. Low-velocity impacts, commonly encountered during manufacturing, handling, and tool drops, are discussed, with a focus on damage mechanisms, energy absorption capabilities, and influential factors such as impactor geometry and boundary conditions. Additionally, this review delves into high-velocity impact events, simulating scenarios such as ballistic impacts, highlighting the role of FMLs in mitigating perforation and enhancing damage tolerance. The effects of various parameters on the impact response are critically analyzed. The findings presented herein contribute to the development of lightweight, impact-resistant FML components for aerospace, automotive, and defence applications.

Author keywords- Composites; Fiber metal laminates (FMLs); High-velocity impact (HVI); Impact response; Low-velocity impact (LVI)

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q2	**53rd**	**1.5**	07 AFFORDABLE AND CLEAN ENERGY

COMPREHENSIVE GLASS/BANANA FIBER CHARACTERIZATION WITH ZIRCONIUM CARBIDE FILLER-REINFORCED HYBRID COMPOSITES FOR LIGHTWEIGHT STRUCTURAL APPLICATIONS

Muniyan V.; Suganya Priyadharshini G.; Thiagarajan V.; Palanisamy S.; **Suyambulingam I.**

Engineering Research Express Volume 6, Issue 4 December 2024 Article number 045524

Dr. Indran Suyambulingam
Professor
Alliance School of Applied Engineering

Comprehensive glass/banana fiber characterization with zirconium carbide filler-reinforced hybrid composites for lightweight structural applications

Vijayan Muniyan, Ganesan Suganya Priyadharshini, Velmurugan Thiagarajan, Senthamaraikannan Palanisamy and Indran Suyambulingam

Abstract

The enhancement of the properties of fiber-based polymer composites is generally possible by the hybridization of fibers. Using synthetic and natural fibers in the composites will enhance the applications, and the problem of voids is solved by using fillers. Mixing banana fiber with glass fibers creates a lightweight yet robust material for architectural elements such as panels and insulation. The current investigation encompassed the production of a glass/banana hybrid composite by integrating a Zirconium carbide (ZrC) filler via compression molding methodologies. The filler proportion varied at five levels: 0 wt%, 0.5 wt%, 1 wt%, 1.5 wt% and 2 wt%, within an epoxy resin matrix. The composite materials underwent mechanical, water absorption, and vibration analysis. Furthermore, the fractured surface was examined using a field emission scanning electron microscope (FESEM) better to understand the interactions between the fibers and the matrix. The initial findings indicated that the incorporation of Banana and glass fibers in composite materials has the potential to achieve an optimal balance between strength and versatility. The key findings include a considerable increase in tensile, flexural, and impact strengths with 1.5 wt% ZrC filler, with improvements of up to 34.5% in impact strength and 44.7% in compressive strength over the unfilled composite.

Author keywords- compression molding; glass fiber; mechanical testing; natural fiber; polymer composite

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	**87th**	**3.4**	12 RESPONSIBLE CONSUMPTION AND PRODUCTION

A REVIEW OF RECENT ADVANCEMENTS IN THE IMPACT RESPONSE OF FIBER METAL LAMINATES

John W.; **Charag A.H.**; Bashir I.

Young Consumers 2025

Dr. Asif Hamid Charag
Assistant Professor
Alliance School of Business

Indian Millennials' continued usage intentions toward online dating apps: the interplay between trust and perceived autonomy

Waseem John, Asif Hamid Charag, Irfan Bashir

Abstract

Purpose: This study aims to empirically examine the role of privacy, security, trust and autonomy in Millennials' continued use of online dating applications. Emerging markets have been famous for their rapid modernization, growth and cultural shifts. Yet, consumer worries about online dating consumption need to be addressed in the literature through a better understanding of their behavioural intentions. This study examines the interplay of the underlying variables by testing a conceptual framework grounded on the theory of reasoned action (TRA), the self-determination theory (SDT) and the information systems continuance theory (ISCT) with regard to an emerging market. Design/methodology/approach: A cross-sectional and quantitative research design is adopted. Using a well-designed structured questionnaire adapted from established scales, data was collected through a survey featuring 332 substantive responses from actively involved Millennial users of online dating apps in India. The data was analysed using confirmatory factor analysis (CFA) and structural equation modelling (SEM) through IBM SPSS AMOS (Analysis of Moment Structures) 24.0 to provide evidence of the reliability and validity of constructs alongside testing the hypothesis in the proposed model. Furthermore, Preacher and Hayes' (2004) approach is used to explore mediation effects. Findings: The results show that autonomy and trust positively affect the continued use of online dating apps. The study further reveals that autonomous behaviour motivates Millennials to use online dating apps, overriding their concerns for privacy and security. Furthermore, the results indicate that trust fully mediates the relationship between concern for privacy, perceived security and continued usage intention. Therefore, trust affects users' intentions to continue using online dating apps as it bridges the effect of users' concern for privacy and the perceived security in the online dating platform, making these dimensions relevant as a whole. Research limitations/implications: This study provides critical insights into the theory and practice. The findings demonstrate that autonomy is more significant in motivating Millennials to use online dating apps than concerns about privacy and perceptions of security. In addition, trust plays a crucial role in mediating the relationship between these variables.

Author keywords- Concern for privacy; Information systems continuance theory; Millennial consumers; Online dating apps; Perceived autonomy; Perceived security; Self-determination theory; Theory of reasoned action; Trust

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q2	**79th**	**1.8**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

MEASURING ALTMETRIC EVENTS: THE NEED FOR LONGER OBSERVATION PERIOD AND ARTICLE LEVEL COMPUTATIONS

Karmakar M.; Singh V.K.; **Banshal S.K.**

Global Knowledge, Memory and Communication Volume 74, Issue 1-2, Pages 297 - 309 13 January 2025

Dr. Sumit Kumar Banshal
Assistant Professor & Central Blended Learning Coordinator
Alliance School of Advanced Computing

Measuring altmetric events: the need for longer observation period and article level computations

Mousumi Karmakar, Vivek Kumar Singh, Sumit Kumar Banshal

Abstract

Purpose: This paper aims to explore the impact of the data observation period on the computation of altmetric measures like velocity index (VI) and half-life. Furthermore, it also attempts to determine whether article-level computations are better than computations on the whole of the data for computing such measures. Design/methodology/approach: The complete publication records for the year 2016 indexed in Web of Science and their altmetric data (original tweets) obtained from PlumX are obtained and analysed. The creation date of articles is taken from Crossref. Two time-dependent variables, namely, half-life and VI are computed. The altmetric measures are computed for all articles at different observation points, and by using whole group as well as article-level averaging. Findings: The results show that use of longer observation period significantly changes the values of different altmetric measures computed. Furthermore, use of article-level delineation is advocated for computing different measures for a more accurate representation of the true values for the article distribution. Research limitations/implications: The analytical results show that using different observation periods change the measured values of the time-related altmetric measures. It is suggested that longer observation period should be used for appropriate measurement of altmetric measures. Furthermore, the use of article-level delineation for computing the measures is advocated as a more accurate method to capture the true values of such measures. Practical implications: The research work suggests that altmetric mentions accrue for a longer period than the commonly believed short life span and therefore the altmetric measurements should not be limited to observation of early accrued data only. Social implications: The present study indicates that use of altmetric measures for research evaluation or other purposes should be based on data for a longer observation period and article-level delineation may be preferred. It contradicts the common belief that tweet accumulation about scholarly articles decay quickly. Originality/value: Several studies have shown that altmetric data correlate well with citations and hence early altmetric counts can be used to predict future citations. Inspired by these findings, majority of such monitoring and measuring exercises have focused mainly on capturing immediate altmetric event data for articles just after the publication of the paper. This paper demonstrates the impact of the observation period and article-level aggregation on such computations and suggests to use a longer observation period and article-level delineation. To the best of the authors' knowledge, this is the first such study of its kind and presents novel findings. © 2023, Emerald Publishing Limited.

Author keywords- Altmetric half-life; Altmetric velocity; Altmetrics; Scientometrics; Social media metrics

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	97th	8.5	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

LIGNOCELLULOSIC FIBER-REINFORCED STARCH THERMOPLASTIC COMPOSITES FOR FOOD PACKAGING APPLICATION: A REVIEW OF PROPERTIES AND FOOD PACKAGING ABETTED WITH SAFETY ASPECTS

Nazrin A.; Ilyas R.A.; **Rajeshkumar L.**; Hazrati K.Z.; Jamal T.; Mahardika M.; Aisyah H.A.; Atiqah A.; Radzi A.M.

Food Packaging and Shelf Life Volume 47 January 2025 Article number 101431

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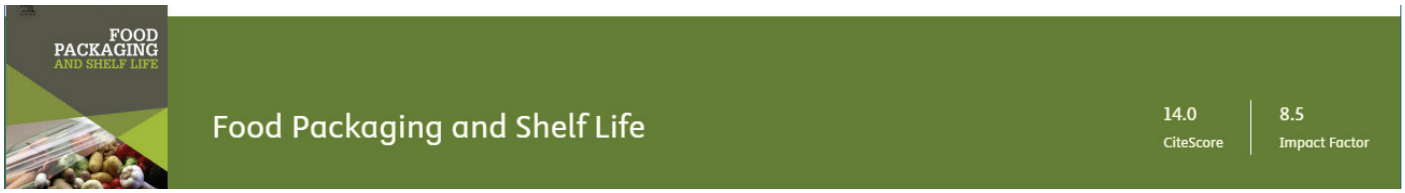

Abstract

Starch-based materials exhibit significant promise as environmentally friendly food packaging alternatives, with the inherent advantage of being biodegradable. This bioderived polymer stands out as a fascinating alternative owing to its remarkably low cost, positioning itself as a promising substitute for non-renewable polymers. The interaction between the fiber and matrix is crucial in shaping the properties of bioplastics. Recognizing the constraints of using starch as the sole polymer matrix for food packaging, attention has shifted towards incorporating lignocellulosic fibers in bioplastics. The fabrication of lignocellulosic fiber-reinforced starch-based bioplastics has yielded varying degrees of success, highlighting ongoing efforts to optimize these materials. The incorporation of lignocellulosic fibers confirms there is improvement in various properties of bioplastic. In this review, the characterization and extraction of lignocellulosic fibers are covered. Then, we generalize the developments and properties of starch-based biopolymers. As for starch-based films reinforced with lignocellulosic fibers, we place importance on the thermal, barrier and biodegradation properties of bioplastics and their compatibility with the lignocellulosic fiber–matrix. The utilization of lignocellulosic fibers containing starch in bioplastics is examined. The safety of starch composite-based packaging in bioplastics is also explained.

Author keywords- Barrier properties; Food packaging; Natural fiber; Starch biocomposite films; Thermal; Toxicity

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	**82nd**	**3.4**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

THE EFFECT OF SiC AND Y2O3 INCLUSION ON MICROSTRUCTURE AND MECHANICAL PROPERTIES OF Al 5052 COMPOSITE FABRICATED THROUGH FRICTION STIR PROCESS

Natarajan P.; Sekar T.; **Chenrayan V.; Rajeshkumar L.**

Heliyon Volume 11, Issue 115 January 2025 Article number e41665

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Abstract

A consistent research attempt to develop newer lightweight-high strength materials facilitates the automobile sector to excel in product efficiency. The present research is another endeavour to anchor the automobile industries by exploring novel composite. The different earth elements SiC and Y2O3 are utilised for the hybrid reinforcement of Al 5052 alloy in four different weight proportions. Friction Stir Processing (FSP) is employed to fabricate composites. The microstructure analysis conducted through the optical microscope reveals the formation of fine grain size at the nugget zone. The effect of dynamic recrystallization and particulate strengthening is reflected in the inflated tensile strength of Al-3SiC-1Yo. The microhardness test results manifest the higher hardness at the nugget zone and descending to the Heat Affected Zone (HAZ) through the Thermo Mechanically affected zone (TMAZ). The post-tensile fracture morphological observation through Scanning Electron Microscopy (SEM) explores the particulate strengthening mechanisms offered by the piled-up dislocation densities. The hybrid hard particle inclusion in the matrix helps to achieve 63.87 %, 50 % and 35 % improvement in tensile strength, hardness and impact toughness of SiC and Y2O3 reinforced FSPed Al alloy. Further, a higher level of inclusion of Y2O3 beyond 0.5 % is found to dent the properties due to the agglomeration effect of Y2O3 particles.

Author keywords- Friction Stir Processing; Grain refinement; Nugget zone; Silicon carbide (SiC); Yttrium oxide (Y_2O_3)

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	89th	3.4	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

FASNet: FEDERATED ADVERSARIAL SIAMESE NETWORKS FOR ROBUST MALWARE IMAGE CLASSIFICATION

Ambekar N.G.; **Samal S.**; Devi N.N.; Thokchom S.

Journal of Parallel and Distributed Computing Volume 198April 2025 Article number 105039

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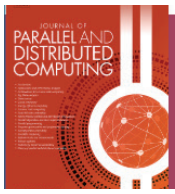

Journal of Parallel and Distributed Computing
Supports open access
10.3 CiteScore
3.4 Impact Factor

Abstract

Malware detection faces considerable challenges due to the ever evolving and complex nature of cyber threats. Various deep learning models have demonstrated effectiveness in identifying malware within organizations. However, developing a reliable distributed malware detection model using diverse data from multiple sources faces significant challenges, which are worsened by privacy concerns, including data distribution issues and the absence of balanced datasets. This requires advanced data privacy techniques. To address this, the proposed FASNet approach makes the following key contributions: This study introduces FASNet, a novel privacy-centric distributed malware detection model designed to enhance detection accuracy and robustness. FASNet employs state-of-the-art Siamese networks as feature extractors and incorporates two significant advancements: federated learning and adversarial training. Federated learning, implemented with a client size of three, ensures that model training is conducted on individual devices, eliminating the need for centralized data collection and addressing data privacy concerns. This design also prevents data dilution and communication overhead while maintaining effective training on each device. Additionally, adversarial training utilizing the Fast Gradient Sign Method (FGSM) generates adversarial images to strengthen the model's resilience. By training on both original and adversarial malware images, FASNet improves its ability to accurately classify malware images that have been intentionally perturbed to mislead the system. Experimental results on the Blended dataset demonstrate the efficacy of the proposed FASNet approach, achieving notable performance with a testing accuracy of 0.9510, precision of 0.9417, recall of 0.9510, f1 score of 0.9384, Matthews Correlation Coefficient (MCC) of 0.9464, Jaccard Index (JI) of 0.9271 and Fowlkes-Mallows Index (FMI) of 0.9725. These experimental findings show that the proposed FASNet method effectively tackles two main challenges: privacy-centric malware detection and an imbalanced dataset.

Author keywords- Adversarial training; Data privacy; Federated learning; Malware images; Siamese networks

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	**86th**	**4.9**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

CARBON-BASED TWO-DIMENSIONAL MATERIALS (CB-2DMs): AN EMERGING SENSING TECHNOLOGY FOR FLUORIDE DETECTION

Yadav A.; **Talreja N.**; Chauhan D.; Khan S.; Ashfaq M.

Microchemical Journal Volume 209February 2025 Article number 112712

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Abstract

Fluoride (F–) ions contamination has significantly increased globally in environments that affect human health. Excessive exposure to the F– ions in the environmental bodies might cause various diseases, including thyroid inflammation, kidney disorder, and dental and skeleton fluorosis. Therefore, the detection of F- ions is of utmost importance in managing their adverse effects. Early detection of F– ions is essential to mitigate its adverse effects. Researchers have made significant efforts to develop newer materials that have high selectivity and sensitivity towards F– ions. Two-dimensional materials (2DMs), especially carbon based-2DMs (CB-2DMs) like graphene, graphene oxide (GO), graphitic carbon nitride (g-C3N4), and MXene, have unique characteristics such as high surface area, high electron mobilities, exceptional catalytic activity, high mechanical, electrical, and thermal stability, which makes them highly sensitive sensor, thereby easily detect F– ions from environments by the colorimetric, fluorescent, and electrochemical-based sensor. In this mini-review, we focused on the CB-2DMs-based sensing technologies for detecting F– ions. Moreover, we discussed how incorporating metals/polymers/surface functional groups will improve the sensing ability. We also discussed the sensing mechanisms of the F– ions using CB-2DMs. Lastly, we discussed the challenges and future possibilities towards the development of the F– ions sensor.

Author keywords- Environments; Fluoride; Graphene; Sensor; Two-dimensional materials (2DMs)

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	85th	5.1	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Sr^{2+} DOPING-INDUCED CHANGES IN STRUCTURAL, MAGNETIC, AND DIELECTRIC PROPERTIES OF FERRIMAGNETIC YTTRIUM IRON GARNET

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Ceramics International 2025

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Abstract

This study analyses the impact of Strontium (Sr) doping on the structural and physical properties of Yttrium Iron Garnet Y3Fe5O12 (YIG). The polycrystalline Y3-xSrxFe5O12 (x = 0.00, 0.05, and 0.10) specimens were synthesised via the solid-state reaction technique. X-ray diffraction with Rietveld refinement indicated that the compound crystallises in the cubic phase with an Ia3d space group. The doping has caused an increase in lattice volume due to lattice expansion. The FTIR and Raman spectra supported the monophase composition and indicated a linear trend of lattice expansion upon doping. XPS spectrum investigation confirmed the existence of multivalent states of Fe, which convert equivalently into the Fe4+ state upon doping. The magnetic hysteresis revealed its soft ferrimagnetic characteristics. The augmentation of double-exchange interaction from hole doping has led to a substantial rise in saturation magnetisation, reaching a peak value of 27.05 emu/g at a concentration of x = 0.1, so rendering it a feasible choice for the magnetic cores of electromagnets. The ferroelectric hysteresis loop demonstrated the resistive characteristics of YIG, marked by a decrease in polarisation due to the suppression of Fe2+ states. The dielectric investigation revealed the relaxation characteristics of YIG. Divalent doping has also resulted in a decrease in both the dielectric constant and the loss factor. This study will introduce an effective technique for producing high-performance YIG ferrite that meets the requirements of miniaturisation and integration.

Author keywords- Dielectric; Ferroelectric; Magnetisation; Mossbauer; XPS; YIG

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	92nd	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

AN EXPERIMENTAL AND MODELLING APPROACH TO PROCLAIM SUSTAINABLE MACHINING USING AVOCADO OIL-BASED NANO-CUTTING FLUIDS

Anebo A.A.; **Chenrayan V.**; Shahapurkar K.; Gebremaryam G.; Petrů J.; Soudagar M.E.M.; Bhaviripudi V.R.; Rajagopal R.; Bashir M.N.

Scientific report Open Access Volume 15, Issue 1, Pages 1598 10 January 2025

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Article | Open access | Published: 10 January 2025

An experimental and modelling approach to proclaim sustainable machining using avocado oil-based nano-cutting fluids

Abera Ayza Anebo, Venkatesh Chenrayan ✉, Kiran Shahapurkar, Gezahgn Gebremaryam, Jana Petrů ✉, Manzoore Elahi M. Soudagar ✉, Vijayabhaskara Rao Bhaviripudi, Rajakrishnan Rajagopal & Muhammad Nasir Bashir

Abstract

Higher-end science and technology facilitate the human community with a sophisticated life despite it curses by abundant pollution. The alarming demand for sustainability pressurizes the manufacturing sector to ensure sustainable manufacturing. Since Molybdenum di sulfide (MoS2) and avocado oil are known solid and liquid lubricants respectively, hence, it is a worthwhile attempt to implement the bio-based degradable avocado oil enriched with nano Molybdenum di sulfide (nMoS2) particles as a potential machining fluid for CNC-end milling. Different proportions of avocado oil and nMoS2 were used to synthesise four distinct machining fluids to assess the individual impact of avocado oil and nMoS2 particles. Emulsification and sonication were employed to synthesise the fluids. A hybrid Grey Relational Analysis (GRA) coupled with Principal Component Analysis (PCA) was followed to scrutiny the effect of novel machining fluid on machining objectives. The experimental results of physio-chemical properties revealed that avocado-rich 0.5% nMoS2 excels among others. The L16 orthogonal array experiments associated with statistical analysis explored the developed machining fluid (A6W4/0.5) that significantly impacts the machining objectives. The experimental results manifest that nearly 64.87% of surface roughness and 93.3% of tool wear have been reduced during machining in the presence of A6W4/0.5 fluid than A4W6/0.75. The improved performance of the novel machining fluid upholds its potential to replace conventional fluids and ensure green manufacturing.

Author keywords- Avocado; Bio-degradable; Machining fluid; Molybdenum di sulfide; Surface roughness; Sustainability; Tool wear

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	95th	3.8	16 PEACE, JUSTICE AND STRONG INSTITUTIONS

PERINATAL MENTAL HEALTH WITHIN THE CONTOURS OF THE INDIAN MTP ACT FRAMEWORK: FROM THE LENS OF THE INDIAN JUDICIARY

Behl R.

Asian Journal of Psychiatry Volume 104 February 2025 Article number 104355

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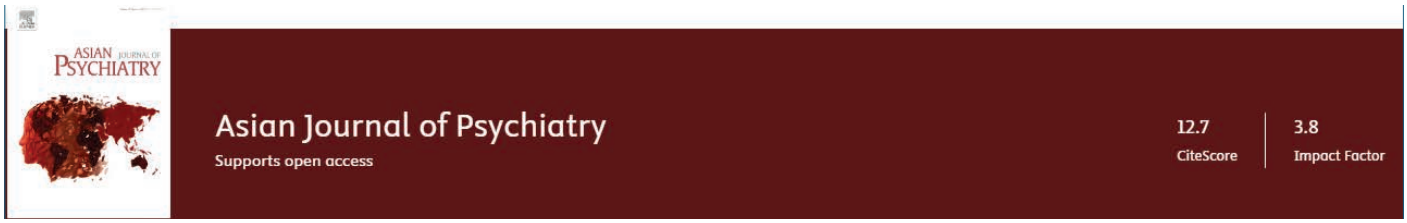

Abstract

The Indian Supreme Court's (SC) eminent judgment in X v. The Principal Secretary, Health and Family Welfare Department, Government of NCT of Delhi & Another (2022) represents judicial activism and opened new pathways for maternal healthcare related to MTP while also emphasizing on mental health and well-being of women. The appellant, a 25-year-old, unemployed Delhi resident, was carrying a single uterine, 22-week pregnancy and intended to undergo MTP because 'her partner refused to marry her'.

Author keywords- India; Judiciary; Laws; Medical termination of pregnancy; Mental Health

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q2	**56th**	**2.4**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

THE COEXISTENCE OF ELECTROSTRICTIVE AND MAGNETOSTRICTIVE PROPERTIES IN A POLYCRYSTALLINE ZnO FILM

Guchhait S.; **Aireddy H.**; Kander N.S.; Das A.K.

Current Applied Physics Volume 71, Pages 144 – 151 March 2025

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Abstract

A polycrystalline ZnO film is fabricated on a cantilevered substrate of silicon by pulsed laser deposition (PLD) technique and investigated the electrostrictive and magnetostrictive (in-plane and out-of-plane) properties by an indigenously developed optical cantilever beam magnetometer (CBM) setup. The film shows excellent electrostrictive as well as magnetostrictive response at room temperature (300 K) with high values of piezoelectric strain coefficient (|d| = 69.69 p.m./V), piezoelectric stress coefficient (|e| = 7.75 C/m2), saturation magnetostriction (s = 1286.15 ppm & 647.99 ppm), and strain sensitivity (d /dH = 12.63 × 10 −9 A−1m & 8.29 × 10 −9 A−1m) in in-plane and out-of-plane configuration, respectively. The emergence of significant electrostrictive and magnetostrictive responses makes the ZnO film well suited for use as a ferroelectric (FE) or as a ferromagnetic (FM) material in electric field-controlled multiferroic magnetoelectric composites (i.e., FM/FE heterostructure) applicable for the development of novel spintronic devices.

Author keywords- Cantilever beam magnetometer (CBM); Electrostriction; Magnetoelectric (ME); Magnetostriction; Multiferroic; Spintronics

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	82nd	6.0	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

EFFECT OF INFILL PATTERN ON MECHANICAL PROPERTIES OF 3D PRINTED PLA-ZN COMPOSITES FOR DRONE FRAME STRUCTURES: A TOPOLOGY OPTIMIZATION INTEGRATED APPLICATION STUDY

Arunkumar P.; Balaji D.; Radhika N.; **Rajeshkumar L.**; Mavinkere Rangappa S.; Siengchin S.

Results in Engineering Open Access Volume 25 March 2025 Article number 104107

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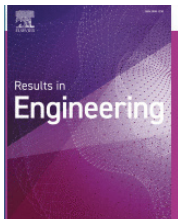

Results in Engineering
Open access
5.8 CiteScore
6.0 Impact Factor

Abstract

Material requirements and design optimization are two parallel verticals for the ever-growing material-based demands. The demand for enhanced properties of the materials can be satisfied by developing composite materials. The capability of additive manufacturing (AM) to handle complex geometries with ease has opened many avenues in topological optimization and lightweight structural design. In the current work, the drone frame has been modeled using Fusion 360 software and topological optimization was carried out to obtain a structural design with maximum load-carrying capacity with minimum material. Subsequently, PLA-Zn filament (with an 80:20 ratio) was used to develop composite specimens through the fused deposition modeling (FDM) 3D printing technique. The effect of various infill patterns on the 3D printed PLA-Zn specimens on the mechanical properties such as tensile, compressive, and impact strength and hardness were evaluated. All the tests were carried out as per ASTM standards. The results showed that the infill patterns such as octet and cubic exhibited higher mechanical properties with 0.56 kN tensile strength, 60.58 MPa compressive strength, 4.84 J/cm2 impact strength, and 80 shore D hardness. Subsequently, the drone frame was printed using the topologically optimized model with the infill pattern which exhibited maximum mechanical properties. The drone frame was also tested in real time for its mechanical strength. The topologically optimized 3D-printed drone frame with a cubic infill pattern can be used as a low-cost replacement for the currently used conventional frame.

Author keywords- Additive manufacturing; Applications; Infill pattern; Mechanical properties; PLA-Zn composites; Topology optimization

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	85th	2.5	07 AFFORDABLE AND CLEAN ENERGY; 09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

DATA-AGGREGATION-AWARE ENERGY-EFFICIENT IN WIRELESS SENSOR NETWORKS USING MULTI-STREAM GENERAL ADVERSARIAL NETWORK

Karunkuzhali D.; Pradeep S.; Sungheetha A.; Basha T.S.G.

RTransactions on Emerging Telecommunications Technologies Volume 36, Issue 2 February 2025 Article number e70017

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Data-Aggregation-Aware Energy-Efficient in Wireless Sensor Networks Using Multi-Stream General Adversarial Network

D. Karunkuzhali ✉, S. Pradeep, Akey Sungheetha, T. S. Ghouse Basha

Abstract

The lifetime of a wireless sensor network (WSN) can be impacted by the energy consumption of the routing protocol, because small sensor nodes are typically hard to recharge after deployment. Generally, data aggregation is employed to decrease the data redundancy and save energy at each node in a WSN. Traditional routing protocols frequently fall short of handling the complexities of data aggregation while getting energy efficient. In this paper, Optimized Multi-Stream General Adversarial Network espoused Data-Aggregation-Aware Energy-Efficient Routing Protocol for WSN (MSGAN-RPOA-DAA-EERP) is proposed. Here, Multi-Stream General Adversarial Network (MSGAN) is used for routing protocol. Then the Red Panda Optimization algorithm (RPOA) is proposed to optimize the MSGAN to increase the network lifetime of WSN. The proposed model is used to maximize the parameters such as data aggregation, communication energy and node residual energy. The proposed MSGAN-RPOA-DAA-EERP method attains 20.28%, 27.91% and 17.53% lower energy consumption when compared to the existing methods, like Energy-efficient cross-layer-basis opportunistic routing protocol and partially informed sparse autoencoder for data transfer in WSN (EECOP-PIAS-WSN), Improved buffalo optimized deep feed forward neural learning dependent multiple path routing for energy efficient data accumulation (IBO-DFFNL-EEDA), Effective communication in WSN utilizing optimized energy efficient engroove leach clustering protocol (EC-WSN-EEELCP) respectively.

Author keywords- multi-stream general adversarial network; red panda optimization algorithm; throughput

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	85th	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

AN ASSESSMENT OF COLLABORATIVE RESEARCH IN CORPORATE SUSTAINABILITY

Das M.; Dutta A.; Dutta G.

Social Sciences and Humanities Open Volume 11 January 2025 Article number 101288

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Social Sciences & Humanities Open
Open access
4.2
CiteScore

Abstract

Corporate sustainability has emerged as an important domain of study as business and academia are increasingly recognizing the inter-relationship among business activities, societal well-being, and environmental protection. As concerns about climate change, social equity, and ethical business practices have intensified, researchers across various disciplines have increasingly collaborated to explore and address these complex challenges. This paper presents a bibliometric analysis of scholarly publications on the topic of corporate sustainability to deliver a detailed analysis of the status of the topic starting from the year 1995 when the first climate conference happened in Berlin to this date. In the process, this paper explored 2504 published papers documented in Scopus and Web of Science. Results obtained from the analysis show an exponential growth of publications on the topic, particularly after 2010. The study identifies the key contributors in corporate sustainability research in terms of the most productive authors, institutions, journals, and countries and also highlights less researched sub-domains under it. This can provide insightful directions to future researchers in this field. Our findings also suggest that, though the number of publications increased manifold, cross-country research collaboration has remained minimal. There is a need for more case study-based research papers that bring out sustainability success stories from developed nations with relatively higher SDG (Sustainable Development Goal) scores to set benchmarks for the rest of the world.

Author keywords- Bibliometric coupling; Citation; Co-authorship; Corporate social responsibility; Corporate sustainability; Network analysis; Publication; Sustainable development

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	92nd	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

SVM DIRECTED MACHINE LEARNING CLASSIFIER FOR HUMAN ACTION RECOGNITION NETWORK

Lamani D.; Kumar P.; Bhagyalakshmi A.; Shanthi J.M.; Maguluri L.P.; **Arif M.**; Dhanamjayulu C.; K S.K.; Khan B.

Scientific Reports Volume 15, Issue 1 December 2025 Article number 672

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SVM directed machine learning classifier for human action recognition network

Dharmanna Lamani, Pramod Kumar, A Bhagyalakshmi, J. Maria Shanthi, Lakshmana Phaneendra Maguluri, Mohammad Arif, C Dhanamjayulu ✉, Sathish Kumar. K & Baseem Khan ✉

Understanding human behavior and human action recognition are both essential components of effective surveillance video analysis for the purpose of guaranteeing public safety. However, existing approaches such as three-dimensional convolutional neural networks (3D CNN) and two-stream neural networks (2SNN) have computational hurdles due to the significant parameterization they require. In this paper, we offer HARNet, a specialized lightweight residual 3D CNN that is built on directed acyclic graphs and was created expressly to handle these issues and achieve effective human action detection. The suggested method presents an innovative pipeline for creating spatial motion data from raw video inputs, which makes successful latent representation learning of human motions easier to accomplish. This generated input is then supplied into HARNet, which processes spatial and motion information in a single stream in an effective manner, maximizing the benefits of both types of cues. The use of traditional machine learning classifiers is done in order to further improve the discriminative capacity of the features that have been learned. To be more specific, we use the latent representations that are stored in HARNet's fully connected layer and use them as our deep learnt features. After that, these features are entered into the Support Vector Machine (SVM) classifier in order to accomplish action recognition. In order to evaluate the HARNet-SVM method that was developed, empirical tests were run on commonly used action recognition datasets such as UCF101, HMDB51, and the KTH dataset. These tests were carried out in order to gather data for the evaluation. The experimental results show that our method is superior to other state-of-the-art approaches, achieving considerable performance increases of 2.75% on UCF101, 10.94% on HMDB51, and 0.18% on the KTH dataset. These results were obtained by running the method on each dataset separately. Our findings demonstrate the usefulness of HARNet's lightweight design and highlight the significance of utilizing SVM classifiers with deep learnt features for the purpose of accurate and computationally efficient human activity recognition in surveillance videos. This work helps to the advancement of surveillance technology, which in turn makes video analysis in applications that take place in the real world safer and more dependable.

Author keywords- Directed acyclic graphs; Human action recognition network (HARNet); Spatial motion; Support vector machine (SVM); Three-dimensional convolutional neural networks (3D CNN)

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q3	37th	1.32	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

AN IMPROVED CYBER-ATTACK DETECTION AND CLASSIFICATION MODEL FOR THE INTERNET OF THINGS SYSTEMS USING FINE-TUNED DEEP LEARNING MODEL

Leni A.E.S.; Anand R.; Mythili N.; Pugalenthi R.

International Journal of Sensor Networks Volume 47, Issue 1, Pages 11 - 252025

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An improved cyber-attack detection and classification model for the internet of things systems using fine-tuned deep learning model

Authors: A. Ezil Sam Leni, R. Anand, N. Mythili, R. Pugalenthi Authors Info & Claims

International Journal of Sensor Networks, Volume 47, Issue 1 • Pages 11 - 25 • https://doi.org/10.1504/ijsnet.2025.143909

Abstract

Internet of things (IoT) networks increasingly need security due to the large amount of data that needs to be managed. These networks are susceptible to a variety of sophisticated and more frequent cyberattacks. In this study, an improved cyber-attack detection model is presented for IoT networks using a fine-tuned deep learning model. This model produces high accuracy and classifies the different types of cyber-attacks with low losses. In the feature selection process, a wrapper-based dwarf mongoose optimisation algorithm (W-DMO) is utilised to choose the best subset of features from the original network traffic features. Lastly, a hybrid triple attention deep neural network-assisted BiLSTM model (TDeepBiL) is employed to classify the features and categorise different kinds of attacks. Several performance metrics are evaluated for the proposed method, including accuracy, precision, recall, and F1-score. The proposed model has reached a high accuracy of 99.44% for the UNSW-NB 15 dataset and 98.6% for the ToN-IoT dataset in comparison to other current models. Thus, the presented model gains significant improvement in cyber-attack detection.

Author keywords- BiLSTM; cyber-attack detection; DAE; deep network; dense autoencoder; dwarf mongoose optimisation; internet of things; IoT networks; triple attention; wrapper

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	**85th**	**7.4**	

CHARACTERIZATION OF RENEWABLE MATERIAL FROM BIOWASTE: WASTE ALBIZIA LEBBECK LEAVES BIOMASS-BASED BIOPLASTICIZER FOR FUTURISTIC APPLICATIONS

Divakaran D.; **Suyambulingam I.**; Narayanaperumal S.; **Senthamaraikannan P.**; Rao H.J.; Santos T.F.; Santos C.M.

Rasayan Journal of Chemistry Open Access Volume 17, Issue 4, Pages 1699 – 1708 October-December 2024 Journal of Environmental Chemical Engineering Volume 13, Issue 1 February 2025 Article number 115195

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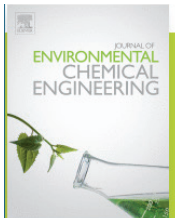

Journal of Environmental Chemical Engineering
Supports open access
11.4 CiteScore | 7.4 Impact Factor

Abstract

Plasticizers are active constituents that are introduced into polymer in order to enhance its workability. The majority of liquid plasticizers are synthetic substances derived from petroleum-based materials. The effectiveness of synthetic plasticizer is a matter of concern due to its cheap cost. A replacement was needed to save the environment. On account of this, the extraction of plasticizers from plant sources is conducted in our study. The leaves of Albizia lebbeck are employed in this procedure, which is extracted via surface catalysis, alkali treatment, neutralisation, and slow pyrolysis. A combination of FT-IR, UV—visible, and X-ray diffraction techniques were used to examine the plasticizer that was separated. AFM, SEM, EDX, and particle sizer studies determine surface morphology. The very low density was obtained as 0.86 g/cm3. X-ray diffraction reveals that the plasticizer has a crystallinity index of 45.02 %. The particle size study yielded a mean particle size of 26.53 µm using ImageJ software. The thermogram and differential thermal analysis curves reveal plasticizer thermal stability and degradation. The extracted plasticizer was used to plasticize the polylactic acid biopolymer at concentrations of 1 %, 2 %, 3 %, 4 %, and 5 %, respectively. Elastic modulus, tensile strength, and elongation break % were some of the mechanical properties that were investigated. The modulus, elongation break %, and tensile strength are all enhanced by the plasticizer's plasticizing effect at 2 % addition. The extracted plasticizer could be applicable for lower order biopolymers such as PLA, PBAT and others.

Author keywords- Cascaded ResNet; Deep energy predictor model; Deep neural networks; Electricity consumption prediction; Feature extraction; Hybrid model; XGBoost

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	80th	3.3	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

MICROGRID AND GRID SYNCHRONIZATION: A CRITICAL ANALYSIS OF CHALLENGES AND OPPORTUNITIES

Rai I.; C S.

Electric Power Systems Research Volume 242 May 2025 Article number 111434

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Abstract

Microgrids provide a viable way to integrate renewable energy sources, enhance energy security, and boost grid resilience. However, substantial operational and technological challenges exist in achieving smooth synchronization with the larger power grid. The primary challenges associated with microgrids, and grid synchronization are examined extensively in this paper. These difficulties include phase and frequency coordination, problems with power quality, methods for islanding and reconnecting, infrastructure for communication and control, and regulatory barriers. The research examines new developments in smart grid technology, sophisticated control algorithms, and creative finance strategies that may enable more seamless synchronization and help microgrids reach their full potential. The research also proposes a method for managing energy while emphasizing the importance of implementing an effective energy management plan, particularly in energy storage systems. A method is suggested for managing energy storage and controlling energy storage system charge and discharge in a microgrid connected to a solar system, using linear programming optimization methods to minimize variable electricity prices and compare it with heuristic optimization approaches. In order to overcome the remaining obstacles and clear the path for the broad deployment of microgrids, the article ends with suggestions for future research and development projects.

Author keywords- Control algorithms; Grid synchronization; Microgrid; Power quality; Regulation; Renewable energy; Smart grid

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	**91st**	**7.2**	07 AFFORDABLE AND CLEAN ENERGY

GREEN COVALENT SURFACE FUNCTIONALIZATION OF CARBON NANOFILLERS AND HYBRIDIZATION TO IMPROVE THE THERMAL AND ELECTRICAL PROPERTIES OF RTV SR NANOCOMPOSITES

Chandrashekar A.; Hegde M.; Siya; Karthik Reddy B.; **Gopi J.A.**; Ravichandran V.; Varrla E.; Prabhu T.N.

Applied Materials Today Volume 42 February 2025 Article number 102603

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Abstract

In this work, graphene (GP) and multiwalled carbon nanotubes (MWCNT) are covalently surface functionalized via a green method using clove extract. The clove–modified carbon hybrid silicone rubber (SR) nanocomposites are fabricated by incorporating clove –modified GP (CGP) and MWCNT (CMWCNT) in various weight ratios with a total filler loading of 10 wt%. Our study investigated the effect of green covalent surface modification and the use of hybrid filler on the thermal and electrical properties of the silicone rubber. The nanocomposite with 9:1 hybrid ratio showed the highest thermal conductivity of about 0.406 W m−1 K−1, 103 % enhancement and thermal effusivity of about 766.2 Ws1/2 m−2 K−1, 29.64 % enhancement with respect to pure SR. Thermal management performance was evaluated by applying thermal compounds as thermal interface material on a 1 W light emitting diode (LED) bulb for testing. It was found that during heating, the hybrid composite with 9:1 ratio showed 2.3 °C reduction in the surface temperature of the LED bulb (under ON condition) and reduced the surface temperature by 1.8 within 20 s and reached almost room temperature in 100 s (under OFF condition). In addition, nanocomposite with 9:1 hybrid ratio showed excellent thermal stability, enhanced electrical resistivity which presents a promising strategy for designing thermally conductive polymer nanocomposites based thermal interface materials in managing excess heat for thermal management applications. © 2025

Author keywords- Carbon nanofillers; Green covalent surface functionalization; Silicone rubber; Thermal conductivity; Thermal management

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q3	43rd	0.7	17 PARTNERSHIPS FOR THE GOALS

CREATING VALUE SINCE 2015: A REVIEW OF THE JOURNAL OF CREATING VALUE

Roche J.; Anand V.

Journal of Creating Value 2025

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Creating Value Since 2015: A Review of the *Journal of Creating Value*

Joseph Roche and Vivek Anand View all authors and affiliations

OnlineFirst | https://doi.org/10.1177/23949643241304874

Abstract

The Journal of Creating Value (JCV) is a Scopus-indexed, peer-reviewed journal that has been published since 2015. Over the last decade, JCV has played a pivotal role in enhancing knowledge creation and sharing among academia and practitioners in its chosen field. This study is an attempt to map the contribution of the journal in terms of classifying impactful authors, current and evolving trends and themes, and set a direction for future researchers and practitioners. The review of the articles published was performed using bibliometric analysis and techniques. A total of 165 articles published during the years 2015 up to 2023 were part of the scope of the study using the Scopus database. Open-source visualization software VOSviewer was used for analysis. Performance analysis and science mapping techniques were employed, and the findings indicate five major themes/clusters. Thirty per cent of the publications are from the USA. Other contributing countries include India, Germany, the Netherlands and the UK. Overall, there are significant global contributions as well. Insightful trends and themes in the field of creating value are documented, which could be a useful resource for prospective researchers.

Author keywords- Bibliometric; co-creation; creating value; science mapping

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	87th	7.7	07 AFFORDABLE AND CLEAN ENERGY

RICE HUSK BIOWASTE DERIVED MICROCRYSTALLINE CELLULOSE REINFORCED SUSTAINABLE GREEN COMPOSITES: A COMPREHENSIVE CHARACTERIZATION FOR LIGHTWEIGHT APPLICATIONS

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International Journal of Biological Macromolecules Volume 299 April 2025 Article number 140153

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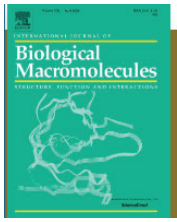

International Journal of Biological Macromolecules
Supports open access
13.7 CiteScore
7.7 Impact Factor

Abstract

This study addresses the issue of waste generation within the food industry, focusing on the conversion of rice husk waste into value-added products. The investigation involves a comprehensive characterization of microcrystalline cellulose extracted from the rice husk and reinforcing them in bio-epoxy resin to determine its feasibility in producing ecofriendly products. The dried rice husk waste was made to undergo a series of treatments, including alkali, acid hydrolysis, and bleaching for extracting high purity microcrystalline cellulose. Physio-chemical, morphological, thermal, and spectroscopy analyses were performed on rice husk microcrystalline cellulose (RHMCC), revealing a high cellulose content (94.39 %), favourable crystallinity (77.8 %), low density (1.571 g/cm3), and substantial thermal stability (299.14 °C). Additionally, the surface roughness of rice husk microcrystalline cellulose supports its suitability as a bio-filler material in the production of environmentally friendly composites. The rice husk microcrystalline cellulose was added to bio-epoxy polymer at different weight percentages (0, 2.5, 5, 7.5, and 10 %), and mechanical and spectroscopy characteristics were evaluated using ASTM standards. Fractographical morphology was also examined in the fractured sample to disclose cellulose bonding behaviour, void forms, filler agglomeration, and fracture behaviour. This research contributes in reducing waste in food industry and promoting sustainable ecofriendly products to the society.

Author keywords- Bio-epoxy; Microcrystalline cellulose; Rice husk

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q3	33rd	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

A CRITICAL ANALYSIS OF NANOFLUID USAGE IN SHELL AND TUBE HEAT TRANSFER SYSTEMS

Monalisha B.; **Sasmita B.**; Jayashree N.

Journal of Nano- and Electronic Physics Volume 16, Issue 6, Pages 1 - 42024 Article number 06020

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Vol. 16 No 6, 06020(4pp) (2024) Том 16 № 6, 06020(4cc) (2024)

REGULAR ARTICLE OPEN ACCESS

A Critical Analysis of Nanofluid Usage in Shell and Tube Heat Transfer Systems

Abstract

Nanofluid technology combines nanoscience, nanotechnology, and thermal science enhancing the heat transfer capacity of base fluids like water or oil. Researchers have put their effort into transforming these base fluids by adding nanomaterials to them, resulting in improved thermophysical properties of the coolant. Studies reveal that nanofluids with different nanomaterials suspended in them exhibit different thermophysical properties like density, viscosity, diffusivity, and thermal conductivity, unlike conventional fluids. Under the same boundary condition, nanofluids are capable of transferring more heat in different types of heat exchangers. However, several disadvantages like accumulation, long-term stability, sedimentation, and higher costs are associated with it. This paper summarizes the various aspects of the application of nanofluids in shell and tube heat exchangers. The purpose of the paper is not only to examine previous studies related to this but also to discuss the recent developments in the heat transfer process using nanofluids in shell and tube heat exchangers. Challenges remain in optimizing nanoparticle size, concentration, and synthesis techniques. Further research should address these gaps so that nanofluids can be implemented as coolants in shell and tube heat exchangers.

Author keywords- Heat transfer; Nanofluids; Nanoparticles; Pumping power; Shell and tube heat exchangers; Thermal conductivity; Viscosity; В'язк сть; Кожухотрубн теплообм нники; Нанофлю ди; Наночастинки; Потужн сть накачування; Теплопередача; Теплопров дн сть

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	**87th**	**3.7**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

VERIFIABLE PRIVATE DATA ACCESS CONTROL IN CONSUMER ELECTRONICS FOR SMART CITIES

Sheng X.; Wang C.; Shen J.; Sattamuthu H.; **Radhakrishnan N.**

IEEE Consumer Electronics Magazine2024

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Verifiable Private Data Access Control in Consumer Electronics for Smart Cities

Publisher: IEEE Cite This PDF

Xinlei Sheng ; Chen Wang ; Jian Shen ; Hemalatha Sattamuthu ; Niranchana Radhakrishnan **All Authors**

Abstract

With the development of mobile and smart sensing technologies, the use of consumer electronics in smart cities has garnered widespread attention from academic researchers and industry professionals due to data security issues. However, specific issues, including privacy concerns regarding unauthorized access and data sharing, require resolution. In this paper, a blockchain-based verifiable private data access control scheme is proposed to protect user-shared information for data sharing in consumer electronic systems for smart cities. The scheme develops a hybrid on-chain access control system using attribute-based encryption (ABE), establishes an authorization model for access control, and prevents sensitive information leakage during data sharing. The simulation results demonstrate that the proposed scheme effectively achieves access control and ensures the secure sharing of sensitive data.

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q4	24th	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

EMERGING TRENDS IN NANOSTRUCTURED COATINGS: UNRAVELING PROCESSING TECHNIQUES, CORROSION MECHANISMS, AND TRIBOLOGICAL PERFORMANCE

Sasmita B.; Rani N.R.A.; Hasan T.S.M.; Nelson D.; Mukesh S.; Manikandan S.B.

RJournal of Nano- and Electronic Physics, Volume 16, Issue 6, Pages 1 - 52024 Article number 06003

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Abstract

Surface corrosion and wear significantly limit the lifetimes of industrial components, resulting in high economic and safety costs. However, as surface-level phenomena, these degradation mechanisms can potentially be mitigated through surface modifications alone, without altering bulk properties. Recent advances in nanotechnology have made possible a range of nanostructured protective coatings for surfaces. By incorporating nanomaterials like ceramics and metals, these coatings provide enhanced resistance to chemical corrosion and physical wear. This review discusses the current state of research on nanostructured coatings for surface protection. It summarizes the synthesis techniques for producing nanostructured coatings such as sol-gel and electrochemical deposition methods. The corrosion and tribological behaviors of various coating materials like metal oxides and nitrides are compared. Composite polymer-metal coatings are highlighted for their superior crack resistance compared to traditional ceramic coatings. In addition, bio-inspired self-healing and lubricating coatings are described. Finally, current technical challenges and future research directions are outlined such as improving coating adhesion strength and scale-up for mass production and commercialization.

Author keywords- Cladding; Heat Transfer; Microstructure; Nanofluids; Nanostructured coatings; Temperature;

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q2	**68th**	**1.1**	

NEIGHBOURHOOD FIRST? STATUS QUO OF INDIA'S TRADE WITH THE NEIGHBOURS

Saikia M.; Hoque D.

Foreign Trade Review 2024

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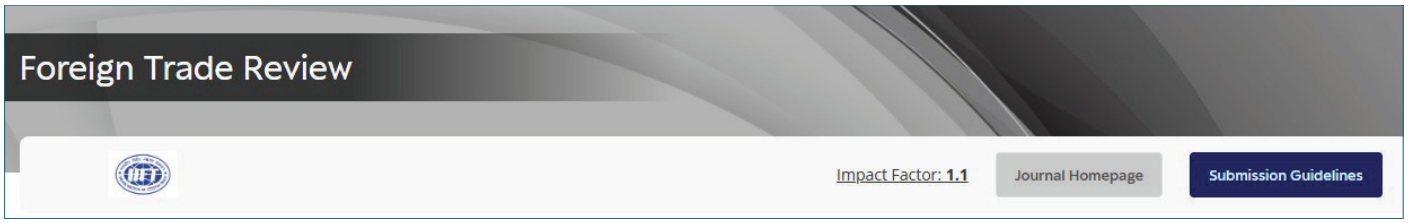

Abstract

Driven by the objective to create a congenial relationship with the neighbours, the Narendra Modi Government of India instituted the 'Neighbourhood First' policy (NFP) in 2014 which is a continuation of the neighbourhood policy with some new features. Sadly, despite India's diligent effort expended to enhance its relationship with its neighbours, all exercises were nugatory. It poses the question of how India can effectively pursue the objectives of its foreign policies. The realisation of the NFP's intended goals remains ambiguous. Consequently, it becomes imperative to assess the impact of Modi's NFP at this opportune moment. Bilateral trade serves as an essential indicator, reflecting the state of relationships between nations. Thus, this study raises two key questions: first, whether the neighbourhood factor influences India's exports, and second, how the NFP affects India's trade with neighbouring countries. The study aims to quantify the impact of the neighbourhood on India's exports and evaluate the NFP's role in facilitating trade within the region. The findings reveal that the neighbourhood, as a collective entity, significantly influences India's exports to neighbouring countries. However, when considering individual countries, the results present a different perspective. Moreover, the study demonstrates that, despite the NFP's original intention to promote friendly relations with its neighbours, it has not been notably successful. The failure of this policy, along with India's deteriorating relationships with its neighbors, is evident in its export patterns. JEL Codes: F13, F14

Author keywords- export; India; neighbour; 'Neighbourhood First Policy'


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Indexing/Quartile	Percentile	Impact Factor	SDG
WOS/NA	NA	0.6	04 QUALITY EDUCATION

DEPENDENCE AND FICTIONAL CHARACTERS

Chakravarty, Shamik

"Dependence and Fictional Characters." Analytic Philosophy (2025)

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Abstract

The artefactual theory of fiction holds that fictional characters are abstract and created artefacts like money and nations. One of its main proponents, Amie Thomasson, holds that fictional characters are ontologically dependent on a particular author or authors (rigid historical dependence) for their origin and on literary works for continued existence (generic constant dependence). While there have been objections to Thomasson's position, both the dependencies are dogmas held among artefactualists and the criticisms haven't yet systematically undermined them. In this paper, I argue against these two dependency claims by citing counterexamples, especially from a Twin Homer case, Fission Fiction case, No Man's Sky, a computer game, where an algorithm creates a character and in another instance, by showing how we humans actually create characters. If my arguments are sound, then a realist like Thomasson has no option to make sense of the data they set up for their theory apart from accepting Everett and Schroeder's theory that fictional characters are ideas. In the light of this, I set up a new criterion for the continued existence of fictional characters wherein they're ideas.

Indexing/Quartile	Percentile	Impact Factor	SDG
WOS/Q2	59th	1.6	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

ROBUST DESIGN OF DAMPING CONTROLLER FOR POWER SYSTEM WITH SNAKE OPTIMIZATION ALGORITHM

Agrawal, Niharika, **Sheila Mahapatra**, and Faheem Ahmed Khan.
"Robust design of damping controller for power system with snake optimization algorithm." International Journal of System Assurance Engineering and Management (2025): 1-31.

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Abstract

The stable, safe, and secure operation of the power system is essential for all-around development. Low-frequency oscillations (LFO) created in the power system due to disturbances influence the system's security and integrity. LFOs restrict the system's power transfer capacity and, if not controlled, will grow and cause the system to collapse. In this paper, Snake Optimization Algorithm (SOA)-based damping controllers have been developed for the stability improvement of the system. This SOA has been tested on the Congress on Evolutionary Computation benchmark functions and has the key benefits of exploration and exploitation. The four simulation models are the system with no controller, the system with a Power System Stabilizer (PSS), the Thyristor Controlled Series Capacitor (TCSC), and the Coordinated PSS and TCSC (CPT). The damping performance of the models is tested with a step input disturbance for three loading conditions. It is also tested with a solid three-phase fault to ground on one of the transmission lines. With the CPT model, the highest damping ratios (0.8110, 0.9840, and 0.9960) are obtained for all loading conditions. The settling time for variation in different parameters is less than 2.0 s in this model. The simulation results, eigenvalues, and damping ratio analysis are provided to demonstrate how well all of the models dampen LFOs. The proposed SOA shows a remarkable capability in designing a robust power system. The integrity, security, and expected lifetime of the power system are enhanced due to better damping performance with this excellent SOA-based CPT model.

Indexing/Quartile	Percentile	Impact Factor	SDG
WOS/Q2	**59th**	**1.6**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

EMPOWERING GRID INTELLIGENCE: A COMPREHENSIVE REVIEW ON OPTIMAL PLACEMENT AND DIVERSE APPLICATIONS OF SYNCHRONIZED PHASOR MEASUREMENT UNITS IN MODERN POWER SYSTEMS

Sneha, Boya, **Rohit Babu, Sheila Mahapatra.**

"Empowering grid intelligence: a comprehensive review on optimal placement and diverse applications of synchronized phasor measurement units in modern power systems." International Journal of System Assurance Engineering and Management (2025): 1-29.

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Abstract

Deregulation has allowed for more effective power generation, technical advancements, and eventually reduced retail pricing, which has caused the electric power business to go through a number of changes in recent decades. In this context, the development of sustainable instruments for the supervision and management of power networks has become a crescively pressing necessity due to the presence of dynamic phenomena inside such systems. The state estimator is an excellent instrument that can be used for the careful monitoring of the circumstances of their operations. The conventional estimators make use of measurements taken in real-time by means of a SCADA system. Remote terminal units (RTUs), which are often deployed in high-voltage substations, are the devices that are responsible for providing these measurements. Because of the technological challenges that are related to the synchronization of measurements at RTUs, it is impracticable to supervise the bus voltages phase angles in a comprehensive manner. The global positioning system (GPS), which also helped contribute to the development of phasor measurement units (PMUs), made it more simpler and less time-consuming to deal with these difficulties. The voltage and current phasor quantification may be obtained with a high level of accuracy using a PMU unit that is fitted with a GPS receiver. These measurements are made in relation to a standard reference phase angle. An introduction to the PMU technology and a discussion on how PMUs should ideally be distributed across a power network is offered in the initial section of this research study. There is a focus on the most important problems with the implementation and functioning of PMUs, and there is also an inquiry into commercialization penetration in the power markets. In the succeeding section of the study, a broad variety of approaches relating to the selection of the judicious placement of PMUs are presented, along with an algorithmic process for determining the optimum set of PMUs that are necessary for complete observability.

Indexing/Quartile	Percentile	Impact Factor	SDG
WOS/Q1	81st	4	16 PEACE, JUSTICE AND STRONG INSTITUTIONS

LEGAL INTERVENTIONS FOR PERINATAL DEPRESSION IN INDIA: A QUALITATIVE STUDY WITH CLINICAL SPECIALISTS HAVING EXPERTISE IN PERINATAL MENTAL HEALTH

Behl, Ritika, Vivek Nemane, and Shashikala Gurpur.

"Legal interventions for perinatal depression in India: a qualitative study with clinical specialists having expertise in perinatal mental health." BMJ open 15.1 (2025): e093027.

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Abstract

Reported in alignment with the Standards of Reporting Qualitative Research checklist.Setting India.Participants 12 out of 38 invited CSs participated in the study. All invited participants either had a background in perinatal psychiatry or were experienced in working with the perinatal population and had undertaken evidence-based research regarding perinatal mental health (PMH), in the Indian setting.Results Five themes emerged from the collected data including (1) the epidemiology of PND in the Indian context, (2) the management of PND in India and the efficacy of the existing legal frameworks, (3) the need for legal interventions for addressing and managing PND in India, (4) role of legislative instruments, globally, in managing maternal PND and (5) advocacy for PMH by lawyers, and advocates in India.Conclusions The existing policy gap is associated with the violation of women's rights. The Mental Health Care Act (MHCA), 2017 should be amended to recognise perinatal women as a vulnerable group and to prioritise their PMH needs. A nationwide policy should be introduced to ensure integrated PMH services.

Indexing/Quartile	Percentile	Impact Factor	SDG
WOS/Q4	16th	0.6	

ON RANDOM EXTREMA WITH APPLICATIONS TO RENEWAL PROCESSES

Ghosh, Suman Kalyan; Ravi, Sreenivasan,

JOURNAL OF STATISTICAL THEORY AND PRACTICE, Volume 19, article number 3, (2025)

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Abstract

Considering the maximum and minimum of a random number N of independent and identically distributed random variables X1,X2,..., with distribution function F, N independent of X1,X2,..., and imposing conditions like concave/convex, log-concave/log-convex on F and/or on the random summand N, a study is done if the properties are preserved by the random extrema. The results are illustrated through two applications to renewal processes.

Indexing/Quartile	Percentile	Impact Factor	SDG
WOS/Q4	13.6th	0.7	08 DECENT WORK AND ECONOMIC GROWTH

DOES GLOBAL SPILLOVER MATTER IN THE INDIAN MONEY MARKET? A VECTOR ERROR CORRECTION MODEL

Avijit Bakshi and Pujari Sudharsana Reddy,
International Journal of Indian Culture and Business Management Vol. 34, No. 1

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Abstract

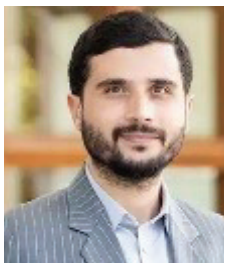
This study investigates the impact of transmission channels, including global liquidity, confidence, and exchange, on the Indian money market. The research aims to identify the predominant transmission channel and its influence on the repo and call money rates. A vector error correction model (VECM) analysed weekly data collected from the Reserve Bank of India, Bank of St. Louis, and Federal Reserve Bank from 29 April 2001 to 21 March 2021. The study finds a stable, genuine long-term relationship between call money rates and global liquidity, confidence channels and exchange channels. A long-run causality is also observed between call money rates and broad market indicators. Repo rates similarly exhibit a long-term, stable relationship with these factors, with short-term impacts observed from global liquidity and the exchange channel, but not from the VIX. The exchange channel and VIX are proven to be more predominant in influencing policy and call money rates.

Indexing/Quartile	Percentile	Impact Factor	SDG
WOS/Q2	60.9th	3.5	03 GOOD HEALTH AND WELL-BEING

INDIAN MILLENNIALS' CONTINUED USAGE INTENTIONS TOWARD ONLINE DATING APPS: THE INTERPLAY BETWEEN TRUST AND PERCEIVED AUTONOMY

John, Waseem; Charag, **Asif Hamid**; Bashir, Irfan

Young Consumers,2025



Dr. Asif Hamid Charag
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Abstract

Purpose: This study aims to empirically examine the role of privacy, security, trust and autonomy in Millennials' continued use of online dating applications. Emerging markets have been famous for their rapid modernization, growth and cultural shifts. Yet, consumer worries about online dating consumption need to be addressed in the literature through a better understanding of their behavioural intentions. This study examines the interplay of the underlying variables by testing a conceptual framework grounded on the theory of reasoned action (TRA), the self-determination theory (SDT) and the information systems continuance theory (ISCT) with regard to an emerging market. Design/methodology/approach: A cross-sectional and quantitative research design is adopted. Using a well-designed structured questionnaire adapted from established scales, data was collected through a survey featuring 332 substantive responses from actively involved Millennial users of online dating apps in India. The data was analysed using confirmatory factor analysis (CFA) and structural equation modelling (SEM) through IBM SPSS AMOS (Analysis of Moment Structures) 24.0 to provide evidence of the reliability and validity of constructs alongside testing the hypothesis in the proposed model. Furthermore, Preacher and Hayes' (2004) approach is used to explore mediation effects. Findings: The results show that autonomy and trust positively affect the continued use of online dating apps. The study further reveals that autonomous behaviour motivates Millennials to use online dating apps, overriding their concerns for privacy and security. Furthermore, the results indicate that trust fully mediates the relationship between concern for privacy, perceived security and continued usage intention. Therefore, trust affects users' intentions to continue using online dating apps as it bridges the effect of users' concern for privacy and the perceived security in the online dating platform, making these dimensions relevant as a whole. Research limitations/implications: This study provides critical insights into the theory and practice. The findings demonstrate that autonomy is more significant in motivating Millennials to use online dating apps than concerns about privacy and perceptions of security. In addition, trust plays a crucial role in mediating the relationship between these variables. Therefore, app developers, app marketers and app stores can use the findings to motivate Millennials to continue using their platforms by encouraging a sense of freedom and a better inner self, fostering engagement and conveying user trust. Originality/value: Several studies have investigated the pre-adoption behaviour of users of online dating apps, and little attention has been paid to continuance usage. This study provides a unique theoretical research model and perspective for online dating apps that uncovers the role of concern for privacy, perceived security and trust that affect post-adoption behaviour by integrating the TRA, SDT and ISCT. This integration offers a more futuristic and refined perspective on human behaviour by considering both cognitive and motivational aspects. The study establishes that autonomy outweighs concern for privacy and perceived security.

Indexing/Quartile	Percentile	Impact Factor	SDG
WOS/Q1	83.5th	5.9	06 CLEAN WATER AND SANITATION

WASTE-DERIVED CA AND ZN-BASED BIMETALLIC (CA/ZN) NANORODS ENCAPSULATED CHITOSAN-BASED HAEMOSTATIC DRESSING BANDAGE: A STEP TOWARDS WASTE TO BANDAGES

Thakur, Pooja; Omar, Rishabh Anand; **Talreja, Neetu**; Chauhan, Divya; Ashfaq, Mohammad

JOURNAL OF INDUSTRIAL AND ENGINEERING CHEMISTRY, Volume 143 Page 327-338

Dr. Neetu Talreja
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Abstract

Controlling loss of blood during militant war, traumatic injury, and surgical procedures is the greatest challenge nowadays, which leads to death, thereby the necessity of hemostatic bandages. The present work focuses on the synthesis of waste-derived (WD)-Ca incorporated Zn nanorods encapsulated with chitosan polymers (CZC) to control the loss of blood as well as bacterial infection. The as-prepared CZC bandage was tested against various biochemical tests such as PBS absorption, hemolysis, adsorption of protein, platelets aggregation/adhesion, blood clotting ability, and antibacterial test assay. The data suggested that the CZC bandage has high biocompatibility, exceptional PBS absorption ability (similar to 1402%), platelets aggregation (similar to 65%) within 10 min of exposure, protein a loading ability (similar to 37 mg/cm(2)), and similar to 84% blood clotting within a 1 min of exposure. Moreover, the CZC bandage effectively kills/inhibits both E. Coli and S. aureus bacteria. Therefore, the prepared CZC bandage in this study is simple, economically viable, and sustainable development.

Indexing/Quartile	Percentile	Impact Factor	SDG
WOS/Q1	93.6th	7.7	06 CLEAN WATER AND SANITATION; 14 LIFE BELOW WATER

EXPLORING BIOMASS DERIVED MICROCRYSTALLINE CELLULOSE FROM THE WASTE AQUATIC PLANT PISTIA STRATIOTES: A COMPREHENSIVE CHARACTERIZATION FOR POLYMER COMPOSITE REINFORCEMENT

Kings, Ajith J.; **Suyambulingam, Indran**; Narayanaperumal, Sunesh; Miriam, L. R. Monisha; Divakaran, Divya; Murali, Adhigan; Han, Sung Soo

INTERNATIONAL JOURNAL OF BIOLOGICAL MACROMOLECULES, Volume: 300

Dr. Indran Suyambulingam
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Abstract

The creation of polymer composites with better performance is a crucial thing. The cellulosic filler material gain popularity in polymer composites. In this study, aquatic plant Pistia stratiote leaves were used as a raw material for cellulose extraction. The cellulose was extracted via acid hydrolysis method with mild concentration chemicals. The main aim was to assess the cellulose characteristics and its potential as a reinforcement for composites. Surface, thermal, and physicochemical properties of the micro fillers made of cellulose were the primary areas of research. To determine the composition of the cellulose, extensive chemical characterization analyses were conducted. According to X-ray diffraction studies, Pistia stratiotes leaves cellulose have a crystallinity index of 75.9 % and crystalline size of 8.2 nm. Cellulosic functional groups were revealed by examination using a Fourier Transform Infrared Spectrometer. Scanning electron microscopy images revealed smooth surface and distorted shaped particles. The average particle size, which was calculated using the ImageJ software, was 23.253 +/- 6.55 mu m. The extracted micro cellulose had an acceptable average roughness value of 28.296 mu m, as shown by atomic force microscopy images. Surface properties of the Pistia stratiotes leaves cellulose (PSC) were shown to be conducive to the formation of interfacial bonds with other matrices while composites are being built. The BET surface areas are significantly higher as well. The material degrades only at high temperatures 215 degrees C, which was analysed by TG analysis. The findings demonstrate that Pistia stratiotes, a plant, outperforms more conventional sources of micro cellulose, such as cotton, hemp, and wood. As a greener alternative to synthetic reinforcements, the recovered micro cellulose has potential uses across numerous industries.

Indexing/Quartile	Percentile	Impact Factor	SDG
WOS/Q3	32.4th	2.1	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

OPTIMAL SETTING OF ARC WELDING ROBOT AND LASER SENSOR VARIABLES FOR GETTING MAXIMAL WELD QUALITY, POSITIONAL ACCURACY, AND SMOOTH TRAJECTORY

Rout, Amruta; Mahanta, Golak Bihari; **Champatiray, Chiranjibi**; Deepak, B. B. V. L.; Biswal, Bibhuti Bhusan

INTERNATIONAL JOURNAL OF INTERACTIVE DESIGN AND MANUFACTURING – IJIDEM, 2025

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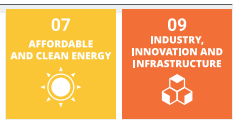
Abstract

For seam-finding applications, a robotic welding system and laser sensor can be coupled to achieve improved repeatability and shorter cycle times. This manuscript investigates the impact of several robot variables, including robot orientation, robot travel speed, and focal length of the laser sensor, on three key factors: positioning error, associated joint jerk-torque rate, and weld quality. An Enhanced Multi-Objective NSGA-II (EMONSGA-II) is proposed, which combines NSGA-II with Nelder Mead local search to find the best values for robot and sensor variables. The goal is to acquire the lowest values for joint jerk-torque rate, positional error, and maximum weld quality metrics. The maximized weld quality is represented by maximized ultimate strength, yield strength, and penetration of weld joint, as minimized weld bead height and width. Fuzzy logic has been used to transform the multi-performance weld characteristics into one term of the weld quality. The experiments have been performed using the Arc 50 series welding system with AccuFast point laser sensor integrated MOTOMAN MA 1440 arc welding robot system. Finally, the optimal setting of the robot and sensor parameters have been validated through experimentation to observe the weld quality and positional accuracy.

Indexing/Quartile	Percentile	Impact Factor	SDG
WOS/Q2	67th	3.9	



SYNTHESIS, CHARACTERIZATION, AND ANALYSIS OF BIOPLASTICIZERS DERIVED FROM THESPESIA POPULNEA LEAF: TOWARDS SUSTAINABLE BIOMATERIALS

Senthamaraikannan, P.; Arokiasamy, Felix Sahayaraj; Selvan, M. Tamil; Divakaran, Divya; **Suyambulingam, Indran**; Balan, A. V.; Rao, H. Jeevan

JOURNAL OF INORGANIC AND ORGANOMETALLIC POLYMERS AND MATERIALS, JAN 2025.

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Abstract

This study presents a detailed synthesis, characterization, and analysis of bioplasticizers derived from Thespesia populnea leaf powder (TPLP) towards developing sustainable biomaterials. Comprehensive characterization of TPLP across various analytical techniques reveals its diverse properties and potential applications. Fourier-transform infrared (FTIR) spectroscopy indicates the cellulose, hemicellulose, pectin, lipids, lignin, and aromatic compounds. UV-visible absorption spectra suggest reduced transparency attributed particle interactions and crystalline structure. XRD analysis of TPLP shows the crystallinity value of 50.69% with crystalline size around 20.49 nm, indicative of its plasticizing effect. Particle size distribution analysis indicates an average size of 12.459 mu m, while differential scanning calorimetry (DSC) analysis reveals multiple thermal transitions indicative of crystallization, melting, and decomposition. These findings collectively underscore TPLP's versatility and potential across a range of applications, including use as a plasticizer in polymer films for packaging, drug delivery systems, composite materials, high-temperature applications such as phase change material formulations. This research highlights the promising future of TPLP as a sustainable bioplasticizer in various industrial applications.

Indexing/Quartile	Percentile	Impact Factor	SDG
WOS/Q3	**29.4th**	**1.7**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

IoT INTEGRATION WITH CMPA-PINN FOR ISLANDING DETECTION THROUGH MICROGRID HIERARCHICAL CONTROL

Komala, C. R.; Jeyakumar, S.; Deepika, G.; Swaroopa, K.; Rangaree, Pankaj; **Arif, Mohammad**; Saikia, Bhargabjyoti; Balasubramanyam, P. N. V.,

INTERNATIONAL JOURNAL OF COMMUNICATION SYSTEMS, Volume: 38, Issue: 4.

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Abstract

Internet of Things (IoT) and cloud computing are becoming increasingly important in the solution of many industrial problems. Effective management of microgrid (MG) requires a strong and scalable information and communication technology (ICT) infrastructure. IoT devices with effective measurement and control capabilities have the potential to be very important in the MG environment. MG was run in both grid-connected and island mode. This paper proposes to improve the MG hierarchical control with IoT using CMPA-PINN techniques for islanding detection. The proposed hybrid method is the joint execution of both the Coronavirus Mask Protection Algorithm (CMPA) and physics-informed neural networks (PINNs). Hence, it is named as CMPA-PINN approach. The major goal of this proposed method is to reduce the deviation of voltage, frequency, and total harmonic distortion (THD). The proposed CMPA is used to optimize the traffic flow over a communication network, and the PINNs are used to predict the optimized traffic flow. By then, the MATLAB platform has adopted the proposed method, and the current process is used to compute its execution. The proposed technique outperforms all current systems, including maximum power point tracking (MPPT), multi-agent reinforcement learning (MARL), and deep reinforcement learning (DRL). The proposed approach shows the THD is 2%, which is lower than other existing systems.

Indexing/Quartile	Percentile	Impact Factor	SDG
WOS/Q3	49.8th	2.6	

MICROCRYSTALLINE CELLULOSE EXTRACTION FROM COMPREHENSIVE CHARACTERIZATION OF MANGIFERA INDICA LEAF BIOWASTE FOR HIGH-PERFORMANCE BIO-BASED POLYMER COMPOSITES

Balan, Pranesh; Priyadharshini, G. Suganya; Divakaran, Divya; **Suyambulingam, Indran**; Sunesh, Narayana Perumal; Rangappa, Sanjay Mavinkere; Siengchin, Suchart

JOURNAL OF POLYMER RESEARCH, Volume, 32, Issue 1.

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Abstract

New natural cellulosic materials used to make high-performance bio-based composites are attracting a lot of attention due to their enhanced properties. This study aimed to investigate micro-sized cellulosic fillers produced from Mangifera indica (Mango) leaves (MIL) with respect to their morphological and physicochemical properties, thermal behaviour, crystallinity and other relevant parameters. Some of cellulose's notable properties are excellent mechanical capabilities, biocompatibility, low density, biodegradability and heat stability. An acid hydrolysis process was used to extract cellulose from dried MIL. Isolated microcrystalline cellulose's crystallinity index and crystalline size were measured using X-ray diffraction, with results of 58.6% and 20.28 nm, respectively. The extracted cellulose filler's morphology was investigated using FESEM and ImageJ. The FESEM image shows MCCs morphology, thick framework formation, cellular structure, microfibrils, surface roughness and bonding making it a promising candidate for high-strength applications due to its enhanced bonding surface and structural integrity. The average size of the microfillers was found to be 103.161 mu m. The absence of lignin, hemicelluloses and other non-cellulosic impurities in the extracted cellulose fillers was verified by infrared analysis employing Fourier transforms (FTIR). The findings suggest that waste materials that are already present in nature can be transformed into useful components for polymeric composites that can withstand processing temperatures ranging from 180 degrees C to 200 degrees C. Surface roughness indicates cellulose is smooth, appropriate and noticeable without cracks. Therefore, lot of possibilities for extrusion methods in incorporating these microparticles into polymer composites.

Indexing/Quartile	Percentile	Impact Factor	SDG
WOS/Q2	65.3rd	2	03 GOOD HEALTH AND WELL-BEING

THE CONVERGENCE OF HEALTH SYSTEM RESOURCES AND HEALTH OUTCOME IN CENTRAL EUROPE AND THE BALTIC REGION

Singh, Shailender; Krishnan, Chitra; Kumar, Nishant; **Sahdev, Supriya Lamba**

COGENT ECONOMICS & FINANCE, Volume:13, Issue:1

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Abstract

Health system resources have increased comparatively higher in Central Europe and the Baltic region relative to the Euro Area and the OECD countries. This study investigates the tendency for health system resources and health outcomes to converge for the countries of Central Europe and the Baltic region from 2000 to 2019. The existence of convergence is tested using the beta coefficient within and across the 11 countries studied. The panel result favors the existence of convergence in the three variables employed as health system resources - physician density, nurses' density, and per capita current health expenditure. Similarly, the findings support the presence of convergence in all four variables used as health outcomes - life expectancy at birth (total), crude death per 1000 population, NCDs mortality, and infant mortality. Furthermore, at the country level, the results are heterogeneous. Evidence highlights that only three variables employed as health system resources converged in Iceland, Latvia, Norway, and Sweden. The results favor the convergence in all four variables employed as health outcomes in Poland and Russia. However, the exact opposite holds for the convergence of health outcomes in Denmark. Therefore, this calls for the need to implement sound reforms in the health systems that could translate increased health system resources into improved health outcomes.

Indexing/Quartile	Percentile	Impact Factor	SDG
WOS/Q3	48.9th	2.6	

THE STRUCTURAL AND THERMAL INTEGRITY OF NOVEL BIO POLYMER COMPOSITE PROCESSED FROM ETHIOPIAN TEFF HUSK PARTICLES FOR CONSTRUCTIONAL APPLICATIONS

Gebremaryam, Gezahgn; Shahapurkar, Kiran; **Chenrayan, Venkatesh**; Kanaginahal, Gangadhar; Rojas, Patricio Valdivia; Arunachalam, Krishna Prakash; Rajagopal, Rajakrishnan; Murthy, H. C. Ananda,

JOURNAL OF POLYMER RESEARCH, Volume.32, Issue.1

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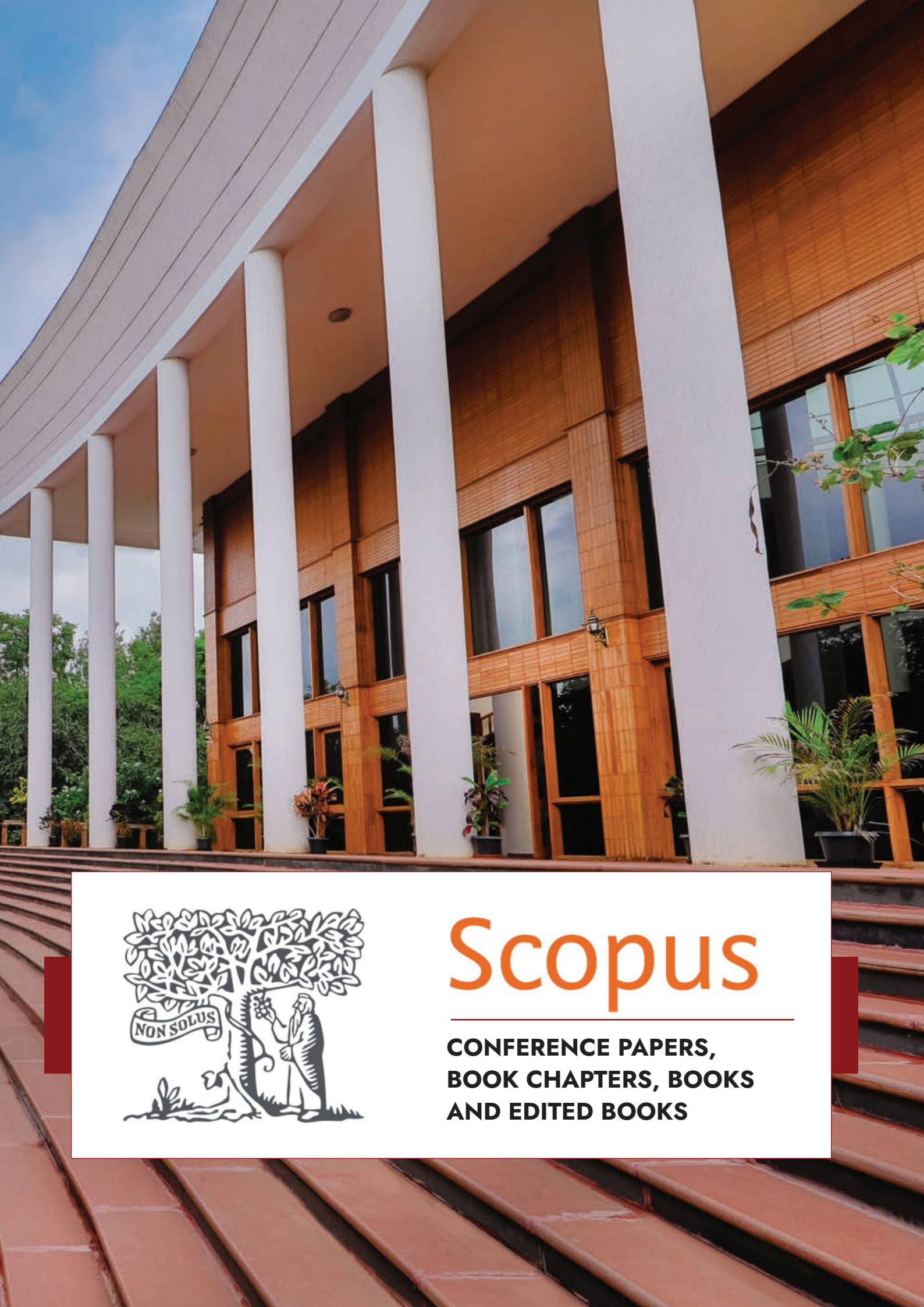
Abstract

The inclusion of bio-fillers to develop a newer material to satisfy the needs of the sustainability agenda is a prime strategy followed by the research communities in recent days. In connection with this, the current work is on the utilization of Teff seed coat powder as an efficient reinforcement in epoxy composites. The open casting method was followed to cast four different proportions of teff powder reinforcement like 2.5, 5, 7.5 and 10% along with neat epoxy. The structural and thermal integrity of the material was investigated with tensile, compressive and thermogravimetric analyses. The density analysis explored the decrement trend in density for the increased content of teff particles. An epoxy composite reinforced with 7.5% teff powder claims to be an exceptional candidate for structural applications with improved properties than other variants. Composites of all compositions have 57% to 130% higher modulus and 39% to 70% higher strength than neat epoxy. Scanning electron micrographs are utilized to understand the structure-property relationships. TG/DTG studies showed that adding teff husk did not affect maximum degradation temperature, but the development of char enhanced the initial degradation temperature accomplished when compared to pristine composites.



Scopus

CONFERENCE PAPERS, BOOK CHAPTERS, BOOKS AND EDITED BOOKS

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q4	3rd	1.8	06 CLEAN WATER AND SANITATION

TREATMENT OF FLUORIDE-CONTAMINATED WATER: A REVIEW

Pant R.; Sah K.; Sheetal; Tomar H.; Dabral A.; **Shaikh A.C.**; Gupta A.

Environmental Science and Engineering Volume Part F4036, Pages 349 – 370 2025

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Abstract

Fluoride is a mineral which occurs naturally and often is ordinarily found in soil, rocks, and water. Fluoride may additionally enter water from other sources, including business operations, runoff from agriculture, and of course some natural events. Fluoride from such sources may disintegrate and find its way into ground water as well as surface water whenever precipitation or melting snow penetrates into the earth. It is called inevitable fluoride, which may be found in various amounts in a wide range of water supplies worldwide. Long-term excessive fluoride consumption has been scientifically connected to a number of physical problems, such as thyroid malfunction along with brain damage. Water poisoned with fluoride poses a serious risk to human health and necessitates extremely efficient water and environmental management. Fluoride poisoning is a serious health concern since fluoride is released into the environment by anthropogenic activities. The efficacy of fluoride removal is contingent upon chemicals in nature, topographical, and economic variables unique to each location; hence, actual applications may deviate from the theoretical framework. A process that satisfies requirements in one place could not meet those in another. Depending on the requirement, a public–private collaboration project should be carried out with sufficient preparation, oversight, and ongoing reinforcement.

Author keywords- Fluoride contamination; Fluoride poisoning; Health concern; Risk; Water

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q3	34th	NA	07 AFFORDABLE AND CLEAN ENERGY

GAUGING THE ACT OF FEMALE BOARD AND AUDIT COMMITTEE ATTRIBUTES ON CREATIVE ACCOUNTING PRACTICE: THE MODERATING EFFECT OF BOARD AGE DIVERSITY

Bala H.; Sani A.A.; Al-Absy M.S.M.; Khatoon G.; **Nusrathunnisa**; Benbelgacem S.

Studies in Systems, Decision and Control Volume 568, Pages 1141 – 11632025

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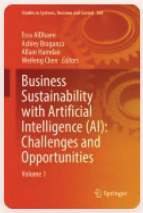
Home > Business Sustainability with Artificial Intelligence (AI): Challenges and Opportunities > Chapter

Gauging the Act of Female Board and Audit Committee Attributes on Creative Accounting Practice: The Moderating Effect of Board Age Diversity

Chapter | First Online: 25 December 2024
pp 1141–1163 | Cite this chapter



Business Sustainability with Artificial Intelligence (AI): Challenges and Opportunities

Abstract

The impact of feminine board attributes (FBA) and audit committee physiognomies (ACP) on creative accounting (CA) is investigated in this research. It also looks at how board age diversity influences this link. The study uses a sample of 82 companies covering the years 2011 through 2020. The study indicated that feminine board competence is more likely to minimize CA after controlling for measurement bias, estimation errors, endogeneity, and financial crises. It also reveals that the existence of feminine directors in AC is more likely to limit CA. Moreover, the presence of autonomous directors in the AC, directors with financial expertise, and legal directors in the AC have a high possibility of reducing CA. It is also found that boardroom aging significantly enhances the link between FBA, ACP, and CA. Supplementary analyses reveal that firms that have at least one feminine director on board are more likely to reduce CA practice than firms that do not have feminine directors on board. It is also acknowledged that companies are more likely to engage in CA practice during the period of the COVID-19 endemic. The study document a novel discovery regarding the moderating effect of board age diversity on the link between board and ACP attributes on CA. Regulators or rule makers in developing countries like Nigeria may use the study's findings to create policies and strategies on gender-related issues. The findings could be utilized to learn more about how gender diversity affects financial reporting quality.

Author keywords- Audit committee physiognomies; Creative accounting; Emerging markets; Feminine board member

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	13 CLIMATE ACTION

MULTIFUNCTIONAL COMPOSITE MATERIALS FOR LIGHTWEIGHT AND EFFICIENT EV STRUCTURES

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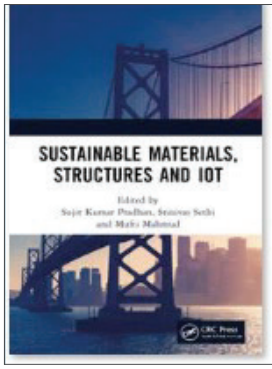

Chapter

Multifunctional Composite Materials for Lightweight and Efficient EV Structures

By Sasmita Bal, Sabyasachi Aich, Jayashree Nayak, Sunita Panda

Book Sustainable Materials, Structures and IoT

Abstract

The world is moving towards sustainable transport as electric vehicles (EVs) continue to develop as a potential tool for reducing greenhouse gas emissions and fossil fuel dependency. EV technology focuses on finding lightweight but strong materials that can improve vehicle performance and efficiency. As such, multifunctional composites have become integral in the design of future EV structures. The primary focus of this article is to find out how multifunctional composite materials help enhance the performance of EV structures. The paper also explores different composites, such as polymer, metallic, and hybridized ones, which are integrated into EV designs. Additionally, it shows the benefits of these materials, including weight reduction, enhanced mechanical properties, thermo-electrical management, and electromagnetic interference shielding.

Author keywords- Carbon fiber; Composite; EV; Lightweight; Polymers

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q4	7th	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

OPTIMISED CONVOLUTIONAL NEURAL NETWORK MODEL FOR MULTICLASS ACUTE LYMPHOBLASTIC LEUKEMIA CLASSIFICATION IN IN PERIPHERAL BLOOD SMEAR IMAGES

Shrivastava V.K.; Shelke C.J.; Achary R.; David M.P.P.; Soliman A.-H.; Kumar A.

AIP Conference Proceedings Volume 3217, Issue 1 20 December 2024 Article number 020027 1st International Conference on Artificial Intelligence, Advanced Materials, and Mechatronics Systems, AIAMMS 2023 Hybrid, Jaipur 3 November 2023 through 4 November 2023 Code 205236

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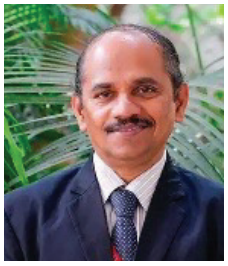

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Optimised convolutional neural network model for multiclass acute lymphoblastic leukemia classification in in peripheral blood smear images

Virendra Kumar Shrivastava; Chetan J. Shelke; Rathnakar Achary; Mano Paul Pauliah David; Abdel-Hamid Soliman; Ajay Kumar

Abstract

The aberrant synthesis of immature white blood cells in the bone marrow results in acute lymphoblastic leukaemia (ALL), a deadly form of blood cancer. Children and teenagers are the main groups impacted. Improving survival rates and reducing complications from acute lymphoblastic leukaemia depend on early diagnosis of the disease. It has proven possible to identify cancer cells in acute lymphoblastic leukaemia instances using a variety of image classification techniques. Convolutional neural networks (CNN) and deep learning (DL) are two of the techniques that have shown promise in automating the detection process. However, there are several feature extraction issues with the current approaches. To overcome these drawbacks, an optimised CNN to classify acute lymphoblastic leukaemia without the use of manual feature extraction and selection techniques, a pre-trained CNN-based deep network architecture employed that extract features automatically. This strategy intends to increase the accuracy of acute lymphoblastic leukaemia categorization. To classify Acute Lymphoblastic Leukemia disease, the Kaggle repository dataset of peripheral blood smear images is used. 3242 images from 89 suspected patients make up this collection. The suggested model has achieved 99.23% classification and prediction accuracy.

Author keywords- Acute Lymphoblastic Leukemia (ALL); Deep Learning (DL); feature extraction; feature selection; Image Processing; Machine Learning (ML)

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q4	7th	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

AN ENHANCED ALGORITHM FOR PREDICTING IDH1 MUTATIONS AND 1P19Q MITIGATION IN GLIOMA TUMOR

Wankhede D.S.; **Shelke C.J.**; George A.

AIP Conference Proceedings Volume 3217, Issue 1 20 December 2024 Article number 020025 1st International Conference on Artificial Intelligence, Advanced Materials, and Mechatronics Systems, AIAMMS 2023 Hybrid, Jaipur 3 November 2023 through 4 November 2023 Code 205236

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Abstract

A stage IV, very invasive astrocytoma tumour is called a glioblastoma. Its diverse MRI appearance presents a serious difficulty in terms of analysis with its detection of sudden growth in cells with diagnosis, to predict via prognosis, and its prediction for the human health survival. This features to reveal the tumor glioma was done with 1232 different categories of feature extraction and evaluates for their prognostic values and relevance, and then applies the FRCNN model to the most significant features to predict survival. We evaluate the proposed model using 80 examples from the Kaggle via BraTS17 dataset used to train the model. For the training dataset, Here on analysis with Fuzzy C means, Optimization algorithm and with Faster Region based CNN algorithm suggested 97% of accuray and validated data produces a normalised RMSE of 2.3% with accuracy of more than 97% obtained.

Author keywords- 1p19q; co-deletions; Glioma; idh1; mutation

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q4	7th	NA	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

ENHANCED PREDICTION OF GLIOMA BRAIN TUMORS USING DEEP LEARNING ALGORITHM

Shelke C.J.; Wankhede D.S.; Paul P.M.; Shrivastava V.K.; Achary R.

AIP Conference Proceedings Volume 3217, Issue 1 20 December 2024 Article number 020022 1st International Conference on Artificial Intelligence, Advanced Materials, and Mechatronics Systems, AIAMMS 2023 Hybrid, Jaipur 3 November 2023 through 4 November 2023 Code 205236

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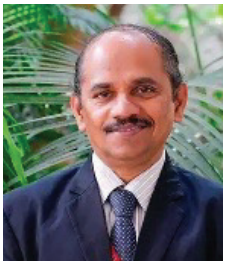

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Enhanced prediction of glioma brain tumors using deep learning algorithm

Chetan J. Shelke; Disha Sushant Wankhede; P. Mano Paul; Virendra Kumar Shrivastava; Rathnakar Achary

+ Author & Article Information

AIP Conf. Proc. 3217, 020022 (2024)

Abstract

Immunotherapy has shown to be a viable strategy f or many malignancies in clinical trials, but its implementation in glioma has lagged behind the progress shown in other tumors. With IDH1 mutation, many characteristics over imaging were significantly different. In accordance with the Minimum Reduction and also with few selection operator, nonlobar location, a higher proportion of attractive tumours, multifocal/ multicentric distribution, and inadequate delineation of non-enhancing margins were all autonomous predictors of an IDH1 wild type. Here an algorithm to detect the mutuation status and status for the co-deletion of brain tumor based on the MRI scans considering different radionics feature using VGG-16 and with Modified Fuzzy C Means algorithm together with Grey Wolf Optimization in R CNN techniques. This innovative model aims to enhance the precision of diagnostic outcomes by employing error-free algorithms in the analysis for the examinations of medical image data.

Author keywords- Brain tumor; deep learning; glioblastoma; glioma; vgg-16

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

PREDICTION OF FAILURES TO ENHANCE FAIL-SAFE IN STEER-BY-WIRE SYSTEM

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3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology, ODICON 2024 2024 3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology, ODICON 2024 Bhubaneswar 8 November 2024 through 9 November 2024 Code 205455

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Abstract

Steer-by-wire (SbW) systems have considerably popular in this era as it has advantages in design, flexibility, and ease of construction. In the other hand SbW systems also has considerable failure risks as there is no mechanical connection between the steering wheel and axle. In this paper, we discuss on prediction of possible failures in a SbW system based on the existing research done in industry, which can be potentially taken to enhance the fail-safe of the system. The failure prediction system relies on multiple inputs. Some inputs, like plausibility errors from the steering position sensor, directly inform the system about potential failures. Additionally, to ensure fail-safety, predictions are enhanced by using various sensors, such as a vibration sensor on the axle for vibration pattern analysis and a proximity sensor on the axle to detect misalignments. These inputs contribute to generating an optimal failure prediction. A thorough review of existing research has been conducted to identify and address gaps in failsafe mechanisms for Steer-by-Wire (SbW) systems through the proposed failure predictions. The experimentation data provides an initial step for the proposed method of achieving better results of prediction of failure.

Author keywords- fail-safe methods; prediction of failure; Steer by Wire (SbW); vibration sensor

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

OPTIMIZED RAINFALL PREDICTION MODEL USING OPTUNE CATBOOST: AN INNOVATIVE APPROACH

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3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology, ODICON 20242024 3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology, ODICON 2024 Bhubaneswar 8 November 2024 through 9 November 2024 Code 205455

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Optimized Rainfall Prediction Model Using Optune CatBoost: An Innovative Approach

Publisher: IEEE Cite This PDF

Tina Babu ; Rekha R Nair ; Pavithra K **All Authors**

Abstract

Rainfall forecasting is important for several uses, such as agriculture, water supply, and flooding emergencies. This is because rainfall, which is a type of precipitation, is not easily predictable owing to several factors that include atmospheric, oceanic, and geographical factors. Therefore, a new Optune CatBoost prediction model has been developed here that can be used to predict rainfall. Some of the research techniques used include; data preprocessing, outlier analysis, normalization, SMOTE, feature engineering, and correlation analysis. This Optune CatBoost prediction gives a maximum accuracy of 96%, a precision of 97% F1 score of 96.7%, and recall of 95.5%. The discrimination between rainfall and non-RA events is evaluated to be strong with the area under the ROC curve equalling 0.96. The study implies that the developed model could be used to enhance rainfall prediction, which in turn aids in decision-making on appropriate resource utilization in weather-sensitive areas.

Author keywords- Label Encoding; Normalization; Optune CatBoost Classifier; Synthetic Minority Over-sampling Technique

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

RASPBERRY PI INTEGRATED CNN METHOD TO FIND THE SKIN LESIONS FROM PHOTO IMAGES

Jeba Singh O.; Lavanya D.; **Rajesh Sharma R.**

3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology, ODICON 2024 2024 3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology, ODICON 2024 Bhubaneswar 8 November 2024 through 9 November 2024 Code 205455

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Raspberry Pi Integrated CNN Method to Find the Skin Lesions from Photo Images

Publisher: IEEE Cite This PDF

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Abstract

Nowadays skin cancer is a growing illness among the people all around the world and it is related to the skin organ. Especially, the symptoms of melanoma disease have to be diagnosed earlier and a successful treatment can reduce the number of patients. The traditional method of detection by the dermatologist will be ineffective and expensive. In the proposed work a convolutional neural network-based method is implemented to analyze the accuracy and robustness of the system. Furthermore, the optimized model deployed on Raspberry Pi based hardware prototype using open CV and camera in python. As the result the performance of the machine learning method is improved to detect the skin lesion with low resources and affordable cost.

Author keywords- fConvolutional Neural Network; Melanoma; Raspberry Pi; Skin lesions

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

NEXT GENERATION HEFFRON-PHILLIPS MODEL FOR DAMPING OSCILLATIONS BASED ON SNAKE OPTIMIZATION ALGORITHM

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3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology, ODICON 2024 2024 3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology, ODICON 2024 Bhubaneswar 8 November 2024through 9 November 2024 Code 205455

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Next Generation Heffron-Phillips Model for Damping Oscillations Based on Snake Optimization Algorithm

Publisher: IEEE Cite This PDF

Niharika Agrawal ; Sheila Mahapatra **All Authors**

Abstract

A reliable, safe, and secure operation of the power system is essential for all-round development. Low Frequency Oscillations (LFO) hamper the smooth operation of the system. In this manuscript, a novel Heffron-Phillips model based on a higher-order Synchronous Machine (SM) model 1.1 is developed for damping oscillations. This Next Generation Heffron-Phillips Model (NGHPM) has 10 K-constants governing the system dynamics instead of 6 K-constants. The different models are the system with no controller, with Proportional Integral Derivative(PID), with Power System Stabilizer (PSS), and with Coordinated PSS and Thyristor Controller Series Capacitor (CPT). The parameters are tuned with a novel Snake Optimization Algorithm (SOA), which has been tested on Congress on Evolutionary Computation (CEC-2017) benchmark functions. The eigenvalues are shifted to the left half of the s-plane with the PID, PSS, and CPT. The simulation is performed with MATLAB R2023a. The highest damping ratio (0.9860) is obtained with the CPT model. The oscillations are settled in the least time with this model. This model is capable of meeting the challenges of grid integration with renewables. The NGHPM with CPT contributes to meeting the seventh goal of the 17 Sustainable Development Goals (SDGs), i.e., to provide affordable and clean energy to all. A robust, safe, and secure power system is developed with NGHPM based on SOA.

Author keywords- Algorithm; Controller; Damping; Oscillations; Robust; Stability

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

PREDICTING FETAL WEIGHT AND PREGNANCY ADVISORY USING DEEP LEARNING ALGORITHM

Rajesh Sharma R.; Abebe M.; Zenebe M.; Teshale H.; **Sungheetha A.**; Gandasala G.S.P.

3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology, ODICON 2024 2024 3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology, ODICON 2024 Bhubaneswar 8 November 2024 through 9 November 2024 Code 205455

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DOI: 10.1109/ODICON62106.2024.10797514 • Corpus ID: 275020378

Predicting Fetal Weight and Pregnancy Advisory Using Deep Learning Algorithm

Rajesh Sharma R, Mesfin Abebe, Mendistu Zenebe, Haymanot Teshale, Akey Sungheetha, GS Pradeep Gandasala less •

Published in 3rd Odisha International... 8 November 2024 • Medicine, Computer Science •
2024 3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology (ODICON)

Abstract

For the benefit of the unborn kid and the mother, controlling pregnancy and making correct fetal weight predictions are essential. To address this, this study, proposes a deep learning model that effectively combines multimodal data, such as text-based medical records and ultrasound images to predict fetal weight and provide personalized pregnancy advisory services. The model is trained on a sizable dataset that includes information from the mother's clinical evaluation and images from fetal ultrasounds that were gathered from Nigst Elleni Hospital in Hossana and the Ethiopian Demographic and Health Survey 2016, respectively. We ran tests on a real-world dataset of expectant mothers and compared several models to assess the effectiveness of our suggested framework. In this study, we used multiclass target classes. The results revealed that combining CNN, LSTM, MLP, Autoencoder, or DBN models significantly improved accuracy in classifying and predicting fetal weight. With scores of 92.3%, 93.4%, 92.2%, and 92.8%, respectively, the CNN and LSTM fusion model coupled yielded the best results in terms of accuracy, precision, recall, and F1 score. Additionally, this model demonstrated the lowest MAE, MSE, RMSE, and the highest R2, measuring 0.45, 0.34, 0.58, and 0.5, respectively. © 2024 IEEE.

Author keywords- CNN; DBN; Fetal; LSTM; MLP; Multi Model

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

QUANTUM BASED FLOYD-WARSHALL'S ALGORITHM WITH ATTENTION U-NET SEGMENTATION MODEL FOR PREDICTING PIXEL REPRESENTATION OF SATELLITE IMAGE

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Quantum Based Floyd-Warshall's Algorithm with Attention U-Net Segmentation Model for Predicting Pixel Representation of Satellite Image

Publisher: IEEE Cite This PDF

Sengottaiyan N ; Gnanaprakasam T ; Anantha Babu S ; Rajesh Sharma R ; Akey Sungheetha ; G S Pradeep Ghantasala **All Authors**

Abstract

A correct file for constructing footprints is vital for more than a few applications, from population estimation and concrete-making plans to humanitarian reaction and environmental science. An appropriate way to acquire such information is through satellite TV for PC imagery that could map the distribution of homes throughout the world, mainly in regions that are remote or tough to access. However, detecting homes with imaginative and prescient strategies in a few environments may be a hard task. The proposed approach reduces the need for substantial previous segmentation and provides more consistency in detecting structures with hazy borders. With an average Fl score of 97.52%, it shows greater accuracy compared to earlier efforts. The suggested method has the potential to be quick and accurate prediction of satellite image datasets. © 2024 IEEE.

Author keywords- Floyd-Warshall's Algorithm; QFWA-UNet; QIR; Quantum Computing; UNet

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

DETECTION OF FALSE INFORMATION IN DIGITAL MEDIA USING BLOCKCHAIN TECHNOLOGY

Kilaru A.; Prasad L.V.N.; **Ghantasala G.S.P.; Ananthanagu U.**; Kallam S.; **Rajesh Sharma R.**

3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology, ODICON 2024 2024 3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology, ODICON 2024 Bhubaneswar 8 November 2024 through 9 November 2024 Code 205455

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Detection of False Information in Digital Media Using Blockchain Technology

Publisher: IEEE Cite This PDF

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Abstract

The spreading of false information over the internet, highly impacts society and causes social and economic loss to the nation. One of the most important factors for the increase in the number of misleading information is that all the users of any particular digital platform usually do not verify the authenticity of the information. The principal impartial of this proposed work is to afford a solution to society to reduce the social and economic losses caused by spreading false information circulated digitally. Blockchain is a disseminated, decentralized network that conducts peer-to-peer transactions, meaning that it does not have a central entity to operate. Here we present a literature survey on various approaches towards this problem statement and investigate a Blockchain-based solution that focuses on all types of digital content by providing the end user to validate the information along with the evidence for data that was collected at each step.

Author keywords- Blockchain Technology; decentralized technology; digital media; disinformation; distributed ledger technology; false information detection; misinformation

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

INTEGRATING BLOCKCHAIN TECHNOLOGY FOR ENHANCED SECURITY AND TRUST IN REMOTE IOT HEALTHCARE SYSTEMS

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Integrating Blockchain Technology for Enhanced Security and Trust in Remote IoT Healthcare Systems

Publisher: IEEE Cite This PDF

V. Ellappan ; R Rajesh Sharma ; Akey Sungheetha ; K. Karthick ; S. Karthick ; G S Pradeep Ghantasala **All Authors**

Abstract

The proposed method goals to deal with the important issues of facts privacy, personal records security, and reliability of clinical facts in allotted health care systems Blockchain generation allows decentralized structures states hand and without problems set up, disposing of risks associated with unique vulnerabilities and increasing stakeholder self-assurance. Internet of Things (IoT) devices, accepted companies, and healthcare providers all serve as nodes in a personal, permissioned blockchain network. This community guarantees the safety and integrity of data received with the aid of IoT sensors, rejecting undesirable changes. Smart contracts enable the automated execution and enforcement of facts sharing agreements, get admission to regulations, and privacy policies.... New cryptographic solutions cope with the security and reliability challenges of the Internet of Things (IoT) and healthcare structures. Algorithms allow confidentiality evaluation and collaborative selection-making. This protects patient privacy and presents smooth records float and treatment. © 2024 IEEE.

Author keywords- Blockchain; Data Security; Internet of Things (IoT); Remote Health Monitoring; Trust Management

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

EXPLORING LOCAL GOVERNANCE AND SUSTAINABILITY CHALLENGES IN COMMUNITY RESERVES: A DATA SCIENCE PERSPECTIVE WITH GLOBAL INSIGHTS

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3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology, ODICON 2024 2024 3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology, ODICON 2024 Bhubaneswar 8 November 2024 through 9 November 2024 Code 205455Computing Technology, ODICON 2024 Bhubaneswar 8 November 2024 through 9 November 2024 Code 205455

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Exploring Local Governance and Sustainability Challenges in Community Reserves: A Data Science Perspective with Global Insights
November 2024
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Conference: ODICON 2024 (IEEE Conference) · At: Bhubaneswar

Abstract

As one of the furthermost noticeable industries, tourism strives for to magnify the situation in numerous forms, effectually addressing the dissimilar matters and concerns into the world nowadays. Frequently, these issues disturb the ecologically momentous areas and the local communities on a higher note. It's the need of the hour to check the forecasts of sustainable and community-based coastal tourism, whichever targets to promote the area's tourism potential over vigorous involvement by the local community although preservative the aboriginal ecological balance. Kerala, a classic tourism destination in India, provides significant opportunities for livelihood options to the local community who depend on natural resources. The contemporaneous research paper was centered on a case study of Kadalundi- Vallikkunnu Community Reserve in Kerala, the local authority and several influences it could need onto the local community then the recommendations whichever could be measured to discourse a interrelated issues. A vast portion of the respondents, having tourism activities as their primary source of income, have identified the problem of environmental degradation as prevalent in the area. In contrast, the rest are unaware of the harmful effects happening to the natural ecosystem, primarily because of waste disposal and water pollution. The paper is an endeavor to shed graceful on the local governance system of community reserve and socio-economic aspects of the local communities on the development of tourism initiatives in Kerala. © 2024 IEEE.

Author keywords- BCommunity Based Coastal Tourism; Community Reserve; Environmental Degradation; Rural Tourism; Sustainability

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

EMERGING TECHNOLOGIES IN HEALTHCARE SYSTEMS

Sachdeva R.K.; Bathla P.; Vij S.; Jain M.; Kumar L.; **Pradeep Ghantasala G.S.**; Ahuja R.

Deep Reinforcement Learning and Its Industrial Use Cases: AI for Real-World Applications Pages 375 – 394 1 January 2024

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Integrating Blockchain Technology for Enhanced Security and Trust in Remote IoT Healthcare Systems

Publisher: IEEE Cite This PDF

V. Ellappan ; R Rajesh Sharma ; Akey Sungheetha ; K. Karthick ; S. Karthick ; G S Pradeep Ghantasala **All Authors**

Abstract

This book chapter provides an overview of emerging trends and opportunities in healthcare research. The objective of the chapter is to explore the impact of emerging healthcare technologies in optimizing patient care. It focuses on addressing challenges and setting future directions for healthcare research. The chapter discusses several subjects, such as the growing significance of patient-centered care and personalized medicine, as well as the application of artificial intelligence (AI), machine learning, and big data analytics to enhance patient outcomes. Examples include the use of AI for drug discovery, machine learning algorithms for predictive analytics, and Internet of Things (IoT) applications related to healthcare enabled by big data analytics. Additionally, it looks at how wearables, telehealth, and apps for mobile health might change the way that healthcare is provided and make care more accessible. The chapter also emphasizes the significance of covering social aspects of health to improve health equity and lessen health disparities as well as the necessity of interdisciplinary collaboration. Finally, the chapter discusses challenges and recommendations related to healthcare research. Overall, the book chapter touches on emerging directions in healthcare research standards, including benchmarks, challenges, and recommendations for advanced technologies, offering a reflective analysis of recent progress and envisioning future mentoring in healthcare.

Author keywords- Artificial intelligence; immunotherapy; machine learning; personalized medicine; regenerative medicine; telemedicine

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

CNN-BASED PLANT LEAF DISEASE DETECTION: A KEY SOLUTION FOR ENHANCING AGRICULTURAL PRODUCTIVITY

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CNN-based Plant Leaf Disease Detection: A Key Solution for Enhancing Agricultural Productivity

September 2024

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Conference: 2024 3rd International Conference for Advancement in Technology (ICONAT)

Abstract

Agriculture plays a pivotal role in our lives and holds significant importance in our economy. Proper management of agricultural practices is essential for maximizing profits in agricultural production. However, many farmers lack expertise in identifying and managing plant leaf diseases, leading to reduced crop yields. Since agricultural productivity directly impacts the profitability of farming, efficient disease detection and management are crucial. To address this issue, Convolutional Neural Networks (CNN) emerge as a viable solution for leaf disease detection and classification. The primary objective of this research is to develop a robust CNN-based system capable of detecting and classifying leaf diseases in various crops such as apple, grape, corn, potato, tomato, and more. In this research, the CNN algorithm was utilised, and the accuracy was 97.58%. The system's application will enable farmers to monitor large fields of crops, facilitating early detection and treatment of diseases. The significance of plant leaf disease detection spans across multiple sectors, including Biological Research and Agriculture Institutes. Detecting diseases promptly can help implement timely medical treatments, thereby mitigating the negative impacts on crop health and productivity. Moreover, such a system can assist in monitoring crop health on a larger scale, benefiting the agricultural sector as a whole.

Author keywords- Agriculture; Convolutional Neural Network; Plant Leaf Disease Detection

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

DATA PRIVACY AND PROTECTION: LEGAL AND ETHICAL CHALLENGES

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Emerging Threats and Countermeasures in Cybersecurity Pages 433 – 465 1 January 2024

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Data Privacy and Protection: Legal and Ethical Challenges
November 2024
DOI:10.1002/9781394230600.ch19
In book: Emerging Threats and Countermeasures in Cybersecurity (pp.433-465)

Abstract

This chapter explores data privacy in the digital era. It examines legal and ethical challenges arising from technological advancements and data-driven processes. Fundamental data privacy principles are discussed such as the right to privacy, consent, and confidentiality. The chapter analyses the impact of legal frameworks, focusing on the GDPR and similar laws, on businesses and individuals. Ethical concerns about personal data collection, algorithmic biases, and emerging technologies, like AI and IoT, are addressed. The intricate balance between data privacy and national security is explored highlighting tensions between individual rights and public safety. In conclusion, the chapter emphasizes the significance of robust legal frameworks and ethical guidelines for safeguarding data privacy while promoting responsible data handling practices.

Author keywords- Data privacy and protection; fundamental concepts of data privacy; global data protection laws; importance of personal data; legal and ethical challenges; privacy and data protection relationship

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

EFFICIENT METHOD FOR AUTOMATIC IRRIGATION SYSTEM USING IOT

Rajagopal R.; Senbagavalli M.; Sampath P.V.V.S.S.; Sanjeevi Kumar V.

10th International Conference on Electrical Energy Systems, ICEES 2024 2024 10th International Conference on Electrical Energy Systems, ICEES 2024 Chennai 22 August 2024 through 24 August 2024 Code 205023

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Efficient Method For Automatic Irrigation System using IOT

Publisher: IEEE Cite This PDF

R Rajagopal ; M Senbagavalli ; P. V. V. S. S. Sampath ; Sanjeevi Kumar v **All Authors**

Abstract

The precise and effective management of water using Internet of Things (IoT) technology in Automatic Irrigation Systems (AIS) has revolutionized agricultural practices. The primary objective is to enhance the watering methods, reduce labor costs, and conserve water. Through the literature review, various components are used in this automatic irrigation system. Identifying gaps in existing approaches leads to the proposal of an integrated framework. This process encompasses the availability and cost-effectiveness of the product. The testing and evaluation of the system will be conducted by testing trails with different soil moisture levels. As a result, we can see an improvement in the quality of the product. The purpose of this project is to show the importance of water conservation in the modern deforested environment. Future work will focus on integrating based on weather conditions by getting the datasets from the weather station.

Author keywords- Automatic Irrigation System; IoT in Agriculture; Real-time Monitoring; Soil Moisture Sensors; Weather Data Integration

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

ENHANCING DECISION-MAKING AND OPERATIONAL EFFICIENCY THROUGH DEMAND PREDICTION USING MACHINE LEARNING

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2024 International Conference on Emerging Trends in Networks and Computer Communications, ETNCC 2024 — Proceedings Pages 230 — 234 2024 4th International Conference on Emerging Trends in Networks and Computer Communications, ETNCC 2024 Windhoek 23 July 2024 through 25 July 2024 Code 204761

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Enhancing Decision-Making and Operational Efficiency Through Demand Prediction Using Machine Learning

N. Bahadure, Neelam Singh, J. Patni, Rutuja Durge, Shailaja Pipalatkar, Ramdas Khomane, Tanupriya Choudhury, Saumya Deshmukh less •

Published in International Conference on... 23 July 2024 • Computer Science, Business •
2024 International Conference on Emerging Trends in Networks and Computer Communications (ETNCC)

Abstract

Launching a new product in the market and then getting reviews about the product so that the feasibility of the product can be planned accordingly mainly depends on the survey information or data from the sources. Here, decision-making plays a significant contribution, and this is where demand prediction comes into the picture. Demand prediction will not only help in planning the business and optimizing the operations but will also help get more information about the product's performance in the market. This study mainly focuses on how machine learning algorithms and other techniques can be used to predict the demand for the product. The model proposed in this study can enhance decision-making and efficiency and lead to high-standard market performance. © 2024 IEEE.

Author keywords- business planning; machine learning; market performance; optimizing operations

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

ENHANCED HEART DISEASE PREDICTION USING GRID SEARCH OPTIMIZED XGBOOST CLASSIFIER

Babu T.; Nair R.R.; Pavithra K.

3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology, ODICON 2024 2024 3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology, ODICON 2024 Bhubaneswar 8 November 2024 through 9 November 2024 Code 205455

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Enhanced Heart Disease Prediction Using Grid Search Optimized XGBoost Classifier

Publisher: IEEE Cite This PDF

Tina Babu ; Rekha R Nair ; Pavithra K All Authors

Abstract

Since heart disease is still one of the major causes of death worldwide, there has been a lot of study done on early diagnosis and prevention techniques. Thus, an XGBoost classifier tuned for Grid Search is used to carry out a novel prediction. Finding the best characteristics in the dataset is aided by Grid Search optimization. The preprocessed dataset is subjected to suitable feature selection procedures in order to extract the most pertinent predictors. The accuracy, precision, recall, and F1-score are among the performance indicators used to assess the suggested method. Comparing the suggested model to other techniques as the Random Forest model, Decision Tree model, and Multi-Layer Perceptron (MLP), it yielded an accuracy of 97.56% and a Fi_Score of 97.69%. By enabling early identification and preventive actions, this research adds to the ongoing efforts to develop accurate and dependable predictive models for cardiac disease, which in turn improves patient outcomes and lessens the strain on healthcare systems. © 2024 IEEE.

Author keywords- Grid Search optimization; MinMaxScaler; Normalization; XGBoost Classifier

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

ADVANCED MACHINE LEARNING FRAMEWORKS FOR MULTIMODAL IMAGE AND SPEECH SIGNAL PROCESSING

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2024 3rd International Conference for Advancement in Technology, ICONAT 2024 2024 3rd International Conference for Advancement in Technology, ICONAT 2024 Goa 13 September 2024 through 14 September 2024 Code 204956

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Advanced Machine Learning Frameworks for Multimodal Image and Speech Signal Processing
September 2024
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Conference: 2024 3rd International Conference for Advancement in Technology (ICONAT)

Abstract

Multimodal data processing, especially the fusion of image and speech modality, is important for future human computer interface, medical applications and security surveillance. This research proposes the new machine learning approach for the efficient handling of multimodal data in which feature extraction from images and from the speech signal is obtained by employing CNN and LSTM networks, respectively. These features are combined by a hybrid fusion approach so that the resulting algorithm would be both accurate and fast. CIFAR-10 and LibriSpeech were used to assess the framework; the highest accuracy was 92% whilst the conventional methods like MDNN and EFMS could only reach 86%. Moreover, the analysis showed that the proposed method can take a processing time of 0.15 seconds to taxonomy and 0.45 seconds for speech data, thus making it preferable for real time data. These results illustrate the framework's efficiency in predicting the multimodal input and demonstrate superiority over the prior methods. © 2024 IEEE.

Author keywords- Data fusion; Deep learning; Feature extraction; Human-computer interaction; Image signal processing; Machine learning frameworks; Multimodal processing; Real-time processing; Speech signal processing

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

A MODULAR CNN FRAMEWORK FOR HIERARCHICAL MANGO GRADING AND QUALITY ASSESSMENT

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A Modular CNN Framework for Hierarchical Mango Grading and Quality Assessment

Publisher: IEEE Cite This PDF

Rahul Adhikary ; Sandipan Pine ; Subhra Jyoti Choudhury ; Akey Sungheetha ; Rajesh Sharma R ; G S Pradeep Ghantasala **All Authors**

Abstract

Mango fruits are widely recognized for their diverse applications in the food, beverage, and various industries, making them a global commodity of significance. The escalating demand for premium-quality mangoes highlights the necessity for dependable and efficient grading techniques. Traditional mango grading heavily relies on human expertise, often susceptible to subjectivity, errors, and time-intensive procedures. In this study, we introduce a CNN-based mango grading model to automate and enhance the accuracy ofmango quality assessment. Our proposed model employs CNNs in a modular, sequential approach to extract relevant features from mango images and classify them into distinct quality grades. We utilize a comprehensive dataset of mango images with corresponding quality labels for training and validation. Experimental outcomes underscore the effectiveness of the CNN-based method in accurately grading mangoes, presenting a promising solution to improve efficiency and objectivity in mango grading. In conclusion, the CNN-based mango grading model represents a significant step forward in modernizing and optimizing mango quality assessment processes. The combination of machine learning techniques with image analysis offers a robust solution to address longstanding challenges associated with traditional grading methods. As this technology evolves, it has the potential to revolutionize quality control practices in the food industry. This CNN-based approach outperforms other classifiers for this specific mango grading problem. © 2024 IEEE.

Author keywords- CNN Modular organization; Deep learning; food production; Mango health detection

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

AUTOMATED GLAUCOMA SCREENING IN RETINAL FUNDUS IMAGERY: LEVERAGING A CONVOLUTIONAL NEURAL NETWORK FRAMEWORK

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Automated Glaucoma Screening in Retinal Fundus Imagery: Leveraging a Convolutional Neural Network Framework

September 2024
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Conference: 2024 3rd International Conference for Advancement in Technology (ICONAT)

Abstract

Glaucoma, a prevalent eye ailment, necessitates early detection and treatment to prevent irreversible vision loss. Conventional screening methods are often time-intensive and require specialized expertise, limiting accessibility, especially in remote areas lacking ophthalmologists. This study introduces a CNN model, harnessing deep learning to analyze retinal images and extract glaucomatous indicators. Evaluation of the CNN's performance on a diverse dataset includes accuracy, sensitivity, specificity, and F-score assessment. Results underscore the CNN's promise as an efficient and dependable tool for automated glaucoma screening. This advancement offers optimism for enhancing early diagnosis and intervention, critical for managing this sight-threatening condition. © 2024 IEEE.

Author keywords- Automated diagnosis; Convolutional neural network; Early intervention; Glaucoma screening; Retinal imagery analysis; Vision loss prevention

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

OPTIMIZING PHASOR MEASUREMENT UNIT PLACEMENT APPROACH FOR ENHANCED SYSTEM OBSERVABILITY

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3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology, ODICON 2024 2024 3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology, ODICON 2024 Bhubaneswar 8 November 2024 through 9 November 2024 Code 205455

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Optimizing Phasor Measurement Unit Placement Approach for Enhanced System Observability

Publisher: IEEE Cite This PDF

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Abstract

This paper presents an Integer linear programming (ILP) model to optimize the integration of PMUs. The proposed method addresses two important goals reducing the number of PMUs required for a complete system overview and reducing redundancy measurement. By increasing system reliability through strategic redundancy, this method ensures robust performance under adverse conditions. The results obtained, in terms of the System Observability Redundancy Index (SORI), the proposed method is easy to implement and provides optimal PMU placement locations for efficient monitoring of new methods, especially for IEEE-14. IEEE-30, IEEE-57, and IEEE-118 test systems. © 2024 IEEE.

Author keywords- Integer linear programming; Optimum PMU Placement; Phasor measurement unit; System observable redundancy Index; Zero-injection Bus

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

OPTIMIZED FEATURE SELECTION AND TRANSFER LEARNING FOR ACCURATE FUNDUS IMAGE CLASSIFICATION IN GLAUCOMA DETECTION

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2024 3rd International Conference for Advancement in Technology, ICONAT 2024 2024 3rd International Conference for Advancement in Technology, ICONAT 2024 Goa 13 September 2024 through 14 September 2024 Code 204956

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Optimized Feature Selection and Transfer Learning for Accurate Fundus Image Classification in Glaucoma Detection

Publisher: IEEE Cite This PDF

R Mahaveerakannan ; B. Rajakumar ; R Rajesh Sharma ; S. Pushpa **All Authors**

Abstract

There needs to be a global response to the alarming rise of retinal disorders. One of the most serious eye diseases, glaucoma can lead to permanent blindness. Manual evaluations are commonly used to diagnose glaucoma by ophthalmologists. However, this method is laborious, subjective, and prone to errors. In order to bolster and support the current diagnostic methods, it is essential to establish automated procedures. Researchers generally agree that optic dise (OD) and optic cup (OC) segmentation can help in glaucoma screening using fundus imaging. A number of studies have suggested decision assistance systems for glaucoma diagnosis that are based on artificial intelligence (AI). The precision and efficiency of current AI-based approaches, however, are severely lacking. The segmentation process becomes more difficult when dealing with objects of varying sizes, backgrounds, and pixel intensity values. At the outset, the flamingo search optimisation algorithm (FSOA) enhances classification accuracy by optimally selecting characteristics. This research proposes a model for automatic fundus picture classification using a deep residual neural network (ResNet) and the transfer learning technique. By including a residual structure, ResNet34 is able to avoid information loss while extracting high-quality fundus image features, making it an outstanding image classification tool. With fewer fundus images, the transfer learning method can better express the information for classification by abstracting the deep features from the shallow features. © 2024 IEEE.

Author keywords- Deep residual neural network; Flamingo search optimization algorithm; Fundus images; Glaucoma Detection; Optic disc segmentation

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

DESIGN AND DEVELOPMENT OF A WIRELESS MULTI-PATIENT VITAL SIGNS MONITORING SYSTEM WITH AN INTEGRATED DASHBOARD

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Design and Development of a Wireless Multi-Patient Vital Signs Monitoring System with an Integrated Dashboard

September 2024
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Conference: 2024 3rd International Conference for Advancement in Technology (ICONAT)

Abstract

Vital sign monitoring systems have revolutionized healthcare by enabling remote patient monitoring with real-time data transmission. This proposes a novel approach by introducing a multi-patient Dashboard, enhancing the scalability and efficiency of vital sign monitoring. Through wireless connectivity, the system simultaneously collects and analyzes vital signs such as heart rate, and SPO2 levels from multiple patients. The Dashboard provides healthcare professionals with a comprehensive overview of patients' conditions, helping with timely interventions which improve patient care. This system not only enhances healthcare delivery but also streamlines workflow, ultimately advancing patient outcomes and healthcare efficiency. © 2024 IEEE.

Author keywords- Dashboard; Health Monitoring; Multiple Patients; Vital signs

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

RICE PADDY DISEASE DETECTION USING CONVOLUTIONAL NEURAL NETWORKS

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Rice Paddy Disease Detection Using Convolutional Neural Networks

Publisher: IEEE Cite This PDF

Rajesh Sharma R ; Sandeep Pradeep ; Mridul Pal ; Jackwin Joseph ; Akey Sungheetha ; Ezil Sam Leni **All Authors**

Abstract

Rice is a critical staple meal worldwide, and its sustainability depends on early detection of rice leaf sicknesses. This look at as it should be identifying and instructions rice leaf sicknesses the use of switch mastering and deep mastering techniques. A dataset of 5932 self-generated rice leaf pics changed into assembled and labeled into 9 disease-unfold instructions. Convolutional Neural Network fashions have been used to evaluate the datasets, and their overall performance changed into contrast with that of different switch mastering techniques.

Author keywords- Agriculture Food security; CNN; Crop yield; Deep learning; Rice leaf disease

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

A ROBUST CONVOLUTIONAL NEURAL NETWORK ARCHITECTURE FOR AUTOMATED PNEUMONIA DETECTION FROM CHEST X-RAY IMAGES

Babu T.; Naik P.K.; **Nair R.R.;** Pallavi K.

2024 3rd International Conference for Advancement in Technology, ICONAT 2024 2024 3rd International Conference for Advancement in Technology, ICONAT 2024 Goa 13 September 2024 through 14 September 2024 Code 204956

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A Robust Convolutional Neural Network Architecture for Automated Pneumonia Detection from Chest X-ray Images
September 2024
DOI:10.1109/ICONAT61936.2024.10775260
Conference: 2024 3rd International Conference for Advancement in Technology (ICONAT)

Abstract

Pneumonia is a significant global health concern, especially for vulnerable populations such as children under five. Timely and accurate diagnosis is critical for effective treatment and improved patient outcomes. This project proposes a robust solution leveraging Convolutional Neural Networks (CNNs) for automated pneumonia detection from chest X-ray images. The model, trained on a meticulously preprocessed dataset of 5,216 chest X-ray images, demonstrated exceptional performance, achieving a training accuracy of 98.16% and a validation accuracy of 98.45% after 50 epochs. The architecture comprises five Conv2D layers with ReLU activation, followed by max-pooling layers, and a fully connected artificial neural network for classification. The model's success in distinguishing between normal and pneumonia-infected cases underscores its potential as a valuable tool for healthcare professionals, offering a reliable and efficient means of pneumonia identification. The model's high accuracy and efficiency make it a valuable asset, potentially reducing the workload on radiologists and enabling quicker diagnoses, ultimately leading to more timely interventions and improved patient outcomes. Comprehensive evaluation, including testing on a separate dataset and real-world image inferences, validates the robustness of the proposed solution. © 2024 IEEE.

Author keywords- Chest X-ray Imaging; Convolutional Neural Networks (CNNs); Pneumonia Detection; ReLU activation

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

ADAPTIVE MULTISCALE WAVELET COMPRESSION FOR PRESERVING CRITICAL DIAGNOSTIC FEATURES IN MEDICAL IMAGING

Rajesh Sharma R.; Prakash K.; **Sungheetha A.**; Ellappan V.; Karthik S.; **Ghantasala G.S.P.**

4th International Conference on Sustainable Expert Systems, ICSES 2024 — Proceedings Pages 1553 — 1557 2024 4th International Conference on Sustainable Expert Systems, ICSES 2024 Kaski 15 October 2024 through 17 October 2024 Code 204685

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Adaptive Multiscale Wavelet Compression for Preserving Critical Diagnostic Features in Medical Imaging
October 2024
DOI:10.1109/ICSES63445.2024.10763290
Conference: 2024 4th International Conference on Sustainable Expert Systems (ICSES)

Abstract

X-ray., MRI and CT scans are indispensable tools for diagnosing and treatment planning but the growth of the number of HR images is a problem in terms of storing and transmitting them. These challenges, therefore, require efficient compression techniques that will help overcome them, but at the same time maintaining key diagnostic details. In this paper, we introduce an adaptive multiscale wavelet-based method for compression of medical images. Our method uses a novel ROI detection algorithm along with a content-adaptive compression approach that compresses the different ROIs by a different level of compression since they have different diagnostic significance. Our approach was able to achieve a compression ratio of twenty to one while only breaking down 98. The quantitative analysis yielded insignificantly different structural similarity index (SSIM) of 5% for the ROI and 95 % for non-ROI area. There were no statistically significant difference between affirmative and negative images as identified by radiologists F1 scores for compressing images were statistically equal to F1 scores of original images p> 0. 05. It minimized on storage by 85% and transmission times by 78% than the uncompressed images. The research work suggested adaptive compression method provides a significant solution for bio signals and medical imaging data storage as planning, organizing and controlling the overwhelming increased usage of data in clinical and telemedicine environment. © 2024 IEEE.

Author keywords- Diagnostic accuracy; Medical image compression; Region of interest; Telemedicine; Wavelet transform

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

PEDESTRIAN DETECTION AND TRACKING FOR DRIVER ASSISTANCE SYSTEMS

Muddebihal A.; Chandru P.; Nisanth V.; **Babu T.**

2024 3rd International Conference for Advancement in Technology, ICONAT 20242024 3rd International Conference for Advancement in Technology, ICONAT 2024Goa13 September 2024through 14 September 2024Code 204956

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Pedestrian Detection and Tracking for Driver Assistance Systems

Publisher: IEEE Cite This PDF

Amaresh Muddebihal ; P Chandru ; V Nisanth ; Tina Babu **All Authors**

Abstract

Pedestrian detection and tracking, particularly in low-light conditions, is critical for ensuring road safety, especially for vulnerable populations like senior citizens. Traditional methods often struggle with multiple moving objects and poor visibility, leading to increased noise and false alarms. To address these challenges, this project proposes a novel approach combining a wavelet-based contrast change detector and locally adaptive thresholding for real-time detection and tracking of multiple moving objects during night-time driving scenarios. The initial phase utilizes a contrast change detector to identify potential moving objects by detecting local changes in contrast over time. False alarms are suppressed using motion prediction and spatial nearest neighbor data association. Furthermore, a sophisticated change detection algorithm is employed to segment video sequences effectively, minimizing noise and enhancing the quality of outputs. Incorporating the latest advancements, such as the YOLO V8 module, this project focuses on leveraging deep learning techniques for pedestrian detection. The YOLO V8 module, a state-of-the-art variant of the YOLO series, is utilized to enhance accuracy and runtime efficiency. By harnessing a Large-Field Of-View (LFOV) deep network approach, the project achieves high detection accuracy while processing larger image areas at faster speeds compared to traditional deep networks.

Author keywords- Autonomous Vehicles; Object Tracking; Pedestrian Detection; Real-time Systems; YOLO V8

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

NOVEL CONTROL APPROACH FOR BALANCING CHARGING DEMAND IN ELECTRIC VEHICLES CONNECTED TO MICROGRID

Rai I.; Badi M.

Proceedings of IEEE International Conference on Vehicular Technology and Transportation Systems, ICVTTS 20242024 2024 IEEE International Conference on Vehicular Technology and Transportation Systems, ICVTTS 2024Bangalore 27 September 2024 through 28 September 2024Code 204615

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Novel Control Approach for Balancing Charging Demand in Electric Vehicles Connected to Microgrid

Publisher: IEEE Cite This PDF

Ila Rai ; Manjulata Badi **All Authors**

Abstract

The increasing use of electric vehicles means that their charging loads are aggravating microgrids and negatively impacting voltage stability. Therefore, the approach for bringing a new form of control and reducing the charging load pressure on microgrids for EVs is presented in this paper. The proposed control approach delineates an entirely new control an adaptive power control flow to regulate the uniform charging of the EVs while at the same time controlling the microgrid voltages. This helps to regulate fluctuations in voltage and achieve standardization of the electric vehicles charging in different sorts of vehicles connected to microgrids. This approach improves the charging system for electric vehicles, and outcomes of the simulations show the efficacy of this approach where voltage regulation is witnessed to have improved with the improved charging balance. This will enhance the determinant factors related to the usage of electric vehicles thus enhancing performance. This approach gives a proper solution concerning EV charging through micro-grids; it introduces diverse options for a system that could not effectively tackle such questions and offers a better methodology of electrical delivery.

Author keywords- Battery; Charging Current; Electric Vehicle; Microgrid; Voltage Control

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

DEEP CONVOLUTIONAL NEURAL NETWORKS FOR AUTOMATED SCREENING AND DIAGNOSIS OF OPHTHALMIC DISEASES

Babu T.; Naik P.K.; Nair R.R.; **Janhavi P.G.**

ICONAT 20242024 3rd International Conference for Advancement in Technology, ICONAT 2024Goa13 September 2024through 14 September 2024 Code 204956

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Deep Convolutional Neural Networks for Automated Screening and Diagnosis of Ophthalmic Diseases

Publisher: IEEE Cite This PDF

Tina Babu ; Pramod Kumar Naik ; Rekha R Nair ; P G Janhavi **All Authors**

Abstract

This project focuses on developing a deep learning algorithm to classify eye diseases from images. The dataset comprises images depicting various eye conditions, including glaucoma, cataracts, normal eyes, and diabetic retinopathy. We adopt a comprehensive approach by utilizing pre-trained architectures such as ResNet-18, GoogleNet, AlexNet, VGG19, and ResNet-50 as the backbone of our models, fine-tuning each on our dataset. During the training process, we employed data augmentation techniques to enhance the dataset, improving the models' generalization ability across diverse eye conditions. The evaluation of the models involves a combination of cross-entropy loss and accuracy metrics to assess performance. Notably, the individually trained models exhibited varying accuracies, with ResNet-18 achieving the highest accuracy of 92.7% on the validation set. Additionally, we conducted an analysis of model performance using metrics such as precision, recall, and F1-score, further enhancing our understanding of the models' capabilities. The visualization of results is facilitated through the presentation of confusion matrices, providing insights into the models' classification behavior across different eye diseases. This study opens up a promising new path for improving ophthalmology screening and diagnosis by demonstrating the prospective benefits of deep learning in automating the classification of eye diseases. © 2024 IEEE.

Author keywords- Deep Learning; Eye Disease Classification; Pre-trained CNN Architectures; ResNet; Retinal Images; Transfer Learning

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	03 GOOD HEALTH AND WELL-BEING

MELLO: A LARGE LANGUAGE MODEL FOR MENTAL HEALTH COUNSELLING CONVERSATIONS

George S.B.; Binu Rajan M.R.; **Ebin P.M.**

2024 3rd International Conference for Advancement in Technology, ICONAT 2024 Goa13 September 2024through 14 September 2024Code 204956

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Mello: A Large Language Model for Mental Health Counselling Conversations

Publisher: IEEE Cite This PDF

Steve Boby George ; M R Binu Rajan ; Pm Ebin **All Authors**

Abstract

Amidst a time when providing assistance for mental health is extremely crucial, a cutting-edge language model that has been specifically trained on talks related to mental health counselling emerges as an innovative answer. The objective of this study is to enhance the understanding and generation of human language in the context of providing mental health assistance. By utilising a diverse dataset of anonymous counselling sessions, the model has been trained to recognize and respond to a wide range of mental health concerns, including anxiety, depression, stress, and more. The fine-tuning process incorporates ethical considerations, privacy concerns, and careful attention to the complexities of mental health conversations. The finished model will demonstrate a comprehensive comprehension of mental health issues and provide empathetic and compassionate assistance. Offering supportive and motivating responses, serving as a crucial asset for individuals in need of advice, mental health experts, and the broader healthcare community. © 2024 IEEE.

Author keywords- Chatbot; Empathy; Large Language Model; Mental Health Counselling; Mistral; Natural Language Processing

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

COMPARATIVE ANALYSIS OF 4X4 WALLACE TREE MULTIPLIERS AT 45NM NODE TECHNOLOGY

Dhariwal S.; Korah R.; Mandeep M.; Reddy B.H.; Gagan M.

Proceedings of NKCon 2024 - 3rd Edition of IEEE NKSS's Flagship International Conference: Digital Transformation: Unleashing the Power of Information 2024 3rd IEEE North Karnataka Subsection Flagship International Conference, NKCon 2024Bagalkote21 September 2024through 22 September 2024 Code 204945

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Comparative Analysis of 4x4 Wallace Tree Multipliers at 45nm Node Technology

Publisher: IEEE Cite This PDF

Sandeep Dhariwal ; Reeba Korah ; Mandeep M ; B. Harshavardhan Reddy ; M Gagan All Authors

Abstract

: In this research paper, a GDI based Wallace tree multiplier is compared with a conventional Wallace tree multiplier to analyze the power dissipation through simulation at 45nm node technology using CADENCE virtuoso design system. A GDI based Wallace tree multiplier is showing improvements in device sizing due to a smaller number of transistors, but the power dissipation is not up to expectation. This is due to more leakage as compared to the conventional design of the Wallace tree multiplier. The leakage is more because of static power dissipation, responsible for usable in high packing applications only due to less area of fabrication.

Author keywords- full adder and compressor; GDI; half adder; Wallace Tree

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

CYBERBULLYING DETECTION FROM BANGLA TEXT ON SOCIAL MEDIA

Asif I.A.; Roy A.; Mamun M.A.; Siddiquee M.T.; **Banshal S.K.**

Research Advances in Network Technologies: Volume 2 Volume 2, Pages 241 - 2521 January 2024

Dr. Sumit Kumar Banshal
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Abstract

The potential of social media is expanding as more and more people utilize it. As more individuals use social media, however, bullying in the comment sections of posts by well-known users and of viral material is also on the rise. This number of bullying texts is on the rise and should be eliminated prior to being shown. Using natural language processing and classifier techniques, we identify cyberbullying in this article. We created our data by ourselves. We receive 3500 records, of which 22.1% pertain to bullying and 77.9% do not. After the data were prepared for the classifier model, they were separated into training and testing groups. Multinominal naive Bayes had an accuracy rate of 78.99%, whereas a decision tree classifier had an accuracy rate of 69.48%. The k-nearest neighbor classifier required the shorted time, at 0.0018 seconds, whereas the random forest classifier required the longest time, at 1.44 seconds.

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

DESIGN AND SYNTHESIS OF STATE TRANSITION GRAPH-BASED SEQUENTIAL MULTIPLIER FOR FAST COMPUTING OPERATION

Pine S.; **Rajesh Sharma R.;** Adhikary R.; Mishra S.; **Sungheetha A.; Pradeep Ghantasala G.S.**

3rd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology, ODICON 20242024 Bhubaneswar 8 November 2024through 9 November 2024Code 205455

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Design and Synthesis of State Transition Graph-Based Sequential Multiplier for Fast Computing Operation

Publisher: IEEE Cite This PDF

Sandipan Pine ; Rajesh Sharma R ; Rahul Adhikary ; Satyasis Mishra ; Akey Sungheetha ; G S Pradeep Ghantasala **All Authors**

Abstract

Combinational multipliers operate fast but require a significant amount of silicon area. as area is an important consideration, it can be reduced at the expense of performance by scheduling the sub-operations of the multiplier to execute in successive clock cycles. sequential multipliers are compact, require fewer adders, and are amenable to pipelining. the area required by combinational multipliers grows geometrically with the word length, but the area of a sequential multiplier does not increase significantly with the word length, and the number of clock cycles required to complete a multiplication also grows linearly rather than exponentially with the word length. thus, the paper presents the design and synthesis of a sequential multiplier using a state transition graph (stg) controller to optimize performance parameters such as area, power, and delay. the proposed multiplier is designed and synthesized using verilog programming in xilinx ise and the cadence tool. simulation results and rtl diagrams are presented to validate the sequential multiplier operations. © 2024 IEEE.

Author keywords- Datapath; FSM; RTL Synthesis; Sequential Multiplier; STG

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

COMPARATIVE ANALYSIS OF WORKFORCE ADAPTATION AND JOB EVOLUTION IN THE AGE OF AUTOMATION USING MACHINE LEARNING

Bahadure N.B.; Pandey P.; Bhutda A.; Kumbhalkar R.; Nittala A.; **Patni J.C.**; Mohiddin M.K.

2024 International Conference on Emerging Trends in Networks and Computer Communications, ETNCC 2024 - Proceedings Pages 63 - 692024 4th International Conference on Emerging Trends in Networks and Computer Communications, ETNCC 2024 Windhoek 23 July 2024 through 25 July 2024 Code 204761

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Comparative Analysis of Workforce Adaptation and Job Evolution in the Age of Automation Using Machine Learning

Publisher: IEEE Cite This PDF

Nilesh Bhaskarrao Bahadure ; Pramod Pandey ; Aryan Bhutda ; Rishikesh Kumbhalkar ; Aditya Nittala ; Jagdish Chandra Patni **All Authors**

Abstract

This study explores the transformative effects of automation on the global workforce, focusing on job displacement and creation from 2020 to 2030. Utilizing a comprehensive analysis of data from the McKinsey Global Institute report and additional scholarly sources, we examine the varying impacts across different sectors, including manufacturing, healthcare, retail, and technology. Through quantitative methods, including regression models, and qualitative insights, the study highlights significant shifts in job types and skill demands. We assess the economic implications of these changes, proposing strate-gic recommendations for policymakers, educators, and business leaders to navigate this transition. The findings suggest that while automation presents substantial challenges by displacing routine jobs, it also offers opportunities for economic growth and job creation in new areas requiring advanced cognitive and social-emotional skills. © 2024 IEEE.

Author keywords- Automation; Economic Impact; Job Creation; Job Displacement; Skill Demand Shift; Workforce Transition

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

CYBERTHREATS AND CYBERSECURITY AWARENESS

Sharna N.A.; Naha S.; Hasan S.; Chakraborty N.R.; Sultana N.; **Banshal S.K.**

Research Advances in Network Technologies: Volume 2 Volume 2, Pages 83 – 106 1 January 2024

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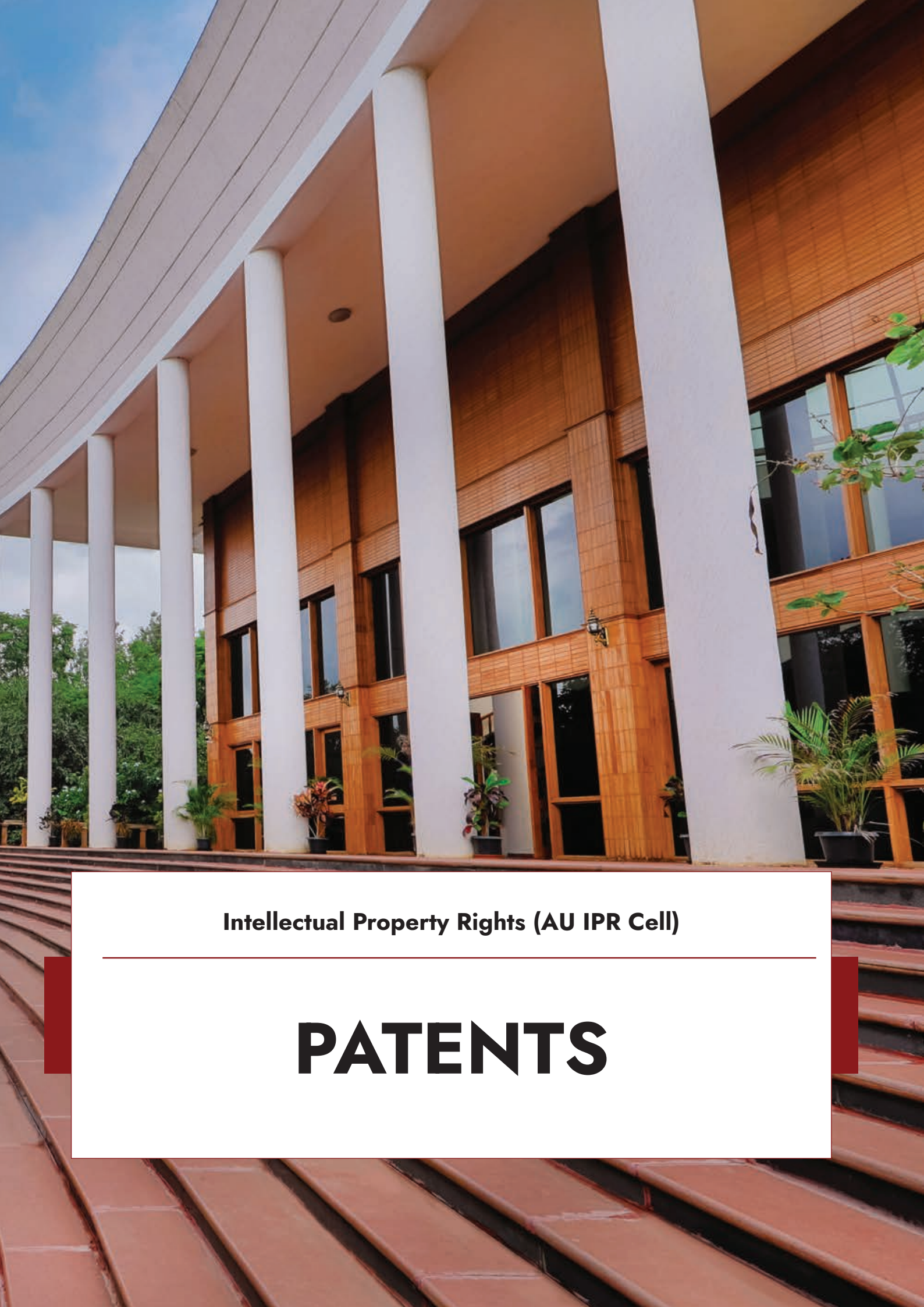
1st Edition
Research Advances in Network Technologies
Edited By Anshul Verma, Pradeepika Verma, Kiran Kumar Pattanaik, Lalit Garg
Copyright 2023

Abstract

The widespread penetration of the internet reshaped behavior and transactional data. Irrespective of the domain, every sphere of life has been penetrated by the e-mode. With the blessing of one-click performance, one of the most crucial issues of exposing these data into an unknown space also arose. In this light, this chapter reviews the existing research in the most commonly known domain of research into these vulnerabilities, namely, cybersecurity or cyberthreats. This chapter outlines the most affected attacks, domains, and probable awareness to be accumulated around this.



Intellectual Property Rights (AU IPR Cell)

PATENTS

Application No **202411079169**

Title of the invention **TIME VALUE OF MONEY: ISSUES & CHALLENGES WITH REFERENCE TO E-PAYMENT SERVICES IN PRIVATE BANKING COMPANIES IN INDIA**

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Name of Inventor: Dr. Priyanka Salgotra, Dr. R. Vennila, **Dr. G. Nandini**, Dr. Pooja Kumari, Dr. Sudha B. S., Shruthi Ramesh, Dr. Umamaheswari S, Dr. Y. Fathima, Dr. K. Balanaga Gurunathan

Abstract

When it comes to making financial decisions, the concept of Time Value of Money (TVM) is crucial. This is especially true when considering the e-payment services offered by private banks in India. The issues and problems surrounding TVM in the dynamic digital payment market are examined in this invention. Interest rate fluctuations, inflationary pressures, and the impact of processing durations on the actual value of money are important considerations. The invention also delves into the ways in which private banks are embracing technological advancements to keep up with customer demands for quick and affordable e-payment services while preserving efficient value transfer.

Application No **202431100934**

Title of the invention **A METAL AND PLANT-BASED PIGMENT CONTAINING POLYMER COMPOSITE FOR INDUSTRIAL APPLICATIONS AND METHOD OF FABRICATION THEREOF**

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Name of Inventor: **Dr. Sunanda Roy**

Abstract

Disclosed herein is a silver nanoparticle-doped PVA-betacyanin electrospun composite mat with high pH-sensing and antimicrobial properties for food packaging application. The method of fabricating said composite mat involves synthesizing silver oxide nanoparticles hydrothermally alongside preparing a mixture of betacyanin and polyvinyl alcohol. Further, incorporating the silver oxide nanoparticles into the PVA-betacyanin solution and electrospinning the solution to prepare a nanofiber mat. The synthesized silver-doped betacyanin-PVA composite mat possesses enhanced antimicrobial property, pH sensing capability, and effectively prevents early decomposition and spoilage of the packaged foods. The composite mat efficiently responded to the fish and meat spoilage. The composite mat meets most of the requirements of a good food packaging materials in terms of its strength, flexibility, optical properties, antimicrobial properties, etc. with real-time monitoring and preserving food quality potential.

Application No **202411103562**

Title of the invention **A SYSTEM AND METHOD FOR FORECASTING AND OPTIMIZING EMPLOYEE PRODUCTIVITY USING REAL-TIME DATA**

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Deputy Registrar (E & E)
& Area Chair - General
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Name of Inventor: Dr. Ridhima Sharma, **Dr. Sunil Kumar**, Dr. Priyanka, Prof. (Dr.) Tanushree Purohit, Prof. (Dr.) Vaishalli Billa

Abstract

A System and Method for Forecasting and Optimizing Employee Productivity Using Real-Time Data. The present invention provides a system and method for dynamically forecasting and optimizing employee productivity by integrating multiple data sources, including real-time behavioral data from wearable sensors and historical performance metrics. The system uses an AI-driven predictive model to analyze this data, generating personalized productivity forecasts and actionable recommendations tailored to individual employees. A dynamic adaptation engine continuously updates recommendations based on real-time changes in employee behavior, mood, and workspace conditions. Additionally, the system incorporates psychometric profiling to further personalize the insights and utilizes a gamified feedback mechanism to encourage healthier work habits, such as taking breaks and optimizing workspace conditions. These technical advancements offer a comprehensive, real-time approach to optimizing productivity and employee well-being, distinguishing the system from traditional static models by providing an adaptive, data-driven solution that enhances both performance and satisfaction in the workplace.

Application No **202441094678**

Title of the invention **SMART WEARALBE DEVICE, COMMUNICATION AMONG HETEROGENOUS INTERNET OF THINGS (IOT) DEVICES**

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Name of Inventor: **Dr. Sandeep Dhariwal, Dr. Gaurav Kumar, Dr. Pradeep Kumar Sharma,** Er. Virinder Kumar Singla, Priyanka

Abstract

An aspect enables communication actions of smart wearable device among heterogeneous Internet of Things (IoT) devices. An IoT device receives data representing a communication of each of a first set of IoT devices, receives data representing a current state of each of a second set of IoT devices, and determines an action to perform at a target IoT based on the received data. An aspect verifies 10 an implied relationship between a first user and a second user by detecting an interaction between a first user device belonging to the first user and a second user device belonging to the second user, storing information related to the interaction in a first interaction table associated with the first user device, assigning a relationship identifier to the second user based, at least in part, on the information 15 related to the interaction, and determining whether or not the assigned relationship identifier is correct.

Application No **202441096025**

Title of the invention **VERISIGN PRO: ADVANCED AI-DRIVEN SIGNATURE VERIFICATION SYSTEM**

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Name of Inventor: **Dr. Jagdish Chandra Patni**, Nilesh Bahadure, Bhoomi Shah, Milind Shah, Pratik Kanani, Prasenjeet D Patil, Md. Khaja Mohidin, Deepak Parashar

Abstract

Handwritten signature verification has been a long-standing method of authentication; however, manual inspection by human experts can be time-consuming and prone to error. VeriSign utilizes Artificial Intelligence (AI) to automate this process, providing fast, accurate, and scalable signature verification that reduces the need for manual intervention. The key contributions of this project include Development of an AI-based signature verification system using deep learning and CNN models. Integration of Explainable AI (XAI) techniques, such as Local Interpretable Model-Agnostic Explanations (LIME), to provide transparency in the verification process. Evaluation of the proposed model's performance using a benchmark signature dataset.

Application No **202411094132**

Title of the invention **ENHANCING AGRICULTURE THROUGH IOT-BASED EMBEDDED SYSTEMS, CLOUD COMPUTING, AND MACHINE LEARNING FOR PLANT DISEASE DETECTION**

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Abstract

The method for the development of easily accessible plant village dataset served as the basis for the dataset used in this investigation. Following the optimization of the hyper-parameters in the systematic review, the network is developed. The transmission learningbased DNN is developed using four trained prototypes: DenseNet121, VGG16, Alexnet, and ResNet50. A method for optimizing composite building blocks is used to extract the data set's key characteristics. This work uses remote sensing and the Internet of Things to monitor agricultural field parameters in a remote cloud environment. In order to create a smart disease prediction, a modified Resnet model was deployed on the cloud. System performance will be lowered by the process. Each GPU unit assigns tasks to designated additional cores in the PDSF multi-threading paradigm. The four levels of this system—crop management, input functional areas, output activities, and pest identification and control—are divided among the different tasks to be performed.

Application No **202441099818**

Title of the invention **TRAFFIC MANAGEMENT - MEASURING THE SPEED OF THE MOVING VEHICLES**

Dr. Jagdish Chandra Patni
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Name of Inventor **Dr. Jagdish Chandra Patni**, Dr. Nilesh Bhaskarrao Bahadure, Dr. Bhoomi Shah, Shrina Patel, Hetal Jethani, Divya Kushwah, Bhavikaben Rushikumar Darji, Dr. Prasenjeet D Patil

Abstract

The purpose of this project, "Traffic Management - Measuring the Speed of Moving Vehicles in the Campus," is to develop a reliable and effective system for monitoring and regulating the speed of vehicles within a university or school campus. By accurately measuring vehicle speeds, the project aims to enhance safety for pedestrians, cyclists, and drivers, reducing the risk of accidents and promoting a safer campus environment. The system will help enforce speed limits, ensuring that vehicles adhere to designated speed restrictions, particularly in areas with high foot traffic, such as crosswalks and intersections. Additionally, the project seeks to leverage modern technologies like computer vision, sensors, and machine learning to create an intelligent traffic management solution that not only monitors speeds but also provides actionable insights for traffic planners and campus security. Ultimately, the goal is to create a more orderly and secure campus atmosphere, improving overall traffic flow and safety for all campus use.

Application No **202441100148**

Title of the invention **OBSTACLE AVOIDANCE SYSTEM WITH MULTI-SENSOR INTEGRATION FOR AUTONOMOUS VEHICLE NAVIGATION CONTROL**

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Dr. Bandi Eswara Kumar
Associate Professor
Alliance School of Applied Engineering

Name of Inventor **Dr. Raja Munuswamy and Dr. Bandi Eswara Kumar**

Abstract

The invention relates to an obstacle avoidance system for autonomous vehicles that integrates histogram analysis with artificial potential field methods. The system combines an Arducam Shield Mini 5MP OV5642 (1) camera with multiple sensors including RPLIDAR A1/A2 (4), HC-SR04 ultrasonic sensors, and dual IMUs (MPU6050 and BNO055) for comprehensive environmental perception. An Arduino MEGA2560 microcontroller (2) processes captured images by converting them to grayscale, resizing to 256 x 256 pixels, and performing histogram analysis to identify obstacle-free regions based on pixel intensity distributions in the 150-200 range. The system implements artificial potential field calculations to generate attractive forces toward safe paths and repulsive forces away from obstacles. Communication is managed through LoRa modules for long-range transmission and CAN bus for internal component integration. The system includes cloud storage capabilities for historical navigation data and SLAM functionality, providing a robust and efficient solution for autonomous vehicle navigation in complex environments.

Application No **202441100180**

Title of the invention **MORPHING DRONE SYSTEM WITH X-H CONFIGURATION TRANSFORMATION FOR ENHANCED RESCUE OPERATIONS**

Dr. Raja Munuswamy
Associate Professor
Alliance School of Applied Engineering

Dr. Bandi Eswara Kumar
Associate Professor
Alliance School of Applied Engineering

Name of Inventor **Dr. Raja Munuswamy, Dr. Bandi Eswara Kumar**

Abstract

This invention presents an innovative morphing drone system that autonomously transforms between X and H configurations to navigate confined spaces effectively. The design features a central hub with four adaptable arms - extending 220mm at 45 degrees in X configuration and 100mm at 90 degrees in H configuration. The system integrates servo motors controlled by a Raspberry Pi microcontroller, while ultrasonic sensors provide real-time obstacle detection to trigger automatic configuration changes. Each arm incorporates motors generating 15N thrust, supporting the 9.81N system weight and maintaining stability during transformations. The hierarchical control architecture manages motor operations, servo control, and decision-making processes. Performance testing reveals rise times of 0.22s (X) and 0.23s (H) configurations, with settling times of 1.30s and 1.35s respectively. This adaptive system proves particularly valuable in military and rescue operations where environmental conditions demand dynamic configuration adjustments.

Application No **202441100571**

Title of the invention **AUTOMATED DUAL-AXIS ROTATION AND PITCH CONTROL MECHANISM FOR PITOTSTATIC TUBE SYSTEM**

Prof. Hariprasad Thimmegowda
Assistant Professor - Assistant Director – PBL
Alliance School of Applied Engineering

Name of Inventor **Prof. Hariprasad Thimmegowda**, Kush Kalpesh Patel, Manne Muddu Shyam Venkat, Manohar R, Badige Sudeep Kumar Achari

Abstract

The invention presents an automated dual-axis control mechanism for precise positioning of pitot-static tubes, incorporating advanced gear systems and control technologies. The mechanism features a main pitching gear (72 teeth, 55mm outer diameter) and matching roll gear assembly, both operating with a 20-degree pressure angle and 0.743243mm module, coupled with a precision-engineered pinion gear (40 teeth, 31mm outer diameter) for synchronized movement control. The system utilizes 3D-printed components for optimal weight characteristics and dimensional accuracy. An integrated automated control system processes real-time flight data to adjust the pitot-static tube's orientation, while multiple position sensors provide continuous feedback for precise positioning verification. The support structure incorporates modular design features enabling efficient maintenance and calibration. This innovative mechanism significantly enhances the accuracy of airspeed and atmospheric pressure measurements while reducing maintenance requirements, thereby improving overall flight safety and operational efficiency.

Application No **202441100577**

Title of the invention **HEMP-BORON NITRIDE HYBRID COMPOSITE COATING FOR SMART ADAPTIVE SUBMARINE HULL APPLICATIONS**

Dr. Sasmita Bal
Associate Professor
Alliance School of Applied Engineering

Dr. Mohit Hemanth Kumar
Assistant Professor & Associate Director - Centre of Excellence (IPR Cell)
Alliance School of Applied Engineering

Name of Inventor **Dr. Sasmita Bal,** Dr. Rajesh Kumar, Prajwal S L, Kishan D, **Dr. Mohit Hemanth Kumar**

Abstract

The invention relates to a biomimetic submarine hull coating fabricated from chemically treated hemp fiber microparticles, boron nitride nanoparticles, and marine-grade epoxy polymer resin. The coating is developed by dispersing treated hemp fiber microparticles (50 μm) and boron nitride nanoparticles (50 nm) into the epoxy matrix using ultrasonication at 40 kHz for 45 minutes, with a controlled mechanical stirring process. The hybrid composite is reinforced with an integrated sensor network and characterized by its ability to dynamically modify surface properties. The coating demonstrates a drag reduction of up to 45%, temperature responsiveness between 5-35°C, and self-healing capabilities for micro-cracks up to 100 μm. The fabrication process involves a multi-stage curing protocol, resulting in a biomimetic coating with hierarchical structures inspired by natural underwater adaptations, providing enhanced hydrodynamic performance and adaptive characteristics for submarine hull applications. The developed coating system is thermally and structurally stable with improved operational efficiency.

Application No **202441100586**

Title of the invention **INTELLIGENT MOBILE DEVICE MANAGEMENT SYSTEM WITH COMPREHENSIVE USER PROFILING**

Dr. R. Rajagopal
Associate Professor
Alliance School of Advanced Computing

Dr. D. Sumathi
Associate Professor
Alliance School of Advanced Computing

Name of Inventor **Dr. R. Rajagopa, Dr. D. Sumathi**

Abstract

The invention relates to an intelligent mobile device management system fabricated through advanced artificial intelligence and machine learning technologies. The system is developed by integrating a mobile application capable of continuous digital activity tracking with an AI-powered behavioral analysis engine. A secure cloud-based processing infrastructure is utilized for uniform dispersion of digital interaction data within the analytical matrix, mechanically processed for 30 minutes with advanced algorithmic curing agents. The system is reinforced with multilayered privacy protection protocols and adaptive intervention mechanisms in a strategic implementation sequence, with computational weight applied to ensure comprehensive data analysis. The mobile device monitoring platform is then post-processed through intelligent machine learning models, maintaining thermal and structural stability with enhanced digital well-being capabilities. The fabricated system provides higher lifecycle management of mobile digital interactions while ensuring user privacy and responsible technology engagement.

Application No **202441101152**

Title of the invention **IOT DEVICE FOR FOOD STORAGE AND MONITORING FOOD QUALITY BY ASSESSING GAS EMISSIONS (METHANE), TEMPERATURE, AND HUMIDITY IN THE STORAGE CONTAINER**

Dr. Lopa Mandal
Professor
Alliance School of Advanced Computing

Name of Inventor: **Dr. Lopa Mandal,** Bharani GS, Jawad Ahmed, Kavin K, Guttapalem Reddy Vishnu Vardhan

Abstract

In the present invention relates to the Internet of Things (IoT) based food storage monitoring system is disclosed, designed to food preservation through intelligent environmental control and real-time spoilage detection. The invention integrates multiple sensors including DHT11 for temperature and humidity, MQ-4 for methane detection, and DS18B20 for precision temperature measurement, all coordinated by an ESP8266 microcontroller to provide comprehensive food storage monitoring. The system continuously tracks critical parameters such as temperature in Celsius, humidity percentage, and methane concentration in parts per million, enabling proactive identification of potential food degradation conditions.

Application No **202441101211**

Title of the invention **DETECTING A DEFECTIVE CELL IN A BATTERY PACK**

Dr. Ila Rai
Assistant Professor
Alliance School of Applied Engineering

Ms. Manjulatha Badi
Associate Professor
Alliance School of Applied Engineering

Name of Inventor: **Dr. Ila Rai, Manjulata Badi**

Abstract

The present invention provides a method and system for detecting defective cells in a battery pack, ensuring safety, reliability, and efficiency. The method involves measuring the open-circuit voltage of each cell, calculating deviations from the mean no-load voltage, and identifying faults based on predefined thresholds. Faulty cells are detected and isolated, with protective measures implemented, such as halting the charging process and triggering warning signals. This approach eliminates confusion caused by natural self-discharge and enhances the accuracy of fault detection. The invention is cost-effective, scalable, and capable of maintaining the overall health and performance of battery packs. By integrating advanced monitoring and diagnostic techniques, it ensures safer and more efficient energy storage systems.

Application No **202441101217**

Title of the invention **AI-DRIVEN CONTINUOUS STRESS ASSESSMENT AND INTERVENTION FRAMEWORK FOR PROLONGED COMPUTER USAGE**

Name of Inventor **Dr. R. Rajagopa, Dr. D. Sumathi**

Dr. R. Rajagopal
Associate Professor
Alliance School of
Advanced Computing

Dr. D. `
Associate Professor
Alliance School of
Advanced Computing

Abstract

The invention provides a system for real-time stress monitoring and management during extended computer use. It integrates physiological sensors (e.g., smartwatches), behavioural sensors (e.g., typing and mouse tracking), and environmental sensors (e.g., light and noise detectors) to continuously collect data on the user's stress indicators. This data is processed through a data fusion module and analysed by AI and machine learning algorithms to detect stress patterns. The system assesses stress levels in real-time and delivers personalized interventions such as visual prompts, auditory alerts, and environmental adjustments. A user interface enables feedback and customization, while ongoing learning adapts the system to improve accuracy and effectiveness. This comprehensive approach addresses stress in various environments, enhancing well-being and productivity.

Application No **202441101226**

Title of the invention **DETECTING UNRESERVED TRAIN POSITION VACANCIES WITH AUTOMATIC PASSENGER COUNTING (APC) SYSTEMS**

Name of Inventor **Dr. R. Rajagopa, Dr. D. Sumathi**

Dr. R. Rajagopal
Associate Professor
Alliance School of
Advanced Computing

Dr. D. Sumathi
Associate Professor
Alliance School of
Advanced Computing

Abstract

The present invention is to improve train service efficiency and customer experience, it focusses on identifying unreserved train position openings utilizing Automatic customer Counting (APC) systems. Real-time data processing and sophisticated sensor technologies are used in this process. The system consists of multiple parts: sensor nodes that collect data and send it to an onboard computer; a wireless communication module that sends data to a central server; infrared sensors and cameras placed at train entry and exit points to detect passengers boarding and alighting.

Application No **202441101057**

Title of the invention **BIODEGRADABLE HYBRID NANO-CUTTING FLUID WITH MOS2 AND CU FOR SUSTAINABLE MACHINING**

Name of Inventor **Dr. C. Venkatesh**

Dr. C Venkatesh
Professor
Alliance School of Applied Engineering

Abstract

The invention relates to a bio-degradable hybrid nano-cutting fluid composition utilizing avocado oil as the base fluid enriched with Molybdenum disulfide (MoS2) and Copper (Cu) nanoparticles for sustainable machining operations. The nano-cutting fluid is prepared through a two-stage process where MoS2 and Cu powders (50 mg each) are first processed in a planetary ball mill at 400 rpm for 12 hours using tungsten carbide balls with a 20:1 ball-to-powder ratio to achieve 80 nm particle size. The nanoparticles are then dispersed in avocado oil (500 ml) at precise concentrations (0.5 vol% MoS2 and 0.25 vol% Cu) through manual mixing, followed by controlled heating and 60-minute magnetic sonication treatment. The resulting cutting fluid combines environmental sustainability with enhanced machining performance, demonstrating improved thermal conductivity, reduced cutting forces, minimized tool wear, and superior surface finish while maintaining biodegradability. The composition is free from synthetic additives and provides a sustainable alternative for industrial machining applications.

Application No **202441101069**

Title of the invention **MWCNTS COATED HSS-CO8 STEEL FOR MACHINING HARD MATERIALS**

Name of Inventor **Dr. C. Venkatesh**

Dr. C Venkatesh
Professor
Alliance School of Applied Engineering

Abstract

The invention relates to a process for manufacturing Multi-Walled Carbon Nanotube (MWCNT) coated HSS-Co8 (M42) steel cutting tools for dry machining of hard materials. The cutting tool is manufactured by initially cleaning the HSS-Co8 (M42) steel substrate using an ultrasonic cleaner for 20 minutes, followed by DC sputtering deposition of a thin nickel catalyst film. The MWCNT (1 wt.%) coating is achieved through PECVD technique, where active vapor precursors (1) undergo vapor phase reactions in a reactor chamber to form intermediate species. These species decompose through homogeneous gas phase reactions (9) above thermal decomposition temperature, followed by diffusion (11) through the boundary layer and heterogeneous reactions (10) at the gas-heated solid interface to form the MWCNT film deposit. The process concludes with the removal of unreacted precursors and secondary products. The resulting MWCNT-coated cutting tool demonstrates enhanced wear resistance and thermal stability for dry machining operations, providing a cost-effective alternative to conventional coated tools while maintaining comparable performance.

Application No **202441101969**

Title of the invention **A DEEP LEARNING FRAMEWORK FOR REAL-TIME SKIN LESION DETECTION AND CLASSIFICATION**

Dr. Amar Choudhary
Assistant Professor
Alliance School of Applied Engineering

Name of Inventor: Sandeep Kumar Rachamadugu, Mr. Deependra Pandey, **Amar Choudhary**, Ms. Sucheta krupalini Moharana, Mr. Sudheer Babu Punuri

Abstract

This innovation proposes a framework for deep learning that may be used for the detection and categorization of skin lesions in real time. The system is able to provide diagnostic insights that are accurate, trustworthy, and explainable because it combines powerful CNN structures with real-time processing capabilities and interpretability features. It is possible to adapt the framework to a wide variety of datasets and imaging settings, which makes it suited for clinical applications as well as telemedicine utilization.

Application No **202541002708**

Title of the invention **SCALABLE MACHINE LEARNING ARCHITECTURE FOR IOT DATA PROCESSING AND ANALYSIS**

Dr. Aparna Pavani
Associate Professor
Alliance School of Business

Name of Inventor: Mr. C.R.VIJAY, Dr Chitra Ramaprakash, Dr. Sajja Suneel, Kottala Sri Yogi, Dr. Ch Shankar, Dr.Suganthi Neelagiri, Dr. P. Usha, **Dr. Aparna Pavani. S**

Abstract

Scalable Machine Learning Architecture for IoT Data Processing and Analysis ABSTRACT The present invention relates to a scalable machine learning architecture designed for efficient processing and analysis of large-scale data generated by Internet of Things (IoT) devices. The system addresses the challenges associated with the high volume, variety, and velocity of IoT data by integrating distributed data processing techniques with dynamic machine learning models. The architecture is modular and designed to scale horizontally, enabling seamless handling of increasing data streams from numerous IoT devices in real-time or near-real-time. Key components of the architecture include a Data Ingestion Layer for secure and reliable collection of IoT data using various communication protocols, a Data Processing and Preprocessing Layer that handles distributed processing, data cleaning, feature extraction, and anomaly detection, and a Machine Learning Model Management Layer that continuously trains, tests, and updates machine learning models for predictive analytics and anomaly detection. The system also leverages both edge and cloud computing resources to optimize latency and computational efficiency, offering flexibility in data processing and model deployment. This scalable machine learning system ensures low-latency performance, real-time adaptability, and high throughput, making it suitable for a wide range of IoT applications, including industrial monitoring, smart cities, healthcare, and connected devices. By enabling continuous learning and adaptation, the system enhances the accuracy and relevance of its analytical models, improving decision-making capabilities across various IoT ecosystems.

Application No **202541002774**

Title of the invention **COLLABORATIVE AI PLATFORM FOR REAL-TIME CURRICULUM CUSTOMIZATION AND OPTIMIZATION**

Dr. Jaya Ganesan
Professor
Alliance School of Business

Dr. G. Ramana Murthy
Professor & Program Director - Ph.D.
Alliance School of Applied Engineering

Name of Inventor **Dr. Jaya Ganesan, Dr. G. Ramana Murthy**

Abstract

Collaborative AI Platform for Real-Time Curriculum Customization and Optimization ABSTRACT The present invention pertains to a joint AI environment that focuses on the real-time adaptability of a curriculum, especially for educational purposes. It uses AI, machine learning, NLP to monitor students' activity, their performance, peculiarities of learning and adapts the content and approaches accordingly. The learning paths that are assigned for each student require students to find the information matching their stage of development as the system allows organizing the educational procedure in a more effective way thus improving learning results. It also makes it easy for educators, content specialists, and administrators to work together to make changes to the curriculum on the fly based on the feedback and performance data received at that time. This invention relieves educators from handling large datasets to make decisions about the best teaching practice and students' interest. Also, it is closely associated with cloud deployment which will allow future scalable implementation in educational organizations and augment the utility of the offered curriculum in various settings. The disaggregation and mutualization of curriculum and AI transform the core processes of curriculum making and delivery of learning resources from a rigid, unidirectional, and linear process into a student-centred and responsive approach to learning with a parallel and reciprocal process of curriculum design and implementation.

Application No **202541004675**

Title of the invention **SALES DATA ANALYSIS AND REPORTING FOR A RETAIL CHAIN MANAGEMENT USING AIML TECHNIQUES**

Dr. Jagdish Chandra Patni
Professor
Alliance School of Advanced Computing

Name of Inventor **Dr. Jagdish Chandra Patni**, Nilesh Bhaskarrao Bahadure, Pradip Ram Selokar, Surendra Pandurang Ramteke, Uday Anandrao Patil, Kamal Kant Verma

Abstract

This work describes a comprehensive process of Sales Analysis & generating reports for retail chain stores. Ultimately, the focus is to provide operational intelligence that helps the retail chain improve its grasp on performance and identify opportunities. There are several dimensions to the project starting with data collection and building a solid foundation for the database. After this, cleaning and preparing the data is an essential step in making sure that the data being processed is both clean and accurate. Using Python, SQL, Excel, etc. the already cleaned & organized data is explored and analysed in a very detailed manner. This stage primarily aims to uncover important trends, cycles, and performance KPIs, which are necessary for the smooth functioning of a retail chain. For more depth of analysis, further methodologies are used: time series analysis and cohort analysis. They give extra insights into sales trends and customer behaviours over time

and provide a more contextual view of factors impacting the performance of your sales. The last part of the work focuses on reporting its results. It means showing the insights in different forms such as tabular summaries, visualizations, and automated reports. These reporting tools are specifically created to enhance decision-making based on data within the retail chain. In summary, this perked, structured approach will enhance the analytical capabilities of the retail chain with recommendations Generation and is designed to give real-life experience in Data Manipulation, Full-Power Data analysis, and Result presentation.

Application No **202441101226**

Title of the invention **SYSTEM AND METHOD FOR AI-ASSISTED DYNAMIC CURRICULUM DESIGN**

Name of Inventor **Dr. Jaya Ganesan, Dr. G. Ramana Murthy**

Dr. Jaya Ganesan
Professor
Alliance School of Business

Dr. G. Ramana Murthy
Professor & Program Director - Ph.D.
Alliance School of Applied Engineering

Abstract

System and Method for AI-Assisted Dynamic Curriculum Design ABSTRACT The present invention relates to a System and Method for AI-Assisted Dynamic Curriculum Design aimed at transforming traditional educational models by leveraging artificial intelligence (AI) to create, manage, and optimize curriculum structures dynamically. The invention provides a comprehensive platform that personalizes learning experiences based on real-time data analysis of individual learner profiles, preferences, and performance metrics. It integrates advanced AI technologies, including machine learning (ML) and natural language processing (NLP), to deliver adaptive content, predictive analytics, and real-time feedback mechanisms. Key features include personalized curriculum generation, real-time content adaptation, multi-modal content delivery, and predictive performance analytics to enhance learner engagement and outcomes. The system supports scalability across diverse educational contexts such as K-12 education, higher education, corporate training, and lifelong learning platforms. Additionally, an educator support dashboard enables real-time monitoring, automated recommendations, and content customization, significantly reducing administrative burdens.

Application No **202541006277**

Title of the invention

AUTOMATED METHODOLOGY FOR PRECISE DENTAL PLAQUE DETECTION ON PRIMARY TEETH USING ADVANCED IMAGING AND AI TECHNIQUES

Name of Inventor

Dr. Tina Babu, Dr. Rekha R Nair, Dr. Pavithra K, Dr. Asha Kurian, Mr. Ebin P M, and Ms. Swetha C B

Dr. Tina Babu
Assistant Professor
Alliance School of
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Dr. Pavithra K
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Alliance School of
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Mr. Ebin P.M.
Assistant Professor
Alliance School of
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Dr. Rekha R Nair
Assistant Professor
Alliance School of
Advanced Computing

Dr. Asha Kurian
Assistant Professor
Alliance School of
Advanced Computing

Ms. Swetha C B
Assistant Professor
Alliance School of
Advanced Computing

Abstract

Traditional methods for detecting dental plaque, such as manual assessment and plaque-disclosing dyes, are time-consuming and prone to human error. This study explores the use of Google Cloud's Vertex AI AutoML to develop a model for detecting plaque levels on permanent teeth using undyed photographic images. Photographic images of undyed and erythrosine-dyed upper anterior permanent teeth from 100 dental students were captured using a smartphone. Dyed images were categorized by plaque levels: mild (60%), serving as the ground truth. Two AutoML models were developed—one for three plaque categories and another for two categories (acceptable vs. unacceptable plaque)—using undyed images in the Vertex AI environment. Both models were evaluated using precision, recall, and F1-score metrics. The three-class model achieved an average precision of 0.907, with the highest precision (0.983) in the heavy plaque category. The two-class model showed improved performance with a precision of 0.964 and an F1-score of 0.931.

Application No **202541006306**

Title of the invention

BIONIC ARM WITH ADAPTIVE MACHINE LEARNING ALGORITHMS FOR PERSONALIZED MOTION CONTROL

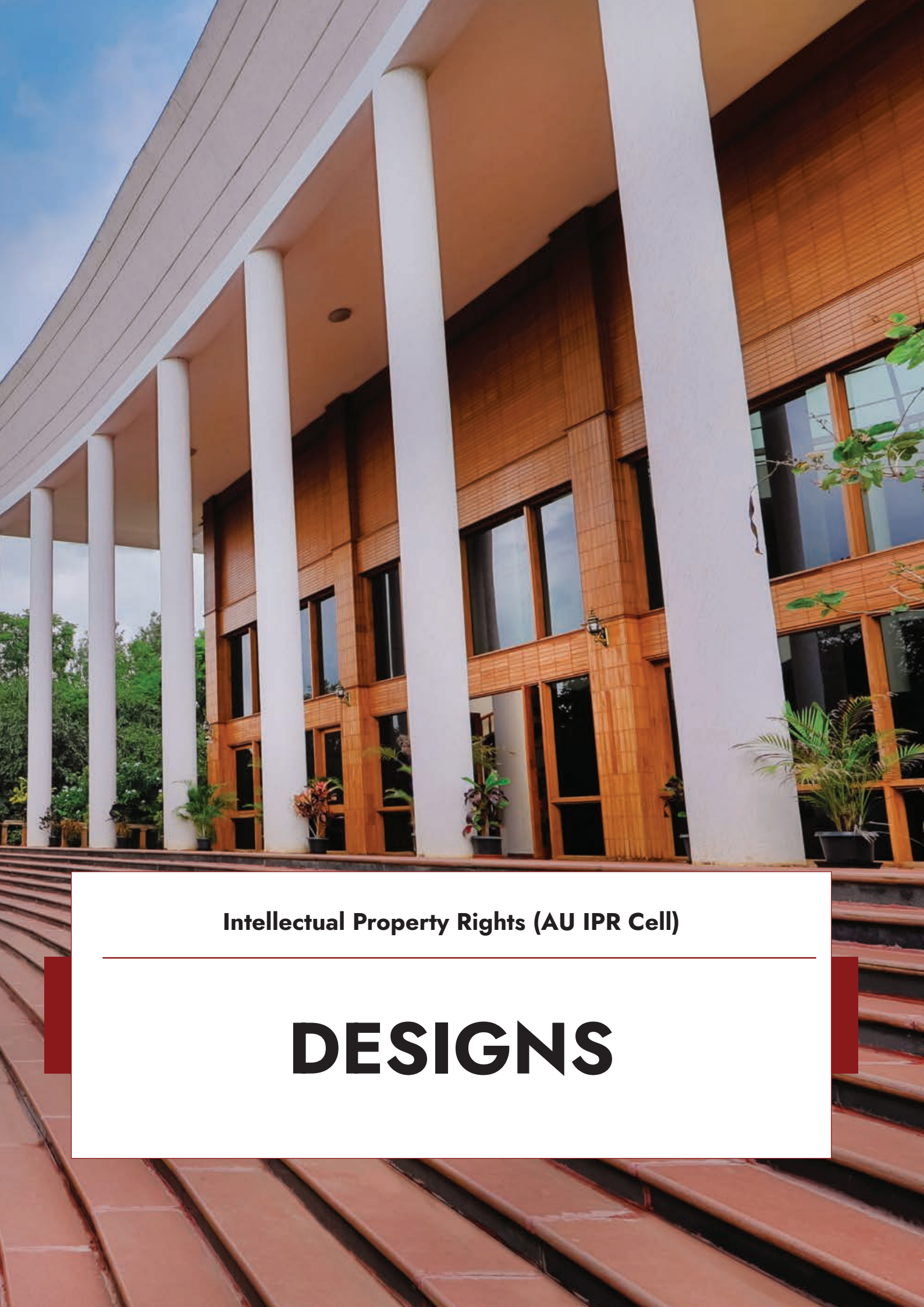
Ms. Asha Rani N.R.
Assistant Professor
Alliance School of Applied Engineering

Name of Inventor

Ms. Asha Rani N R, Mr. K. Immanuel, Shivanand Bhimashankar Konade, Munawar Yusuf Sayed, Mrs. Tejashree S, M. Lavanya, Dr. T. Suresh, Dr. P. Meenalochini

Abstract

The invention introduces a bionic arm system that utilizes adaptive machine learning algorithms for personalized motion control, enabling real-time adjustments based on the user's motor patterns and physical conditions. The system gathers data through sensors, including electromyographic (EMG) sensors, accelerometers, and gyroscopes, which inform the machine learning algorithms to improve the arm's performance. This adaptive approach ensures more natural and fluid movement while accommodating changes in the user's physical state over time. The bionic arm offers customizable features, allowing users to fine-tune the sensitivity, speed, and force of the arm to suit their needs, and also includes predictive maintenance capabilities to ensure long-term functionality. With continuous learning and adjustment, the system provides a seamless, intuitive, and personalized prosthetic experience that significantly improves the user's quality of life and restores greater autonomy.



Intellectual Property Rights (AU IPR Cell)

DESIGNS

Design No: **413057-001**

Title of the Design:

IOT BASED ENERGY METER

Name of Applicant:

Prof. Naren. J, Dr. D. Sumathi, Dr. D J K Kishore, Dr. Amar Choudhary, Dr. Srikanth Itapu, Dr. Sheila Mahapatra, and Dr. Ramesh Chandra Panda

Dr. D. Sumathi
Associate Professor
Alliance School of Advanced Computing

Dr. Amar Choudhary
Assistant Professor
Alliance School of Applied Engineering

Dr. Srikanth Itapu
Assistant Professor & International Relations Coordinator
Alliance School of Applied Engineering

Dr. Sheila Mahapatra
Professor & Associate Director - Research (Academics)
Alliance School of Applied Engineering

Description

A smart energy meter utilizing IoT technology for real-time monitoring and management of power consumption, enhancing efficiency and reducing wastage.

Design No: **432514-001**

Title of the Design:

IOT-INTEGRATED WEARABLE MEDICAL DEVICE

Name of Applicant:

Dr. Kavitha MV, Dr. **Chitra Kiran. N,** Dr. Prerana Chaithra, Dr. Mulumudi Suneetha

Dr. Chitra Kiran N
Professor
Alliance School of Applied Engineering

Description

A cutting-edge wearable device leveraging IoT to track health parameters, providing continuous monitoring for medical diagnostics and personal well-being.

Design No: **434645-001**

Title of the Design:

SMART PILL DISPENSER FOR THE AUTOMATED DELIVERY OF MEDICINES

Name of Applicant:

Alliance University, Bengaluru, **Dr. Harinath Aireddy**, Sheshadri K, Sudhir R, Namitha Papishetty, Joel Jaimon, Shravani N

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

Description

An intelligent pill dispenser designed to automate medicine schedules, ensuring timely delivery and adherence to prescriptions with minimal user intervention.

Design No: **432514-001**

Title of the Design:

AUTOMATED MIST FAN

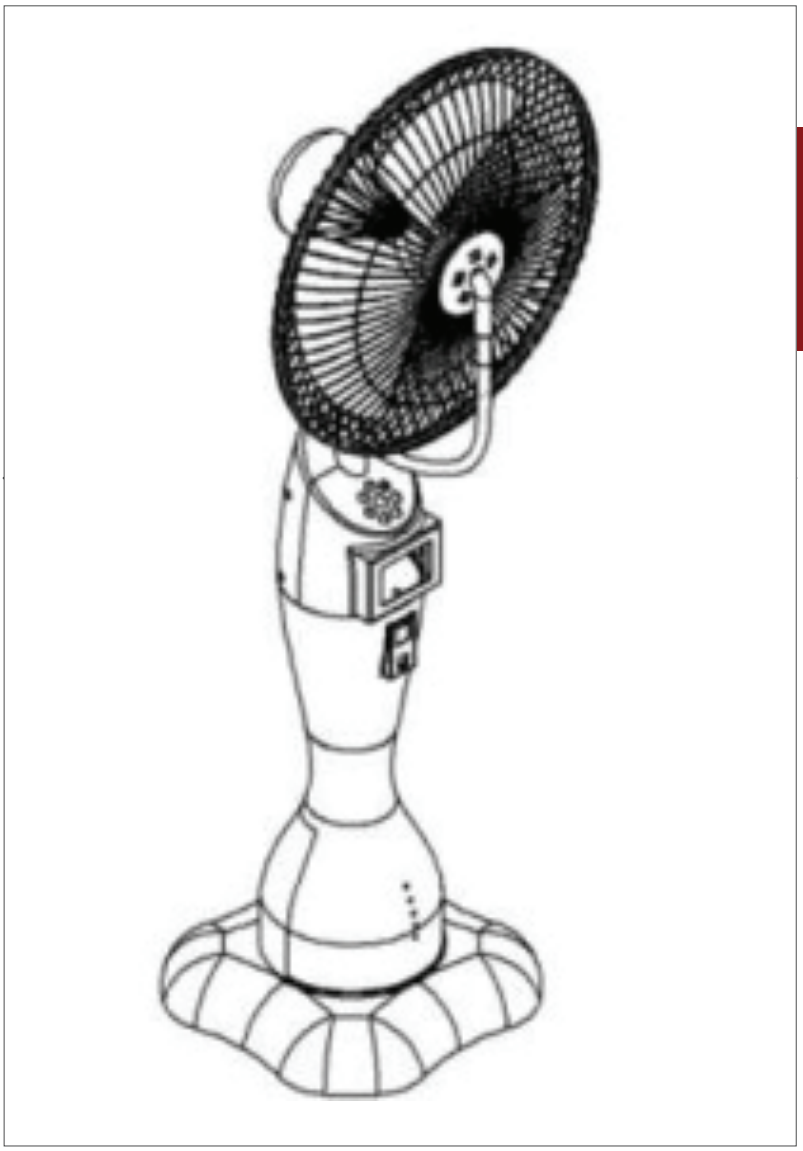
Name of Applicant:

Alliance University, Bengaluru, **Dr. Harinath Aireddy**, Sudhir R, Marriwada Harshavardhan, Nanditha D N, Gurramkonda Venkata Sai, Namitha Papishetty, and Kiran E P

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

Description

A smart mist fan that adjusts mist levels and airflow automatically based on ambient temperature and humidity, offering enhanced comfort and energy efficiency.



Design No: **434649-001**

Title of the Design:

QR CODE BASED PRINTING MACHINE

Name of Applicant:

Alliance University, Bengaluru, **Mr. Rohit Biradar**

Mr. Rohit Biradar
Student
Alliance School of Applied
Engineering

Description

An innovative printing system that operates using QR code scanning, streamlining document retrieval and printing for faster and more efficient workflows.

Design No: **434653-001**

Title of the Design:

HEAD GREASING MASSAGER

Name of Applicant:

Alliance University, Bengaluru, **Mr. Manjunath S**

Mr. Manjunath S
Staff
Alliance School of Applied Engineering

Description

A massaging device designed for scalp care, delivering automated greasing and massage functions to improve blood circulation and hair health.

Design No: **434655-001**

Title of the Design:

SOIL MOISTURE MONITORING STICK

Name of Applicant:

Alliance University, Bengaluru, **Dr. Tina Babu, Dr. Rekha R. Nair, Mr. Manjunath S**

Dr. Tina Babu
Assistant Professor
Alliance School of Advanced Computing

Dr. Rekha R Nair
Assistant Professor
Alliance School of Advanced Computing

Mr. Manjunath S
Staff
Alliance School of Applied Engineering

Description

A portable stick equipped with sensors to measure soil moisture levels, helping farmers and gardeners optimize irrigation for better crop growth.

Design No: **434656-001**

Title of the Design:

SOIL WATER SEPARATION DEVICE FOR IRRIGATION

Name of Applicant:

Alliance University, Bengaluru, **Dr. Tina Babu, Dr. Rekha R. Nair, Mr. Manjunath S**

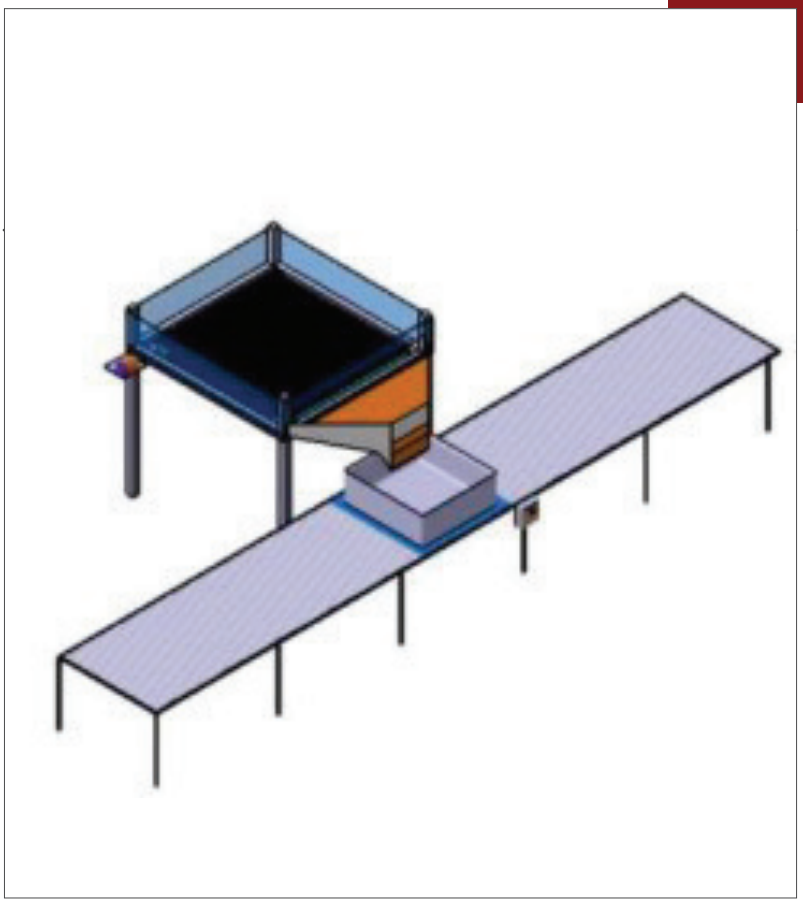
Dr. Tina Babu
Assistant Professor
Alliance School of Advanced Computing

Dr. Rekha R Nair
Assistant Professor
Alliance School of Advanced Computing

Mr. Manjunath S
Staff
Alliance School of Applied Engineering

Description

A smart energy meter utilizing IoT technology for real-time monitoring and management of power consumption, enhancing efficiency and reducing wastage.



Design No: **434657-001**

Title of the Design:

BIRD FACE HELICOPTER TOY

Name of Applicant:

Alliance University, Bengaluru, **Mr. Manjunath S**

Mr. Manjunath S
Staff
Alliance School of Applied Engineering

Description

A uniquely designed helicopter toy with a bird-shaped appearance, offering an engaging and entertaining flying experience for children.

Design No: **435000-001**

Title of the Design:

DEVICE FOR IDENTIFICATION OF ALZHEIMER'S DISEASE THROUGH BLOOD PLASMA PROTEIN

Name of Applicant:

Dr. Asish Bhaumik, Pooja R. Hatwar, Kasturi Vishwanathasetty Veerabhadrappa, Dr Suraj Bansal, Dr Anil Kumar Yadav, **Rahul Goel**, Dr. Easha Biswas, Dr Ajay Kumar, and Girish Joshi

Prof. Rahul Goel
Assistant Professor
Alliance School of Business

Description

A medical diagnostic device analyzing blood plasma proteins to detect early signs of Alzheimer's disease, aiding in timely intervention and treatment.

Design No: **435811-001**

Title of the Design:

SMART DEVICE FOR DECENTRALIZING ENERGY MANAGEMENT

Name of Applicant:

Dr. Saswati Debnath, Dr. Smitha Rajagopal, Dr. Nazmin Begum, **Dr. Neeraj Jain,** Swetha Chittezhath Brahmapriyan, Puneet Kumar Yadav

Dr. Saswati Debnath
Assistant Professor
Alliance School of Advanced Computing

Dr. Smitha Rajagopal
Assistant Professor
Alliance School of Advanced Computing

Dr. Neeraj Jain
Assistant Professor
Alliance School of Advanced Computing

Description

A smart energy management system that decentralizes power distribution, optimizing energy usage and improving grid efficiency through automation.

Design No: **437737-001**

Title of the Design:

COFFEE TABLE

Name of Applicant:

Dr. H. Mohit, Mr. Vamsikrishna V V V, Mr. H. Babu Vishwanath, and Dr. G. Hemath Kumar

Dr. Mohit Hemanth Kumar
Assistant Professor & Associate Director
- Centre of Excellence (IPR Cell)
Alliance School of Applied Engineering

Description

A stylish and functional coffee table, designed with innovative features to enhance convenience, aesthetics, and usability in modern living spaces.

ALLIANCE UNIVERSITY
CENTRE for RESEARCH

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

ALLIANCE RESEARCH CHRONICLES

JANUARY 2025
Volume 1

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