



ALLIANCE
UNIVERSITY
CENTRE for RESEARCH



ALLIANCE RESEARCH CHRONICLES

MARCH 2025

Volume 3





ALLIANCE
UNIVERSITY
CENTRE for RESEARCH



ALLIANCE

RESEARCH

CHRONICLES

MARCH 2025

Volume **3**

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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

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.

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.

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

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.

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.

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.



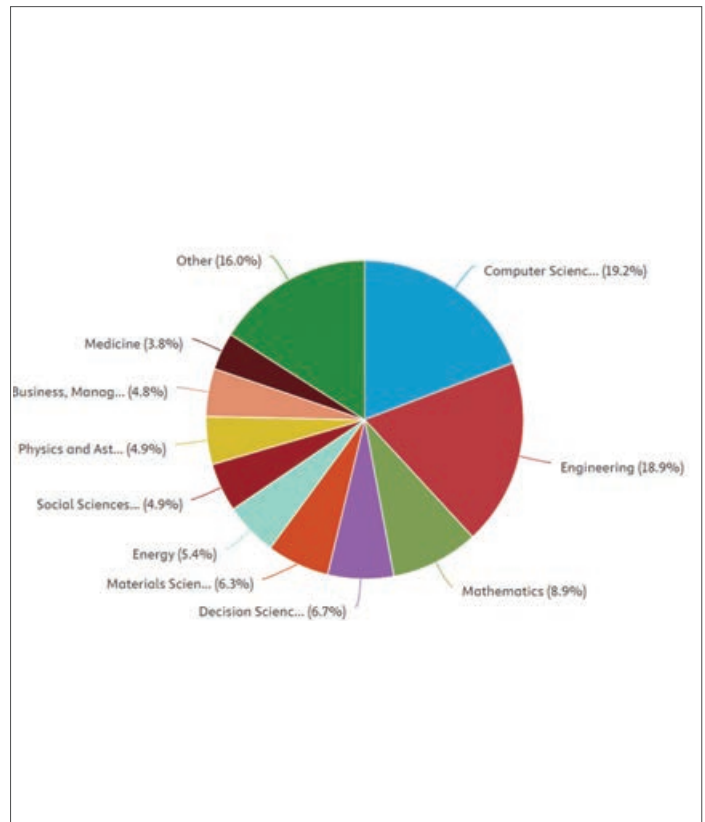
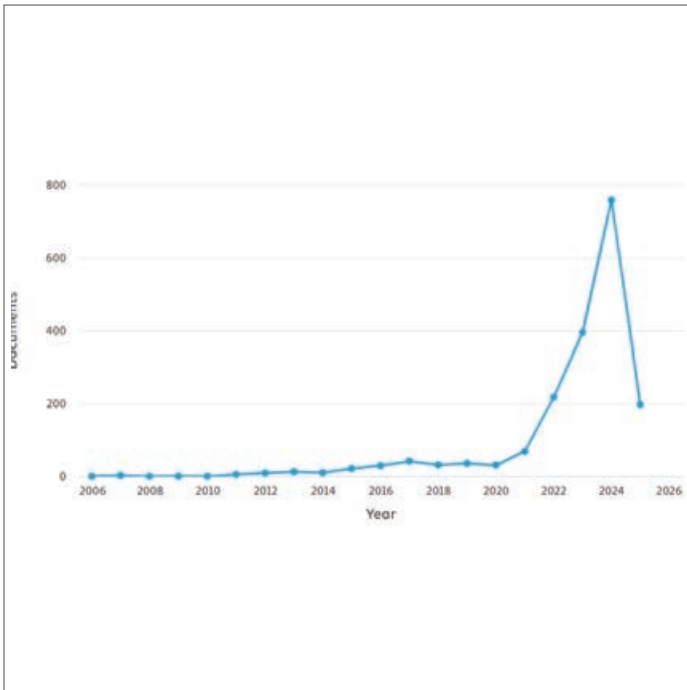


1,864
Documents

593
Authors

Documents by Subject Area

Documents by Year



Summary

1680

Scholarly Output

19.9%

All Open Access

726

Authors

6747

Citation Count

4.0

Citations per Publication

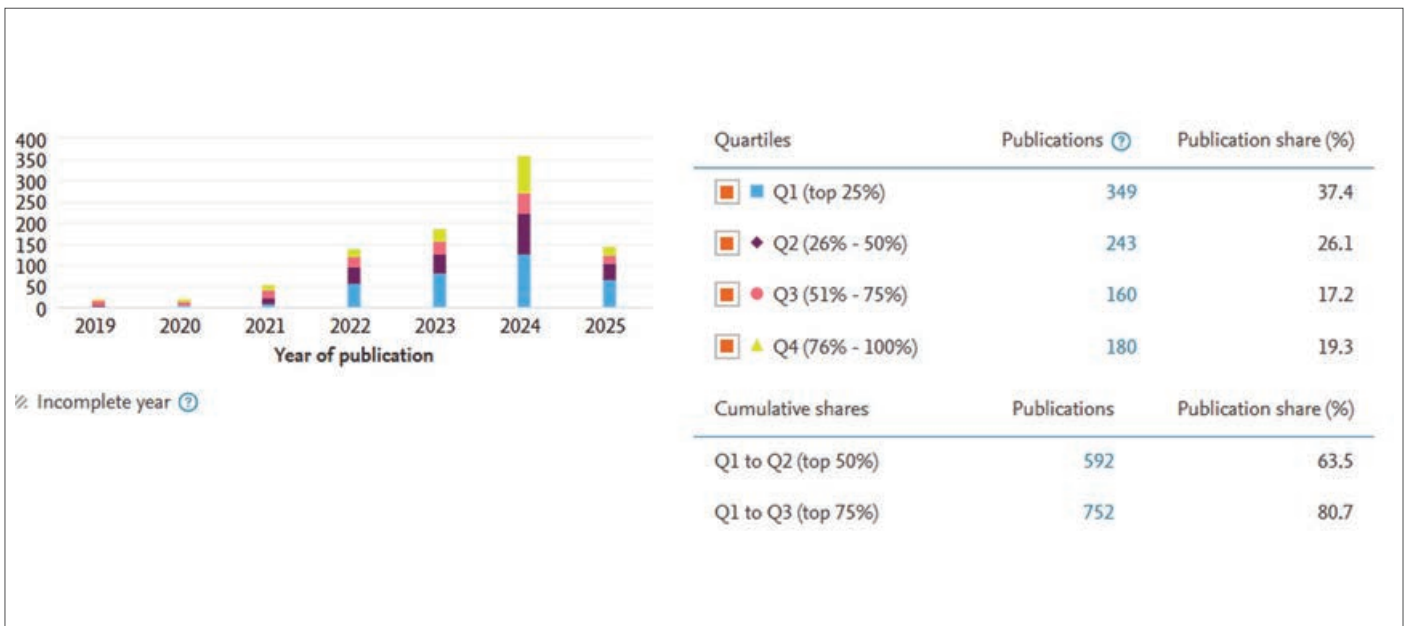
1.81

Field-Weighted Citation Impact

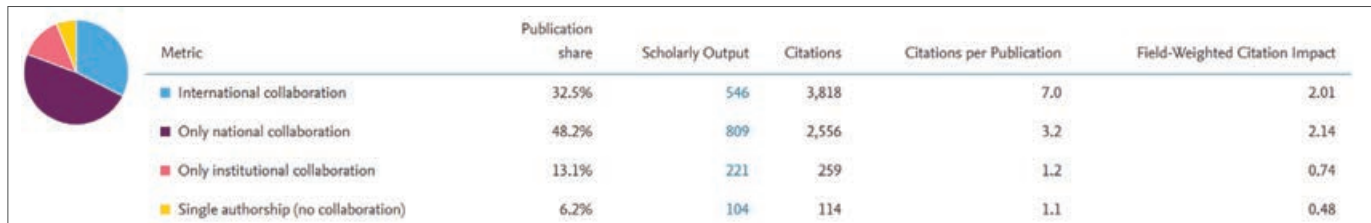
19

h-5 index

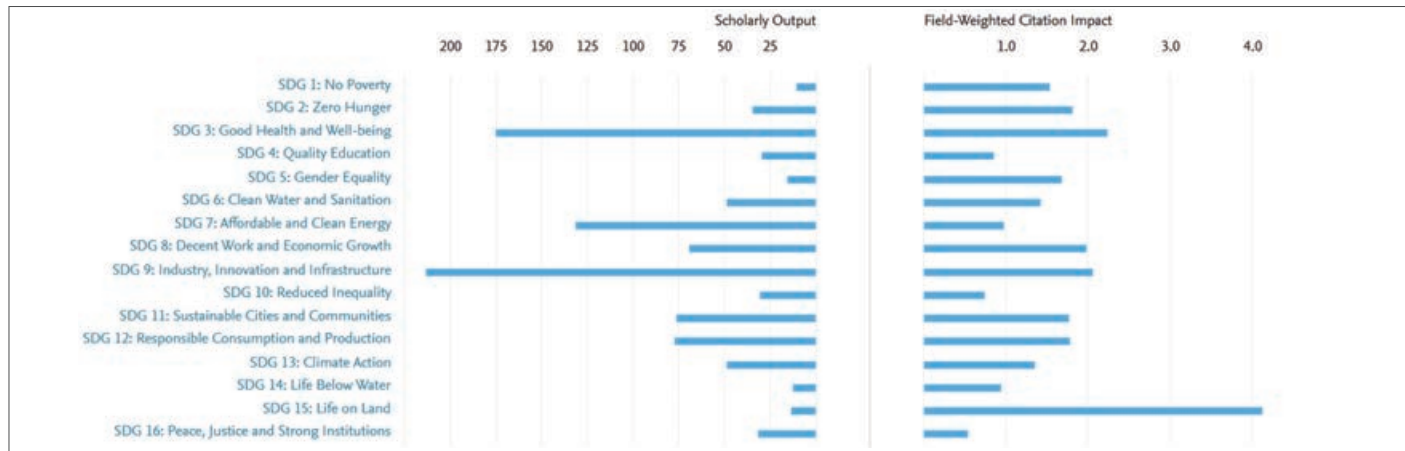
Publication by Journal Quartile



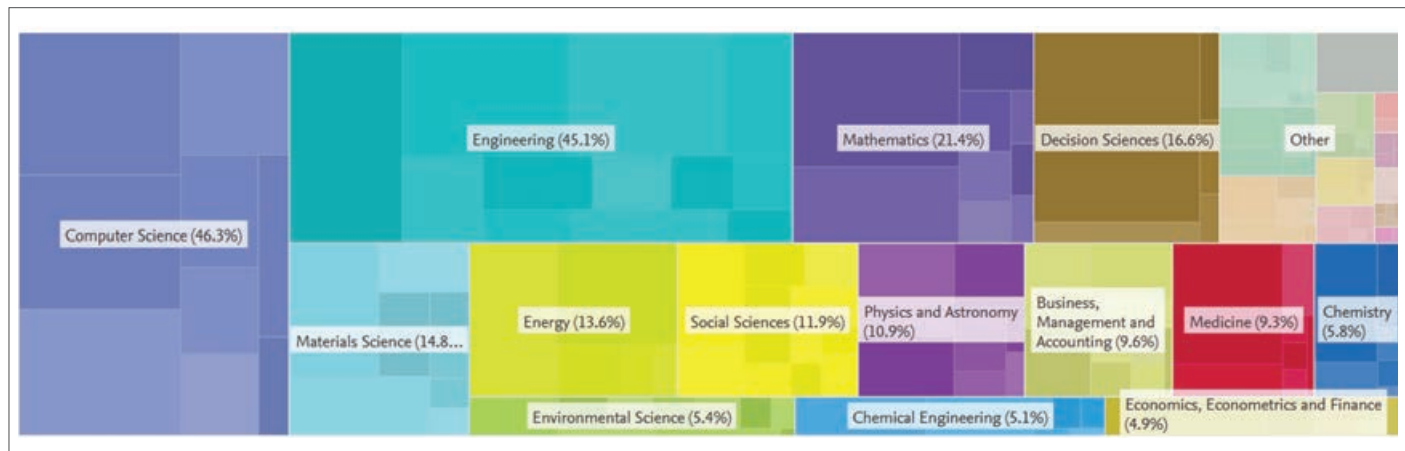
Geographical Collaboration Overall



Publication by SDG



Subject Areas





Scopus
JOURNALS

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Indexing/Quartile

SCOPUS/WOS/Q2

Percentile

65th

Impact Factor

3.5

SDG

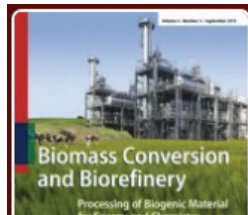


EXTRACTION AND CHARACTERIZATION OF NOVEL BIOMASS-BASED LIGNOCELLULOSIC FIBER FICUS BENGHALENSIS BARK FOR POTENTIAL GREEN MATERIAL APPLICATIONS

Manikandan G.; Sathishkumar T.P.; **Rajeshkumar, L.**,*Biomass Conversion and Biorefinery*, Volume 15, Issue 3, Pages 4835 - 4847 February 2025**Dr. Rajeshkumar Lakshminarasimhan**

Professor

Alliance School of Applied Engineering



Biomass Conversion and Biorefinery Processing of Biogenic Material for Energy and Chemistry

Publishing model

Hybrid

Abstract

Natural fibers play a vital role in many industrial applications. Raising the demand for natural fiber, the present is proposed to characterize the novel fiber named *Ficus benghalensis* (FB) that was extracted from branches of banyan tree. Raw FB fiber has cellulose content of 53.30 wt.%, hemicellulose content of 28.23 wt.%, lignin content of 21.97 wt.%, wax content of 1.69 wt.%, moisture content of 7.43 wt.%, pectin content of 12.13 wt.%, density of 0.49 g/cm³ and ash content of 5.98 wt.%. The diameter of the raw FB fiber is observed as 255 μm , and the same will decrease, and surface area increases, as it undergoes alkali treatment. The Fourier transform infrared spectroscopy (FTIR) investigation shows that the expected functional groups are present in the raw and alkali-treated FB fibers. In the thermogravimetric analysis (TGA) test, raw FB fiber has a

maximum degradation temperature at 345 °C which shows less than 6% alkali-treated fiber of 394 °C. The raw and treated FB fiber's thermally induced transitions are confirmed by the differential scanning calorimetry (DSC) test. The X-ray diffraction (XRD) analysis of untreated FBFs revealed a crystallinity index (CI) of 63.68% but 4% alkali treated shows 69.85% with crystallite size (CS) of 1.68 nm. The surface morphology of FB fiber is rough due to alkali treatment. The tensile strength and Young's modulus of FB fiber were measured as 360.12 MPa and 7.76 GPa, respectively. This can be used to develop green materials for automotive and other industrial applications.

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Author keywords- Chemical composition; Fiber surface morphology; *Ficus benghalensis* fiber; Thermal analysis; X-ray diffraction

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q2	60th	1.80	



STUDENT PERCEPTIONS ON THE INTERNET OF THINGS - A CASE STUDY FROM ALLIANCE UNIVERSITY, INDIA

Swart A.J.; **Shan P.**,

Global Journal of Engineering Education Volume 27, Issue 1, Pages 52 – 57 2025



Dr. B. Priestly Shan

Vice Chancellor
Alliance University

GLOBAL JOURNAL OF ENGINEERING EDUCATION (GJEE)

The *Global Journal of Engineering Education* (GJEE) is included in the Scopus journal citation index, one of the products of Elsevier, the world's leading multinational publisher of science and health information. This represents a step forward in our persistent endeavour to make the Journal available to a wider global community. As widely known by the scholarly international community, the SciVerse Scopus abstract and citation database is the largest of its kind as it includes close to 40,000 titles.

Also, the GJEE is included in the list of journals generated by the Australian Research Council (ARC) under the Excellence in Research for Australia (ERA) initiative. The paramount objective of the ERA initiative was to launch a journal ranking list on a discipline-specific basis to evaluate research excellence and research impact.



Abstract

It is estimated that in 2035 there will be more than 32 billion devices connected to the Internet that either collect and send raw data or that act upon instructions received from a cloud server or user interface. Many institutions now include the Internet of Things (IoT) in their curriculum as they seek to empower their students to become skilled in this field of expertise. The purpose of this article is to present third-year student perceptions on the IoT to determine their current understanding and willingness to adopt such a system. An exploratory case study is used that focuses on qualitative and quantitative data from one group of students (n = 47) from 2024. The results show that many students have a good

understanding of what the terms IoT, open source, protocols and applications mean. Many students were convinced that it would be difficult to design and implement such a system, but that it should be done to benefit their communities, and especially in terms of improving waste management and relieving traffic congestion. Students were divided on the personal adoption of such a system, with many expressing concerns regarding privacy, security and trust. However, many students agreed that the main benefit was convenience. It is recommended to use these perceptions to improve current curricula to focus more on engendering confidence among students in the adoption of such systems. © WIETE 2025.

Author keywords- benefits; concerns; Feedback; IoT; perceptions

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q2	53rd	1.5	

INFLUENCE OF NANOPHASE MO2C PARTICLES ON THE PERFORMANCE OF AUTOMOTIVE LUBRICANT SAE15W40

Muralidharan K.; Suganya Priyadarshini G.; Vaira Vignesh R.; Senthilkumar R.; Velmurugan T.; **Suyambulingam I.**; Siengchin S.,

Engineering Research Express Volume 7, Issue 131 March 2025 Article number 015563



Dr. Indran Suyambulingam
Professor
Alliance School of Applied Engineering



SUPPORTS OPEN ACCESS
Engineering Research Express (ERX) is a broad, multidisciplinary journal devoted to publishing new experimental and theoretical research covering topics extending across all areas of engineering science including interdisciplinary fields.

Abstract

In the current investigation, Mo2C nanoparticles which have been subjected to modification with stearic acid were successfully produced through utilization of a magnetic stirrer, followed by a subsequent phase of vacuum drying lasting for 12 h. The incorporation of three distinct weight percentage concentrations (0.1%, 0.3%, and 0.5%) of nanoparticles into base lubricating oil SAE15W40 was carried out to synthesize nano lubricants. A comprehensive analysis of the physical and chemical attributes of the newly synthesized nano-lubricants was conducted, encompassing examinations of parameters such as

acidity levels, calorific content, flash and fire points, viscosity characteristics, and thermal stability properties. Furthermore, an assessment of the tribological behavior of the synthesized nano lubricants was performed under varying loads utilizing a pin on disk tribometer apparatus. The nano lubricant containing 0.3 weight percent of Mo2C exhibited notably enhanced performance in comparison to the base lubricating oil.

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Author keywords- flash and fire point; Mo2C; nano lubricants; pin on disk; stearic acid; tribology; viscosity

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	89th	4.39	



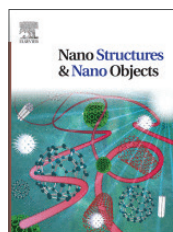
SURFACE FUNCTIONALISATION OF CROSSLINKED POLYVINYL ALCOHOL/ CELLULOSE NANOFIBER BIOCOMPATIBLE COMPOSITE MEMBRANE USING PLASMA

Thulaseedharakurup S.; Ninan N.; Pidhatika B.; Hayles A.; Alemie M.N.; Vasilev K.; **Parameswaranpillai J.**; Vijayan P P., Nano-Structures and Nano-Objects Volume 41 February 2025 Article number 101461



Dr. Jyotishkumar Parameswaranpillai

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Alliance School of Sciences



Nano-Structures & Nano-Objects

9.2
CiteScore

Abstract

The emergence of antibiotic-resistant bacterial strains has posed a great threat to global health; so, the progress of novel antibacterial strategies has become an urgent necessity. In this regard, functionalized polymer membranes play their role as versatile candidates by interacting with a wide range of molecules. However, poor mechanical properties often limit their clinical applications. The current research focused on the preparation of boric acid (BA) crosslinked PVA composite membranes with cellulose nanofiber (CNF). Herein, BA acts as an antibacterial agent against bacterial infection and together with CNF provides mechanical integrity to the composite membrane. Furthermore, these membranes were subjected to surface functionalization with plasma polymerization, a technique that controlled not only their swelling behaviour but also improved their antibacterial properties. The composite membranes were then subjected to

an antibacterial performance test against *Staphylococcus aureus* and *Pseudomonas aeruginosa*, which showed remarkable bactericidal activity. The cytocompatibility was done by cell viability assays and fluorescent staining, confirming the nontoxic nature and biocompatibility of the membranes with macrophages. Besides, contact angle measurements showed favourable hydrophilicity ($44 \pm 1.4^\circ$) to promote cell adhesion, and tensile testing showed optimal mechanical properties at 2.5 phr cellulose nanofiber and 8 phr BA content. The antibacterial activity, mechanical robustness, and cytocompatibility shown by plasma coated PVA-BA-CNF membrane, make them ideal candidates for biomedical applications. It has great potential to act as an antibacterial platform in mitigating bacterial infection, enhancing bioactivity and offering flexible solutions to address antibiotic resistance challenges in clinical settings.

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Author keywords- Biocompatible; Boric acid; Cellulose nanofibers; Plasma polymerisation; Polyvinyl alcohol

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q3	27th	1.0	

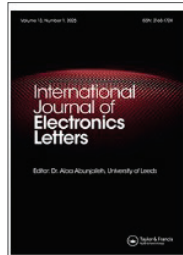
DESIGN AND ANALYSIS OF 1-BIT HYBRID FULL ADDER CELLS FOR FAST COMPUTATION

Anand A.; **Dhariwal S.**; Lamba V.K.; Kassa S.

International Journal of Electronics Letters Volume 13, Issue 1, Pages 96 – 107 2025



Dr. Sandeep Dhariwal
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International Journal of Electronics Letters

Abstract

This research article introduces a 1-bit Full Adder (FA) cell comprising 20 transistors, employing Gate Diffusion Input (GDI) and transmission gate logic. The FA cell is segmented into four modules: the first module encompasses an AND-OR module, followed by a module housing a Multiplexer (MUX) based on transmission gates for Carry Output generation. The remaining two modules are XOR gates dedicated to Sum Output generation. Simulation of the proposed design is conducted

on the 45 nm technology node using Cadence Virtuoso and its GPDK 45 nm library. To validate the performance of the proposed design, it is compared against existing full adders. Performance parameters such as power consumption, delay and Power Delay Product (PDP) demonstrate superior performance across voltages ranging from 0.8 V–1.2 V.
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Author keywords- Cadence Virtuoso; gate diffusion input; Hybrid FA; pass transistor logic; transmission gates

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q2	71st	0.66	



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

Behl R.; Nemane V.,

Medico-Legal Journal Volume 93, Issue 1_suppl, Pages 78 – 81 March 2025



Ms. Ritika Behl
Assistant Professor
Alliance School of Law



Medico-Legal Journal is dedicated to promoting Medico-Legal knowledge in all its aspects. It provides an official record of the proceedings of the Medico-Legal Society. The journal seeks to further the society's aim to expand knowledge of medico-legal matters by commissioning articles on topics from across this diverse field. [View full journal description](#)
This journal is a member of the [Committee on Publication Ethics \(COPE\)](#).

Abstract

On 20 April 2022 the Sessions Court of Greater Mumbai sentenced a postpartum depressed woman to lifetime imprisonment for abandoning and murdering her twin girl child (In re: The State of Maharashtra). In the absence of a diagnosis or treatment for postpartum depression at the time when the

crime was committed, a plea of insanity was denied. This article considers how the absence of services for perinatal mental health in India may challenge the delivery of criminal justice in cases of infanticide.

© The Author(s) 2023.

Author keywords- criminal justice system; India; infanticide; insanity plea; Postpartum depression

Indexing/Quartile

Percentile

Impact Factor

SDG

SCOPUS/WOS/Q1

93rd

7.7

11
SUSTAINABLE CITIES
AND COMMUNITIES

GUM ARABIC-BASED BLEND BIOPOLYMER ELECTROLYTE FOR ELECTRIC DOUBLE LAYER CAPACITOR APPLICATIONS

Hema M.; Gopinath G.; Sakunthala A.; Krishnasamy S.; Aravind D.; **Parameswaranpillai J.**; Venkateshan N.; Natarajan V., *International Journal of Biological Macromolecules* Volume 307 May 2025 Article number 141956



Dr. Jyotishkumar Parameswaranpillai

Professor & Director - Centre of Excellence (AU – Sophisticated Test and Instrumentation Center)
Alliance School of Sciences



International Journal of Biological Macromolecules

Supports open access

13.7

CiteScore

7.7

Impact Factor

Abstract

The present research focuses on PVA: Gum Arabic: Ammonium Nitrate biopolymer blend electrolyte prepared using ultrasound-assisted solvent casting method and its applicability in Electric Double-Layer capacitor. AC impedance spectroscopic technique reveals the highest ionic conductivity of 10^{-5} Scm⁻¹ at 303 K for 20 mol% ammonium nitrate doped sample which is higher than pure PVA. The transference number obtained for the prepared samples (0.94–0.96) confirms the dominant proton contribution to the conductivity. The constructed EDLC with the highest ionic conductivity electrolyte and carbon electrodes show a highest specific capacitance of 2909 mF/g. Intriguingly, the specific capacitance C_s values remain stable over 500 cycles which confirms its cycling stability. © 2025

Author keywords- Biopolymer electrolyte; Electric double layer capacitor; Gum Arabic; Impedance spectroscopy; Ultrasound-assisted solution casting

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q3	27th	0.54	  

DOUBLE AND GROUP ACCEPTANCE SAMPLING INSPECTION PLANS BASED ON TRUNCATED LIFE TEST FOR THE QUASI-X GAMMA DISTRIBUTION

Sen S., Saha M., Tripathi H.,

Stochastics and Quality Control 2025



Dr. Subhradev Sen

Associate Professor
Alliance School of Applied Mathematics



Abstract

In this article, we developed group and double acceptance sampling inspection plans (GASIP) and (DASIP). In GASIP, multiple number of items, made as a group, can be tested simultaneously in an inspection procedure. We study both the GASIP and DASIP under the truncated life test assuming that the lifetime of an item is distributed as quasi-xgamma distribution (Sen and Chandra 2017). The plan parameters of

both proposed plans are to be determined by satisfying the consumer's risk at the specified ratio of true average life to the specified life and termination time. The results for different parameters are tabulated and explained in well manner for better understanding. Two suitable real data sets are considered for application purposes.

© 2025 Walter de Gruyter GmbH, Berlin/Boston 2025.

Author keywords- Acceptance Sampling Inspection Plan; Consumer's Risk; Producer's Risk; Quasi-Xgamma Distribution; Truncated Survival Test

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	76th	0.6	

DEPENDENCE AND FICTIONAL CHARACTERS


Chakravarty, Shamik


Analytic Philosophy (2025)



Dr. Shamik Chakravarty
Assistant Professor
Alliance School of Liberal Arts

ANALYTIC PHILOSOPHY



ORIGINAL ARTICLE |  Full Access

Dependence and Fictional Characters

Shamik Chakravarty 

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.

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Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q2	73rd	1.7	

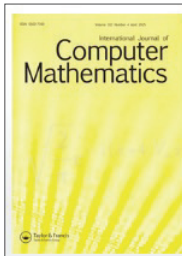
INFLUENCE OF DELAY AND WHITE NOISE ON A POPULATION MODEL WITH PREY-COMMENSALISM AND COOPERATIVE HUNTING OF PREDATORS

Sarkar S.; Maitra S.; **Patra R.R.**



Dr. Rajesh Ranjan Patra

Assistant Professor
Alliance School of Applied
Mathematics



International Journal of Computer Mathematics

Abstract

In this article, a three-species delayed predator–prey model is developed and analysed in both deterministic and nonlinear stochastic environments, considering a commensalism relationship between a weak prey and a strong prey. Three discrete delays are incorporated due to maturation lag for both the prey and predator’s reaction time with the preys. Qualitative characteristics like local stability and the existence of Hopf bifurcation are investigated for the deterministic model. Then in presence of white noise, non-explosivity, ultimate boundedness,

and extinction of the stochastic solutions are verified. Moreover, the ergodic property is shown for the stochastic system both in presence and absence of delay. An explicit formula for the probability density function of the stochastic system has been deduced in absence of delay. Furthermore, some numerical simulations are presented to validate our theoretical conclusions.

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Author keywords- density function; extinction; Hopf bifurcation; hunting cooperation; Stochastic delayed predator–prey model

Indexing/Quartile

SCOPUS/WOS/Q1

Percentile

97th

Impact Factor

9.94

SDG



A NOVEL INTELLIGENT TASK OFFLOADING SCHEME FOR MULTI-CONTROLLER ENVIRONMENT IN SOFTWARE DEFINED INTERNET OF VEHICLES

Hussain M.W.; Sangaiah A.K.; Reddy K.H.K.; Roy D.S.; Alenazi M.J.F.; Javvaji P.K.

IEEE Internet of Things Journal 2025



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IEEE Internet of Things Journal

A Joint publication of IEEE Sensors Council, IEEE Communication Society, IEEE Computer Society, and IEEE Signal Processing Society

Abstract

The Internet of Vehicles (IoV), equipped with sensors, generates vast amounts of data, demanding rigorous computation and network. The cloud computing platform meets these stringent computation requirements, but it has a significant latency that fog computing effectively handles. Software Defined Network (SDN) has become the de facto standard for next-generation networking due to its unique and flexible features, which handle the network pre-requisites in an agile manner. Task Offloading (TO) is a crucial issue in Software Defined-IoV (SDIoV), particularly when the vehicle's resources are insufficient. Fog nodes schedule offloaded tasks; however, neglecting computational and network details during task scheduling can lead to longer completion times, thereby restricting the functionality of SD-IoV due to its time-sensitive

nature. Therefore, this paper introduces two proactive Intelligent Task Offloading (ITO' and ITO) schemes. These schemes schedule tasks onto fog nodes with enhanced computational capabilities, dynamically enable the network through the over-the-air SDN utility, and consider vehicle mobility during task scheduling. Experiments with Mininet show that the proposed (ITO' and ITO) schemes improve performance in terms of CPU availability, bandwidth, and throughput by 5.2 times, 50% and (30.7-13.9)% more than the existing scheme. They also reduce average packet loss, delay, Round Trip Time (RTT), and offloaded node time selection by (45.35-21.3)%, (50-33.3)%, (53.9-9.9)% and (43.2-26.06)% which demonstrates the efficacy of the proposed scheme.

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Author keywords- Cloud Computing; Fog Computing; IoV; Multi-controller; SDN; Task Offloading

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q3	33rd	0.66	



MACHINE LEARNING-BASED MUSIC 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 1713 February 2025

Article number 12



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IJCISIM

INTERNATIONAL JOURNAL OF
COMPUTER INFORMATION SYSTEMS AND INDUSTRIAL MANAGEMENT APPLICATIONS
ISSN 2150-7988

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.

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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/WOS/Q2	65th	3.5	



SUSTAINABLE ISOLATION OF CELLULOSE NANOFIBERS WITH SUPERIOR CRYSTALLINITY AND THERMAL STABILITY FROM TERMINALIA CATAPPA L. FRUIT PEEL WASTE

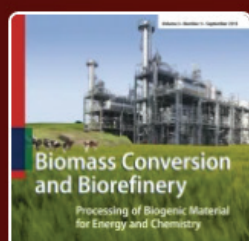
R H.; A. P P.M.; Paul S.; Badawi M.; Ajithkumar T.G.; Rao H.J.; **Parameswaranpillai J.**; Nair A.B.; Sabura Begum P.M.; Dominic C. D M.

Biomass Conversion and Biorefinery 2025



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Biomass Conversion and Biorefinery

Processing of Biogenic Material for Energy and Chemistry

Publishing model

Hybrid

Abstract

Turning agricultural waste into value-added products is a key focus of sustainable development. Herein, cellulose nanofibers (CNF) were extracted from the pericarp of Terminalia catappa L. for the first time. The CNF was extracted by chlorine-free pretreatment methods followed by oxalic acid hydrolysis (5 wt%) assisted with steam explosion. The prepared CNF were characterized by Fourier transform infrared spectroscopy (FTIR), solid-state ¹³C nuclear magnetic resonance spectroscopy, scanning electron microscopy (SEM), transmission electron microscopy (TEM), X-ray diffraction (XRD), and thermogravimetric analysis (TGA and DTG). FTIR analysis confirmed the successful removal of lignin and hemicellulose during chemical treatment which was again validated by solid-

state ¹³C NMR analysis. TEM image revealed that the diameter of the extracted nanofibers ranges from 14 to 18 nm. From XRD analysis, the crystallinity index of the CNF was 82%, while that of the raw sample was 62 %. The temperature at which the maximum degradation (T_{max}) of CNF occurred was found to be 372 °C which is superior to that of the raw sample (334 °C). The extracted cellulose nanofibers were used to prepare cellulose paper, demonstrating a tensile strength of 1.1 MPa, indicating its potential suitability for biodegradable packaging applications.

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Author keywords- Cellulose; Cellulose nanofiber; Green synthesis; Waste to wealth

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q1	95th	0.89	



REALIZATION OF GROSS NATIONAL HAPPINESS- INSPIRED GREEN EDUCATION IN BHUTAN

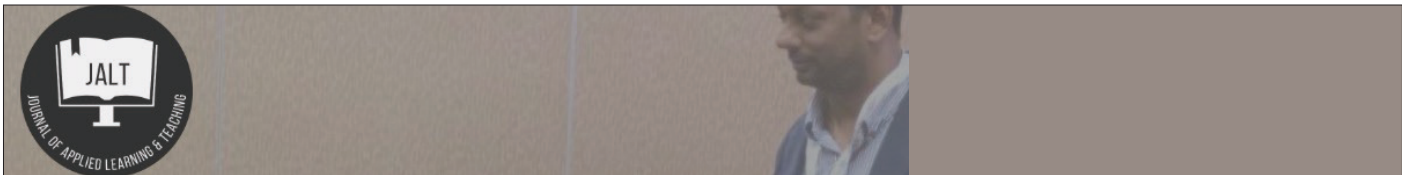
Sadagopan C.; **Krishnan C.**

Journal of Applied Learning and Teaching Open Access Volume 8, Issue Special Issue 1, Pages 57 - 657 January 2025



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Abstract

Green education as mentioned in Thakur S. Powdyel's *My Green School: An Outline* (2014) was developed to support democratic Bhutan's initiative 'Educating for Gross National Happiness' (EGNH), pinned on the nature-culture axis. The initiative motivated the educational institutions to imbue their teaching-learning environment with the values of Gross National Happiness (GNH). However, in terms of holistic development in modern education, the concept requires an integrated understanding beyond the explicit meaning of green, which primarily denotes nature and the environment. The eight dimensions of green school, denoted by the term 'Sherig Mandala' and designed in a concentric sense, hold a critical significance. Besides dealing with the idea of education through the natural environment, the concept also has a major claim on an individual's life and learning on a moral level, integrating the physical and psychosocial ambience. It attempts to establish that the process of learning is the key

to understanding the principles of life. With the core value of education being jeopardized in modern times, the paper attempts to ascertain the meaning and purpose of learning for a holistic life. The inherent meanings of the elements of greenery such as natural, social, cultural, intellectual, academic, aesthetic, spiritual and moral were examined to comprehend their philosophical intent. The significance of the concept was examined not in isolation but in correlation with the nine domains of Bhutan's developmental philosophy known as GNH. Further, the paper has also affirmed that the conceptualization of 'Green School' in Bhutan is quite different from other countries around the world because it focuses not on the buildings and infrastructure, but on the behaviour and the core inner aspects that each child requires. This is to emphasize the fact that only the nobility of mind, heart and hands would empower the learners.

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Author keywords- Bhutan; Green school; Gross National Happiness (GNH); Holistic education; Sherig-Mandala

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q3	45th	0.9	



DESIGN AND ANALYSIS OF STOCHASTIC 5G NEW RADIO LDPC DECODER USING ADAPTIVE SPARSE QUANTIZATION KERNEL LEAST MEAN SQUARE ALGORITHM FOR OPTICAL SATELLITE COMMUNICATIONS

Krishna Priya R.; Sakhare N. N.; Paithane A.; **Shekhar R.**; Sabarimuthu M.
Internet Technology Letters Volume 8, Issue 2 March/April 2025 Article number e539



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INTERNET TECHNOLOGY LETTERS

Edited By: Alfredo Grieco

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Abstract

A Stochastic Low-Density Parity-Check (LDPC) decoder is a type of 5G New Radio standard LDPC decoder that uses stochastic techniques to perform decoding. Stochastic LDPC decoding with 5G NR standard typically uses an iterative process, where messages exchanged among variable nodes (VN), check nodes multiple times. Stochastic LDPC decoders are often used in scenarios where the received signal is subject to varying levels of noise. They will provide improved error correction performance compared to traditional LDPC decoders, especially when dealing with channels with varying signal-to-noise ratios in 5G networks. Using the adaptive sparse quantization kernel least mean square algorithm (SLDPC-ASQ-KLMSA), this paper proposes an area-efficient architecture design for a stochastic LDPC decoder. The LDPC code (2048, 1723) is taken from the LOGBASE-T standard and used in this study. We examine the ASQ-KLMSA connection effects. Starting with the VN. It makes checking node functioning easier and reduces inter-connect complexity by capping extrinsic message length at 2 bits. Because of the simplified check node operation in ASQ-KLMSA, the decoder nodes must exchange

messages with a greater degree of accuracy. The 3–3 input grouping sub-node of the degree-6 VN was changed with an adder-based 5–1 input grouping sub-node for the (2048, 1723) code in order to get more accurate results when the check-to-variable messages aren't strong enough. A suggested decoder architecture was determined using a stochastic LDPC decoder developed for TSMC 65 nm process (2048, 1723). Bite error rate, throughput, mean square error, latency, power, and area usage are some of the metrics used to evaluate the effectiveness of the SLDPC-ASQ-KLMSA algorithm that has been suggested and implemented in Python. Thus, the proposed approach has attained 34.44%, and 38.39% low mean square error while compared with the existing methods such as higher-performance stochastic LDPC decoder architecture designed through correlation analysis (HP-SLDPC-CA), Higher Throughput and Hardware Efficient Hybrid LDPC Decoder Utilizing Bit-Serial Stochastic Updating (HLDPC-BSSU), Flexible FPGA-Based Stochastic Decoder for 5G LDPC codes (FPGA-SD-5G-LDPC), respectively.

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Author keywords- 5G; adaptive sparse quantization kernel least mean square; LDPC code; optical satellite communication; stochastic LDPC decoder; virtual node

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q3	25th	1.1	 

HYDRO-HEGEMONY IN THE ANTHROPOCENE: NEOLIBERAL PARADIGMS AND GLOBAL SOUTH MARGINALIZATION IN WATER SCARCITY GOVERNANCE

Abhishek Thommandru, Mukhammad Ali Turdialiev, and **Varda Mone**,

Journal of Developing Societies, March 27, 2025



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Journal of Developing Societies

Impact Factor: **1.1** / 5-Year Impact Factor: **1.4**

Abstract

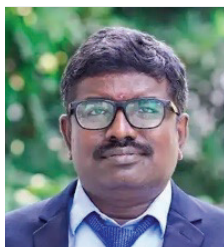
Water scarcity has emerged as a critical global challenge in the Anthropocene, a period marked by significant human impact on the planet's hydrological systems. This article examines the concept of hydro-hegemony, which highlights power disparities in water governance, with a particular focus on the Global South. Neoliberal frameworks, characterized by market-driven policies and resource commodification, have exacerbated these disparities, often prioritizing profit over equitable resource distribution. For instance, transboundary water disputes like the Nile River conflict between Ethiopia and Egypt, as well as urban challenges in Mumbai's "Water for All" initiative, underscore how historical and systemic inequities shape water governance outcomes. This article integrates case studies and empirical data to illustrate how neoliberal policies perpetuate marginalization,

particularly among vulnerable communities, by concentrating decision-making power in the hands of nation-states and corporate actors. By exploring the intersection of neoliberalism, water governance, and social movements advocating for change, the study underscores the far-reaching implications of these dynamics on socio-economic and environmental systems. It argues that the current governance frameworks not only intensify existing inequalities but also hinder sustainable development and environmental justice efforts. Through a critical evaluation of alternative governance approaches, the paper proposes participatory and locally informed strategies that prioritize equity, community empowerment, and resilience in addressing water scarcity.

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	93rd	7.7	 

EVALUATION AND COMPARISON OF THE BEHAVIORAL PROPERTIES OF RAW, ALKALI-TREATED, AND TRIETHOXY SILANE–TREATED CELLULOSIC FIBERS DERIVED FROM ROTTBOELLIA COCHINCHINENSIS PLANT AS A SUBSTANTIAL MATERIAL FOR POLYMER COMPOSITES

T. Ganapathy ^a, D. Sundarrajan ^a, S. Arivazhagan ^b, **P. Senthamarai kanna n** ^c, Pandian Pitchipoo ^a, S. Manoharan ^d
International Journal of Biological Macromolecules, Volume 309, Part 1, May 2025, 142794



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International Journal of Biological Macromolecules

Supports open access

13.7

CiteScore


7.7

Impact Factor

Abstract

This investigation involved isolating a unique cellulosic fiber from the Raoul grass plant (*Rotboellia cochinchinensis*) and compared the behavioral effects of raw fiber with various chemical treatments, specifically 5 % NaOH and a 70: 30 mixture of (3-aminopropyl) triethoxy silane, on Raoul grass fiber. The treatments were conducted for 45 min, after which the fiber properties were evaluated. The cellulose percentages of the alkalized and silane-treated fibers increased to 72.29 % and 75.07 %, respectively, whereas the raw fiber contained 65.23 %. The X-ray diffraction study revealed a significant increase in the crystallinity index of the alkalized and silane-treated fibers, with an increase of 41.8 % and 43.89 %, compared

to the 33.6 % found in the raw fiber. Thermogravimetric analysis established that both the alkalized and silane-treated fibers exhibited a maximum degradation peak at 366.27 °C. The kinetic activation energies for the alkalized and silane-treated fibers were 60.63 and 64.52 kJ/mol, respectively. The energy-dispersive spectroscopy spectrum of the alkalized and silane-treated Raoul grass fiber showed no impurity elements, indicating the successful elimination of impurities from the fiber's surface. These findings conclude that silane treatment is the most suitable method, and Raoul grass is a promising material for reinforcement in fiber-reinforced plastics.

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q2	65th	3.5	 

LEVERAGING CITRUS EXTRACT TO ENHANCE ANTIOXIDANT PROPERTIES OF MUNG BEAN (VIGNA RADIATA) PROTEIN EDIBLE FILMS

Ruby Celsia Arul Selvaraj, Arunprasath Kanagaraj, Parthiban Karuppiah, Suhith Ravindran, Monish Mohan Raj,

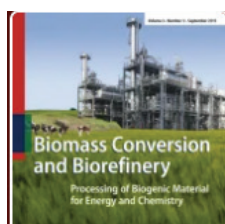
P. Senthamaraikannan & Indran Suyambulingam



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Biomass Conversion and Biorefinery

Processing of Biogenic Material for Energy and Chemistry

Publishing model
Hybrid

Abstract

An antioxidant edible film for food safety and preservation is produced from citrus extract and mung bean protein isolate (MBPI). Films were prepared by using different levels of lemon peel extract enriched in phenolics and antioxidants (MBPI). Characterization and testing were carried out for the water solubility, tensile strength, elongation at break, and thickness. MBPI showed a maximum solubility of 105 mg/ml and an optical density of 0.759 (OD₇₅₉) at pH 12. These proteins carrying negative charges were extremely soluble at alkaline pH (8–10). MBPI films are fit for high-temperature food preparation on account of their warm steadfastness. Gradually decreasing weight and moisture content resulted in dried citrus peels with 8–12% moisture, reducing the effect of microbial degradation. Film thickness-related polyphenol-rich compounds were enhanced through the interaction between protein functional groups and the phenolic hydroxyl groups. The point of 25% MBPI film tensile strength was 13.18 ± 0.15 N/mm². Water

solubility was 15–30% to allow controlled degradation and barrier properties. The MBP films showed biodegradability in a soil environment as opposed to synthetic films, which lost 10% and 22% weight values by day 10 and day 20, respectively. FTIR analysis indicated that the amide I and II bands were displaced, confirming that hydrogen bonding occurred between the hydroxyl groups of the citrus extract and the amide groups of MBPI. Controlled citrus extract exhibited less phenolic content (0.105 at 100 µg/ml) than elevated antioxidative presence (0.236 at 300 µg/ml). Antioxidant films were obtained at 40% of DPPH radical reduction. A 10% lemon peel extract shows an antibacterial effect with 12.5 ± 0.50 mm against *S. aureus* and *E. coli* inhibition zone. Synthetic preservatives can be replaced with plant-based edible films and coatings to curtail plastic waste and enhance food safety and quality as well as shelf life.

Indexing/Quartile	Percentile	Impact Factor	SDG	07 AFFORDABLE AND CLEAN ENERGY	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE
SCOPUS/WOS/Q3	25th	3.3			

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

Ila Rai^a, Suchetha C^b

Electric Power Systems Research Volume 242, May 2025, 111434



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Electric Power Systems Research
Supports open access

7.5 | 3.3
CiteScore | Impact Factor

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.

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q2	65th	3.5	 

EXTRACTION AND CHARACTERIZATION OF MARTYNIA ANNUA STEM FIBER AS REINFORCEMENT FOR PROSPECTIVE APPLICATION

T. Velmurugan, G. Suganya Priyadharshini, **P. Senthamarai Kannan & Indran Suyambulingam**

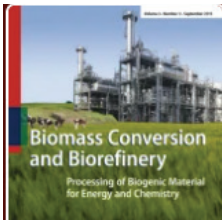
Biomass Conversion and Biorefinery, Published: 12 March 2025



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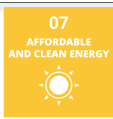
Biomass Conversion and Biorefinery Processing of Biogenic Material for Energy and Chemistry

Publishing model
Hybrid

Abstract

In this research work, *Martynia annua* stem was subjected to extraction and investigation of the physiochemical, thermal stability, as well as surface characteristics to ensure its suitability as a reinforcement for composites. The extraction process involves breaking down the cellulose-hemicellulose-lignin complex, causing the isolation of cellulose fibers. Higher cellulose content (52.56 ± 10.34 wt.%), lower hemicellulose (12.34 ± 3.86 wt.%), lignin (11.56 ± 3.56 wt.%), and wax (0.45 ± 0.07 wt.%) were identified with the help of chemical analysis. The authors then subjected the extracted sample to various characterization studies, including Fourier transform infrared (FTIR), X-ray diffraction (XRD), field emission scanning

electron microscopy (FESEM), and thermo gravimetric analysis (TGA). The findings from the XRD provide information on a crystallinity index of 33.83% while FTIR analysis helps identify functional groups present in the cellulose, and FESEM provides insights into the morphology. Simultaneously, images obtained from the atomic force microscopy demonstrated that the extracted microcellulose possesses the requisite average roughness (6.167 nm). Overall, the study suggests that *Martynia annua* stem fiber (MASF) could be a valuable material in polymer composites to strengthen as an effective reinforcement agent due to its special features and characteristics.

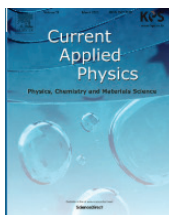
Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q3	25th	2.4	 

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

Suman Guchhait ^a, **H. Aireddy** ^b, Niladri Sekhar Kander ^a, A.K. Das ^a
Current Applied Physics Volume 71, March 2025, Pages 144 – 151



Dr. Harinath Aireddy
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 Director - Centre of Excellence (Maker Space)
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Current Applied Physics

4.8 CiteScore | 2.4 Impact Factor

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 ($\lambda_s = 1286.15$ ppm & 647.99 ppm), and strain sensitivity ($d\lambda/dH = 12.63 \times 10^{-9}$ 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.

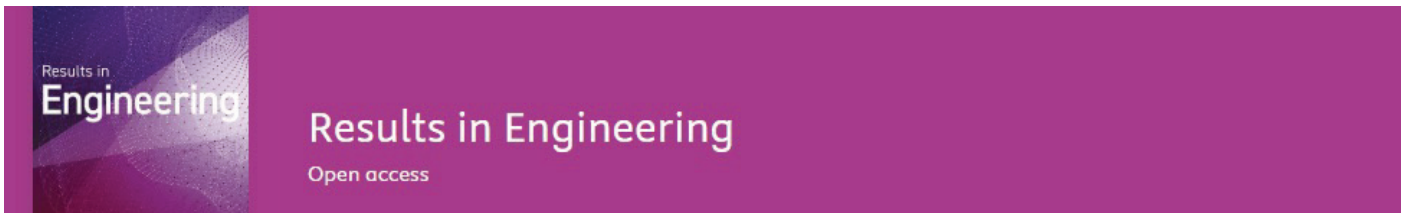
Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	94th	6.0	 

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

P. Arunkumar ^a, D. Balaji ^{a,b}, N. Radhika ^c, **L. Rajeshkumar** ^d, Sanjay Mavinkere Rangappa ^e, Suchart Siengchin ^e
Results in Engineering, March 2025, 104107



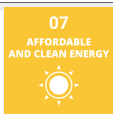
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Abstract

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.

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	93rd	7.7	 

EXTRACTION OF HIGHLY CRYSTALLINE AND THERMALLY STABLE CELLULOSE NANOFIBER FROM HELICONIA PSITTACORUM L.F. LEAVES

Sharon Paul ^a, Anto Joseph ^a, P.D. Hridhya ^b, Michael Badawi ^c, T.G. Ajithkumar ^d, **Jyotishkumar Parameswaranpillai** ^e, Mochamad Asrofi ^f, C.D. Midhun Dominic ^b

International Journal of Biological Macromolecules Volume 308, Part 1, May 2025, 142264



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Alliance School of Sciences



International Journal of Biological Macromolecules

Supports open access

13.7

CiteScore

7.7

Impact Factor

Abstract

Extracting cellulose nanofibers (CNF) from agro-waste is one of the promising and practical ways to develop sustainable nanocomposites. In this study, cellulose nanofibers were extracted from the leaves of *Heliconia psittacorum* for the first time. The combination of oxalic acid hydrolysis (5 wt%) and steam explosion was used for the isolation of CNF from the leaves of *Heliconia psittacorum*. The structural and chemical features of the prepared CNF were analyzed using various techniques, including Fourier Transform Infrared Spectroscopy (FTIR), Solid state ¹³C Nuclear Magnetic Resonance Spectroscopy (¹³C NMR), Scanning Electron Microscopy (SEM), Energy Dispersive X ray analysis (EDX), Transmission

electron Microscopy (TEM), X-Ray Diffraction (XRD) and Thermogravimetric analysis (TGA). TEM micrographs reported 15 to 40 nm diameter for the nanofibers synthesized. XRD analysis reported 91 % crystallinity index for CNF, whereas that of the untreated sample was 76 %. The maximum degradation of the CNF is reported at 355 °C, exceeds the untreated sample (316 °C). The tensile strength of the CNF derived paper was found to be 23 MPa. The recovered nanocellulose can be further utilized for various applications such as the automobile industry for developing lightweight parts, biosensors, super capacitors, absorption of greenhouse gases, wastewater treatment, and packaging applications.

Indexing/Quartile	Percentile	Impact Factor	SDG	07 AFFORDABLE AND CLEAN ENERGY	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE	11 SUSTAINABLE CITIES AND COMMUNITIES
SCOPUS/WOS/Q1	88th	6.2	SDG			

MULTI-CRITERIA AND CNN ANALYSIS OF AL₂O₃/TiO₂/EGG SHELL/ATH CERAMIC FILLERS IN GLASS FIBER-EPOXY COMPOSITES

H. Mohit a, V.V. Vamsi Krishna b, M.R. Sanjay c, Suchart Siengchin c, Ibrahim M. Alarifi d, Adel Alblawi e, Mohammed A. Alamir f, Femiana Gapsari g

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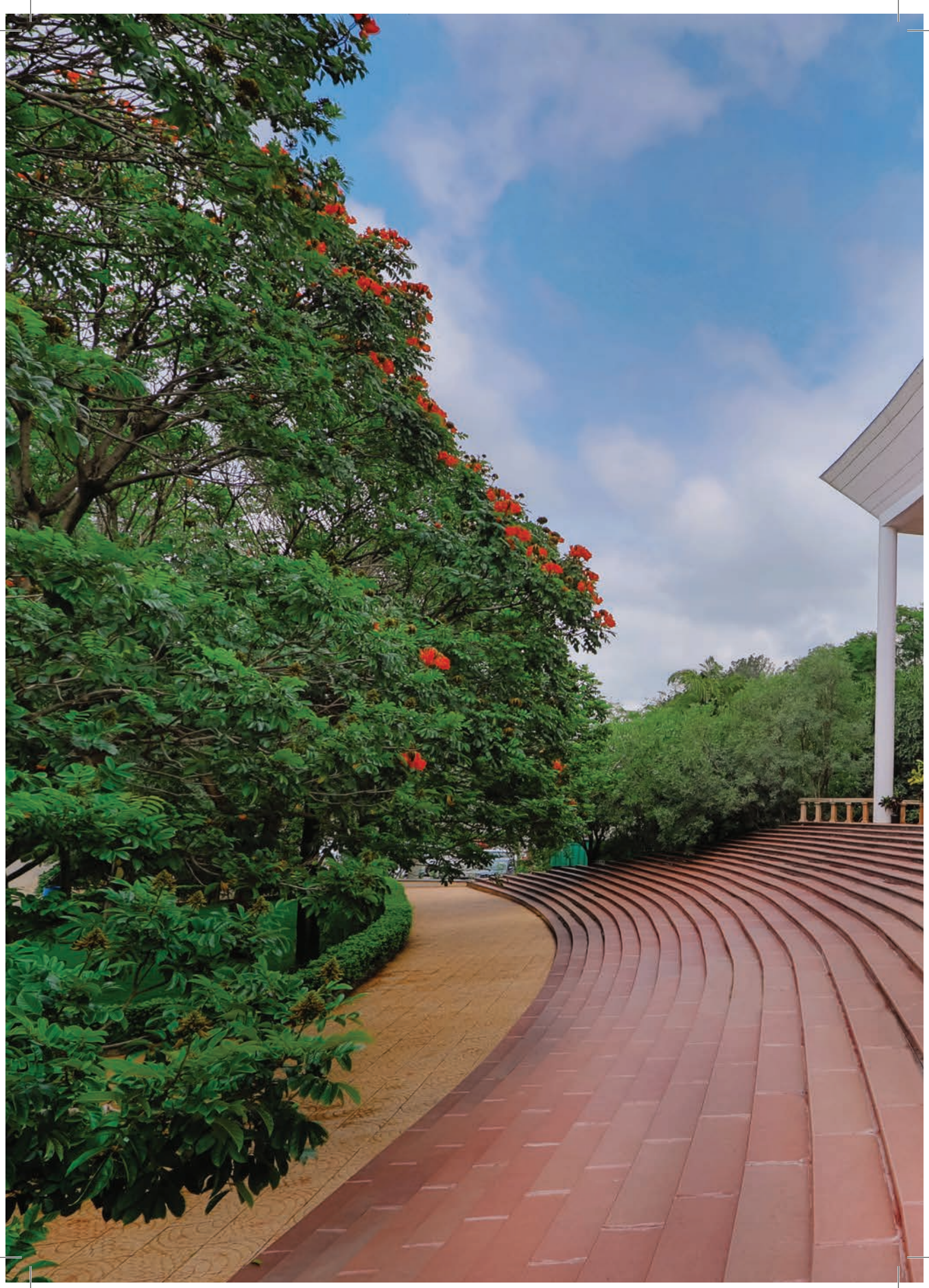
6.2

Impact Factor

Abstract

The increasing global demand for sustainable and high-performance composite materials has driven research into novel filler combinations that enhance thermal and mechanical properties while minimizing environmental impact. This study explores the synergistic effect of egg shell waste—a calcium-rich biofiller—combined with inorganic ceramic fillers (alumina, titania, and aluminum trihydrate) in glass fiber-reinforced epoxy hybrid composites. Unlike prior studies focusing on individual fillers, this unique blend offers multifunctional enhancements. The composites' physical, mechanical, and thermal properties were systematically analyzed across various filler proportions, revealing substantial performance improvements. The optimal composite (L7GEATAER) exhibited a density increase to 3015.84 kg/m³ and a 25.4 % reduction in water absorption. Mechanical tests demonstrated significant enhancements,

with flexural and tensile strengths increasing by 2.14 and 1.57 times, respectively, while the glass transition temperature improved by 8.92 %. These enhancements are attributed to superior interfacial bonding, reduced polymer chain mobility, and uniform stress distribution. Advanced analytical techniques, including deep learning-based convolutional neural network (CNN) analysis of SEM microstructures, confirmed refined filler dispersion and improved structural integrity. This research highlights the potential of integrating biowaste with inorganic fillers to develop high-performance, sustainable composites suitable for demanding aerospace, automotive, and construction applications. The findings provide a comprehensive framework for optimizing filler combinations to meet specific industrial requirements while promoting circular economy principles.





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Indexing/Quartile	Percentile	Impact Factor	SDG
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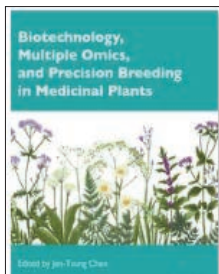


INTEGRATED MOLECULAR STRATEGIES FOR ENHANCED PRODUCTION OF MEDICINAL PLANT-DERIVED FLAVONOIDS

Sinha D.; Kazi Z.; Muherjee R.; Ganguly A.; **Banerjee S.**; Maurya A.K.; Chowdhury A.A.; Majgaonkar A.; Dutta S., *Biotechnology, Multiple Omics, and Precision Breeding in Medicinal Plants* Pages 314 - 3321 January 2025



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Chapter

Integrated Molecular Strategies for Enhanced Production of Medicinal Plant-Derived Flavonoids

Abstract

The diverse and powerful products of flavonoids, plant-derived polyphenolic compounds, have found medical and industrial applications, with a market value expected to reach \$1.5 billion by 2025. Sustainable harvesting practices are essential to reduce biodiversity loss and ensure continuous access to these beneficial compounds. Biotechnological approaches, including genetic engineering and synthetic biology, are superior to traditional methods for flavonoid production by allowing direct manipulation of plant metabolic pathways, which can increase products, improve purity, and create molecules. Extensive

expression of transcription factors and reverse genetic engineering hold promise for increasing flavonoid synthesis, as the plant suspension method is a spatial and scalable method for flavonoid extraction. In addition, microbial plant engineering technologies and microbe-based strategies can improve flavonoid production through genetic optimization and synergy. These advanced technologies offer exciting opportunities to unravel the complex biology of flavonoids and augment targeted approaches to enhance plant-derived flavonoids' yield, quality, and diversity. © 2025 Taylor & Francis Group, LLC.

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



AI AT THE EDGE: MERGING INTELLIGENCE AND DISTRIBUTED COMPUTING

Sungheetha A.; Sharma R.,

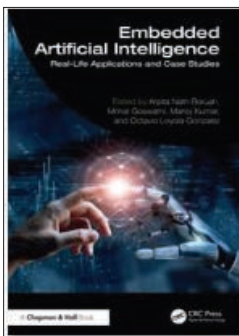
Embedded Artificial Intelligence: Real-Life Applications and Case Studies Pages 55 – 74 1 January 2025



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Chapter

AI at the Edge

Merging Intelligence and Distributed Computing

By Akey Sungheetha, Rajesh Sharma

Book [Embedded Artificial Intelligence](#)

Abstract

This bankruptcy examines the fusion of facet computing and synthetic intelligence (AI) in India and Taiwan, presenting an in-depth evaluation of real-international packages and case studies. We discover how those technology paintings in tandem to address demanding situations in information processing, community latency, and useful resource optimization throughout numerous sectors. Through a comparative observation of implementation techniques in each countries, we spotlight specific procedures and improvements tailor-made to their respective technological landscapes. Our studies make use of superior methodologies, which include system studying algorithms and dispensed computing frameworks, to investigate great datasets from various sources. The findings exhibit wonderful upgrades in device efficiency, decision-making

processes, and person reviews while facet AI answers are deployed. This bankruptcy contributes to the increasing understanding based on embedded AI through supplying insights into the sensible implications, demanding situations, and destiny trajectories of facet AI integration in one of Asia's most dynamic tech hubs. By specializing in India and Taiwan, we provide a nuanced angle on how facet AI is shaping technological development in special cultural and monetary contexts, paving the way for destiny improvements and collaborations on this unexpectedly evolving field.

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



SECURITY OF SOCIAL MEDIA CONTENT FOR AI-EMBEDDED SYSTEMS: COMPARATIVE ANALYSIS

Debnath S.; Senbagavalli M.; Ramalakshmi K.; Naik S.; Begum N.

Embedded Artificial Intelligence: Real-Life Applications and Case Studies Pages 293 – 307 1 January 2025



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This book explores the role of embedded AI in revolutionizing industries such as healthcare, transportation, manufacturing, and retail. It begins by introducing the fundamentals of AI and embedded systems and specific challenges and opportunities. A key focus of this book is developing efficient and effective algorithms and models for embedded AI systems, as embedded systems have limited processing power, memory, and storage. It discusses a variety of techniques for optimizing algorithms and models for embedded systems, including hardware acceleration, model compression, and quantization.

Key features:

- Explores security experiments in emerging post-CMOS technologies using AI, including side channel attack-resistant embedded systems
- Discusses different hardware and software platforms available for developing embedded AI applications, as well as the various techniques used to design and implement these systems
- Considers ethical and societal implications of embedded AI vis-a-vis the need for responsible development and deployment of embedded AI systems
- Focuses on application-based research and case studies to develop embedded AI systems for real-life applications
- Examines high-end parallel systems to run complex AI algorithms and comprehensive functionality while maintaining

Abstract

Nowadays, social media is the most powerful form of communication, which can spread information very rapidly. Artificial intelligence (AI) that is easily integrated into common gadgets is known as embedded AI. Embedded AI increased efficiency and created new opportunities across several domains like social media and job portal by bringing AI closer to the data source. However, with the increasing benefits of social media in AI-embedded system, the security of its content is very essential. A major issue in the social network is anomaly identification, such as fraud and spammer detection. Social media is one of the main modes that can spread fake news. It is hard to remove false information manually. Thus, one solution

is to evaluate the validity of news at an early stage and stop it from spreading. However, for a large amount of data, it is difficult to execute. It has been observed that machine learning and deep learning are very powerful tools for dealing with enormous amounts of data. This chapter briefly analyses the security of social media content, followed by the new methods of detecting hate content using deep learning. The comparative analysis of different methods is presented using machine learning and deep learning techniques. © 2025 selection and editorial matter, Arpita Nath Boruah, Mrinal Goswami, Manoj Kumar, Octavio Loyola-González; individual chapters, the contributors.

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

ENHANCING URBAN RESILIENCE AND BIODIVERSITY: INTEGRATING RAIN GARDENS AND GREEN CORRIDORS IN BENGALURU

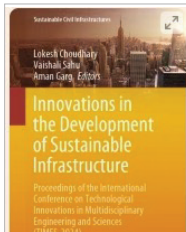
Hanumesh M., Mohan M.; Anand P.,

Sustainable Civil Infrastructures Pages 52 - 65 2025 International Conference on Technological Innovations in Multidisciplinary Engineering and Sciences, TIMES 2024 Gurgaon 5 September 2024 through 6 September 2024 Code 327379



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Innovations in the Development of Sustainable Infrastructure

Proceedings of the International Conference on Technological Innovations in Multidisciplinary Engineering and Sciences (TIMES-2024)

Conference proceedings | © 2025

Abstract

This study explores the heterogeneous role of rain gardens and green corridors in urban environments as innovative and sustainable solutions for stormwater management. By investigating the design, implementation, and performance of rain gardens, the research aims to elucidate their efficacy in mitigating runoff, reducing pollutants, restore lake, underground water and fostering biodiversity. Through a comprehensive review of existing literature and case studies, the study

emphasizes how rain gardens might support environmental preservation and urban resilience. The results highlight how crucial it is to include rain gardens in urban planning to solve the problems brought on by radical urbanization, water scarcity and climate change, ultimately fostering more resilient and ecologically balanced communities.

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

ECO-FRIENDLY SOLUTIONS FOR WATER PURIFICATION: EFFECTIVENESS OF VARIOUS PLANT-DERIVED COAGULANTS IN REDUCING TURBIDITY

Asha Rani N.R., Mayura B.S. Hasan, T. S. Muzammil

Sustainable Civil Infrastructures Pages 286 - 301 2025 *International Conference on Technological Innovations in Multidisciplinary Engineering and Sciences, TIMES 2024* Gurgaon 5 September 2024 through 6 September 2024 Code 327379



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Innovations in the Development of Sustainable Infrastructure

Proceedings of the International Conference on Technological Innovations in Multidisciplinary Engineering and Sciences (TIMES-2024)

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Abstract

This work is a research on the efficiency of different plant-based coagulant in water clarification. With regards to coagulants that have been subjected to testing; they include Moringa oleifera seed powder, Mangifera indica seed powder, hyacinth peel powder, orange peel powder, banana pith powder, tamarind seed powder, lemon peel powder, Tulsi leaf powder, neem leaf powder and last but not the least banana peel powder. Consequently comparative analysis indicated that turbidity reduction by tamarind seed powder was 92%. 9% at a dosage of 40 g/L while lemon peel powder achieved the same reduction of turbidity at a dose of 20 g/L. It was seen that hyacinth peel powder had an efficiency of 89% thus making it very efficient. It gave a turbidity removal of 4% at 4 g/L concentration. Moringa oleifera seed powder which is one of the most acknowledged natural coagulants lower the turbidity by 77. In case of its application at a dosage of 100 g/L, it was established at 9%. This work also revealed that coagulant efficacy varies with the initial turbidity of the water,

and dosage amount used. Some of the coagulants that were tested include Tulsi leaf powder and banana pith powder, these two coagulants effective at lower concentrations but their removal rate was observed to reduce with an increase in the concentrations meaning that there is an optimal concentration that gives the best value. These results indicate the feasibility of employing naturally available resources in water purification especially from developing nations and rural regions. Some of these green coagulants may replace chemical coagulants in sustainable management of water hence may be a part of circular economy. Thus, it is necessary to perform a series of experiments aimed at investigating the molecular mechanisms of natural coagulants action and evaluating their efficiency in respect to the standard procedures and at identifying the actual dosages and conditions for their application.

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Author keywords- ecofriendly solutions; natural coagulants; turbidity; water treatment

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

DECENTRALIZED ENERGY GRID SYSTEM USING IOT AND BLOCKCHAIN: A SUSTAINABLE FUTURE

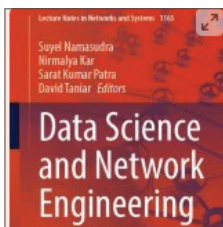
Debnath, Saswati, Patil, Vedavati, Agrawal, Dhruv,

Lecture Notes in Networks and Systems Volume 1165, Pages 353 - 366 2025 2nd International Conference on Data Science and Network Engineering, ICDSNE 2024 Agartala 12 July 2024 through 13 July 2024 Code 326289



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Data Science and Network Engineering

Proceedings ICDSNE 2024

Conference proceedings | © 2025

Abstract

The global pursuit of sustainable energy solutions has led to the exploration of innovative technologies aimed at revolutionizing energy management and distribution. This paper presents integration of Blockchain and Internet of Things (IoT) technologies in decentralizing energy management with a focal point on transmitting power data from small-scale renewable power stations to a central power plant. IoT devices strategically monitor energy production from renewable energy sources, such as wind turbines, solar panels, and microgrids, enabling real-time data analysis to maximize efficiency. These transactions, which are automated by smart contracts, ensure trust. Interoperability, data security, and user interfaces are all covered as the technical architecture required for seamless

integration in this paper. It is important that regulations need to be changed to make room for creative energy solutions. This framework highlights sustainability, encourages energy independence, and lessens dependency on centralized power by supporting renewable energy sources. By combining blockchain technology, IoT, and sustainable energy practices, the proposed system aims to transform the way of energy distributing, improving security, resilience, and sustainability while giving to communities more control over how much energy they use and produce.

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Author keywords- Blockchain; Decentralized energy monitoring; Internet of things; Real time monitoring

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

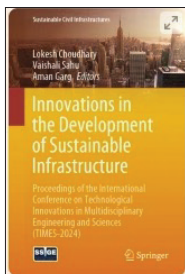


ENVIRONMENTAL IMPACTS OF AVIATION: CHALLENGES AND OPPORTUNITIES FOR SUSTAINABLE AIR TRANSPORTATION SYSTEMS

Nagondanahalli Raju, Asha Rani, Lakshmaiah, **Sunil Kumar**, Kunebelakere Siddappa, Rashmi, Laishram, Tresheela
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 Multidisciplinary Engineering and Sciences, *TIMES 2024* Gurgaon 5 September 2024 through 6 September 2024 Code
 327379



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Innovations in the Development of Sustainable Infrastructure

Proceedings of the International Conference on Technological Innovations in Multidisciplinary Engineering and Sciences (TIMES-2024)
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Abstract

Aviation needs to be considered as a component of a country's development since it promotes the exchange of people and products worldwide. However, some negative consequences of the industry development have been observed over the past forty years. Catastrophic accidents in aviation are up 95% meanwhile the ecological footprint of the industry is up 60%. This research examines the pressing need to address the environmental consequences of aviation activities, focusing on three key areas: climate change, local air quality, and noise pollution, both as adverse effects of anthropogenic activities, and mitigation of the same. With the development of the economy, the demand for air travel is also increasing, thus, these environmental impacts also will become worse. The author believes that if no prompt and adequate solution is to be sought, all these problems can potentially pose themselves as towering roadblocks to the further evolution of air transport in the 21st century. This research also reveals how special groups such as children, the elderly, workers in the open board, and

those with existing respiratory/cardiovascular diseases suffer from air pollution more than other groups. The study also understands the differential emission sources such as PMs/ particulate matter and greenhouse emissions of aircraft and vehicles and their repercussions on global climate change and on-ground air quality. Emphasis is laid on the position of the jet aircraft in the emissions of the global warming potential gases such as direct CO₂ emissions and other greenhouse gas compounds that have not received much attention in literature including nitrogen oxides, soot, and particulates. Thus, the goal of this work is to review the existing knowledge and highlight the gaps in the urgent need for change to present findings to policymakers, industry representatives, and researchers. The research stresses that there is a need to regulate the economic growth of the aviation industry to sustain it and reduce the effects that it has on human life and the environment.
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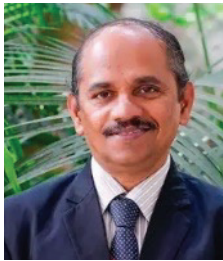
Author keywords- Aircraft; aviation; environmental effects; impact; rapid growth

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q2	50th	2.3	 

A GAN-ENHANCED MULTIMODAL DIAGNOSTIC FRAMEWORK UTILIZING AN ENSEMBLE OF BILSTM, BIGRU, AND RNN MODELS FOR MALARIA AND DENGUE DETECTION

Achary, Rathnakar, Shelke, Chetan J, Lekhya, Alluru,

Procedia Computer Science Open Access Volume 252, Pages 381 - 393 2025 4th International Conference on Evolutionary Computing and Mobile Sustainable Networks, ICECMSN 2024 Hybrid, Coimbatore 28 November 2024 through 29 November 2024 Code 206697.



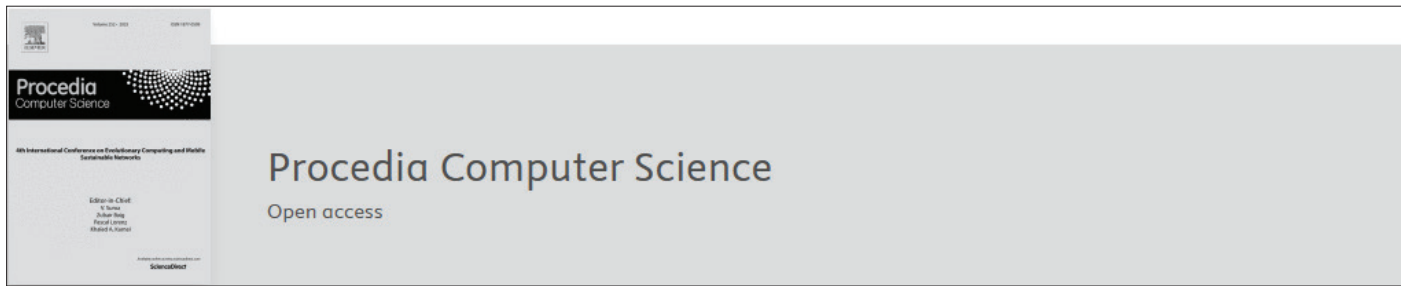
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Abstract

Quick detection of Malaria and Dengue is crucial for doctors to start treatment and manage patients effectively. As patient conditions become more complex with overlapping symptoms, traditional diagnostic tools become inefficient, slow, and less accurate. Modernizing diagnostics with AI-powered systems is essential. Inaccurate or delayed diagnoses lead to transmission and sustained spread of these diseases. Improving diagnostic tools with accuracy, precision, recall, and speed enhances patient outcomes, reduces infection spread, and streamlines health sector operations. Despite advances, current diagnostic algorithms have weaknesses, especially in applying machine learning to diverse datasets at granular levels. Continuous effort is needed to improve accuracy and recall. This research

proposes a GAN-Based Synthesized Multimodal Diagnostic System, combining BiLSTM, BiGRU, and RNN approaches. Utilizing GANs for data augmentation and recurrent networks, this framework shows innovative infectious disease detection. It improves diagnostic precision by 4.9%, accuracy by 3.5%, recall by 3.5%, and AUC by 4.5%, while reducing the gap between disease progression and detection by 8.3%. These outcomes can reduce triage time, misdiagnoses, and lead to faster, quality healthcare. The GAN-Enhanced Multimodal Diagnostic Framework shows promise for diagnosing Malaria, Dengue, and other infectious diseases.

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Author keywords- Bidirectional Long Short Memory - Bidirectional Gated Recurrent Unit (BiLSTM-BiGRU) Fusion; Dengue Detection; GAN-Enhanced Diagnostics; Malaria; Multimodal Learning

Indexing/Quartile	Percentile	Impact Factor	SDG	07 AFFORDABLE AND CLEAN ENERGY	11 SUSTAINABLE CITIES AND COMMUNITIES
SCOPUS/NA	NA	NA			

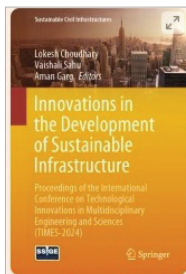
URBAN SLUM GREENING: REVIEW AND PROPOSAL

Hanumesh M.; Devang P.S.B.; Ananda S.; Yella H.; Prakash Reddy M.

Sustainable Civil Infrastructures Pages 302 - 312 2025 *International Conference on Technological Innovations in Multidisciplinary Engineering and Sciences, TIMES 2024* Gurgaon 5 September 2024 through 6 September 2024 Code 327379



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Innovations in the Development of Sustainable Infrastructure

Proceedings of the International Conference on Technological Innovations in Multidisciplinary Engineering and Sciences (TIMES-2024)

Conference proceedings | © 2025

Abstract

Considering the urban environmental crisis all over the world, especially in populous countries like India, there is a need to cater to sustainable needs of every citizen of the country, to address this, a private survey was conducted among urban slum dwellers to know their needs. The proposed urban slum greening project, a result of the said survey, aims to transform underdeveloped slum areas into healthier, sustainable, and vibrant communities. It includes designing and developing green spaces within the limited space and resource and improving hygiene and waste management. It also enhances the environment by reducing pollution, tackling heat, and fostering biodiversity. It also improves residents' quality of life, reduces

stress, improves mental health, it encourages sustainable living practices and fosters a sense of responsibility in slum residents by empowering them to become environmental guardians by means of water management, renewable energy, community involvement and education. Urban slum greening, how will it affect or benefit urban slum dwellers? How will it benefit nature? These are the main questions this paper aims to address. For those living in urban slums, the project envisions a more nutritious, greener, and increasingly prosperous tomorrow.

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Author keywords- Developing urban slums; green roof; Nature based solutions; sustainable living; water management

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q2	50th	2.3	



DEEP LEARNING AND EXPLAINABLE AI BASED BLAST WAVE PRESSURE PREDICTION IN IOV APPLICATIONS

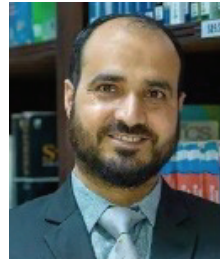
Mir M.H.; Antony J.; Mohamed S.S.; Dhar S.; Pragma; Fayaz D.,

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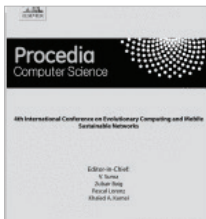
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Procedia Computer Science

Open access

Abstract

Predicting blast wave pressure is crucial for enhancing safety and response strategies in Internet of Vehicles (IoV) applications, particularly in the context of urban environments and high-risk areas. This paper presents a novel deep learning model designed for predicting blast frequencies in BLEVE (Boiling Liquid Expanding Vapor Explosion) scenarios. The article evaluates several activation functions, including ReLU, Mish, ELU, Silu, and Leaky ReLU, to determine their effectiveness in improving model accuracy. The results indicate that the Mish activation function achieves slightly lower Root Mean Square Error (RMSE) and Mean Absolute Error (MAE) scores on the test dataset, with Train RMSE at 0.075 and Test

RMSE at 0.099. The Silu activation function also demonstrates strong performance, yielding a Train RMSE of 0.074 and Test RMSE of 0.095, alongside high R2 scores, indicating a good fit to the data. The paper further explores the interpretability of the model's predictions using the LIME framework, revealing insights into how sensor positions and vapor heights influence blast frequency predictions. This research explores the potential of deep learning techniques in enhancing safety measures and predictive capabilities in hazardous scenarios, contributing valuable insights to the field of risk assessment and management in IoV applications.

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Author keywords- Blast Wave Pressure; Deep Learning; Explainable Artificial Intelligence; Prediction

Indexing/Quartile	Percentile	Impact Factor	SDG	07 AFFORDABLE AND CLEAN ENERGY	11 SUSTAINABLE CITIES AND COMMUNITIES
SCOPUS/NA	NA	NA			

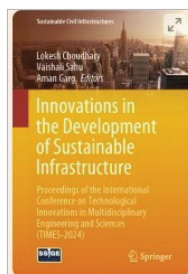
HARMONY IN URBAN ECOLOGY: INTEGRATING GREEN ROOFS AND CONSTRUCTED WETLANDS FOR SUSTAINABLE URBAN DEVELOPMENT

Hanumesh M.; Reddy L.A.; Mohan M.

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Innovations in the Development of Sustainable Infrastructure

Proceedings of the International Conference on Technological Innovations in Multidisciplinary Engineering and Sciences (TIMES-2024)
Conference proceedings | © 2025

Abstract

The urban environment has severe problems with water scarcity and environmental sustainability. This study suggests an integrated approach that smoothly incorporates urban agriculture by mixing constructed wetlands with green roofs. This design supports rooftop gardening with treated wetlands water, creating a closed-loop system that simultaneously addresses several urban concerns. Rooftop agriculture is made feasible by the structural components of the design, such as planter boxes and load-bearing capacity calculations. To enhance space efficiency and promote a sustainable urban agricultural model, diverse vegetation and optimum design are employed. Constructed wetlands are easily incorporated

into the water management system, providing drip irrigation with nutrient-rich water while maximizing resource efficiency and reducing water waste. Cities is working toward sustainable urban growth, and the combination of constructed wetlands, urban agriculture, and green roofs offers a flexible and viable way to achieve this goal. This model’s success depends on its careful application in the local environment, continued community involvement, and a dedication to continuously improving the integrated green infrastructure.
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Author keywords- Constructed Wetlands; Green Roof; Nature Based Solutions; Sustainable Buildings; Urban Agriculture; Water Purification



Intellectual Property Rights (AU IPR Cell)

PATENTS

Application No	202521014492	Title of the invention	INTEGRATING EEG AND BLOOD BIOMARKERS USING DEEP LEARNING FOR PERSONALISED AND EXPLAINABLE MEDITATION IMPACT ASSESSMENTS
Name of Inventor	Akhilesh A. Tayade, Dr. Ratnashil N. Khobragade, Dr. Chetan J. Shelke , Dr. Rathnakar Achary , Vrushali S. Sakharkar, Krutika K. Chhajed, Amol D. Chokhat		



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Abstract

Though meditation is known to elicit certain cognitive and physiological advantages, objective, multimodal assessment of its impact remains unexplored. Most of the previously conducted studies rely only on either electroencephalography or blood biomarkers and overlook their synergistic influence on meditation-induced changes. In addition, conventional machine learning models suffer from personalized analysis, lack of longitudinal trends, and inability to explain. To overcome these challenges, we propose an end-to-end deep learning framework that integrates EEG and biomarker data to comprehensively assess meditation effects. Our proposed Cross-Modality Self-Attention Transformer CMSA-T learns interdependencies between EEG frequency bands and blood biomarkers dynamically, improving fusion accuracy by 12–18% over the unimodal models. To personalize meditation analysis, Contrastive Representation Learning for Personalized Meditation Effect (CRL-PME) creates individualized embeddings, achieving

85–90% accuracy in distinguishing strong and weak meditation responders. Recognizing the inherent network structure of EEG connectivity and biochemical interactions, we introduce Graph EEG-Biomarker Network (GEBNet), leveraging graph convolutional networks to enhance prediction AUC by 8–12%. L-TFN models meditative Induced trends over time and improves long-term effect prediction by 15%. Finally, the Explainable Meditation Impact AI (X-MedAI) makes sure the interpretation is carried out through SHAP-based feature attribution and counterfactual analysis that confirms Theta band and BDNF as predominant indicators of the benefits of meditation. The novel AI-driven paradigm for meditation research is set up in this work, offering an interpretable, multimodal, and personalized assessment framework. Our findings pave the way for precision meditation therapies, optimizing well-being through evidence-based, data-driven insights in process.

Application No	202541022063	Title of the invention	AI-DRIVEN AUTOMATED BUILDING CONSTRUCTION USING IOT-INTEGRATED SYSTEMS
Name of Inventor	Ms. Asha Rani N R , Dr. T. G. Vasista, Ms. E. Selvamanju, Ms. V. Deepthi, Ms. V. Lekhaa, Dr. Nynalasetti Kondala Kameswara Rao, Sumathi B, Dr. P. Meenalochini		



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Engineering

Abstract

The AI-Driven Automated Building Construction Using IoT-Integrated Systems is an intelligent and autonomous construction framework that enhances efficiency, precision, and safety. The system integrates AI-powered robotics, predictive

analytics, and IoT-enabled sensors to automate various construction processes such as bricklaying, material handling, structural monitoring, and energy optimization. AI algorithms process real-time data from IoT sensors to ensure optimal

resource allocation, real-time risk assessment, and predictive maintenance of construction machinery. The system also employs digital twins and drone-based surveillance for continuous site monitoring and compliance verification. IoT-based wearable safety devices enhance worker protection by detecting hazardous conditions and alerting supervisors in real-time. By incorporating

automated project scheduling, smart energy management, and autonomous robotic operations, this invention minimizes manual labor, reduces construction waste, and accelerates building processes. The proposed system is ideal for urban infrastructure, industrial projects, and remote-site construction, transforming the future of intelligent and sustainable building automation.

Application No	202541024179	PREDICTIVE MAINTENANCE AND REAL-TIME (PMRT) FAULT DETECTION OF MEDICAL EQUIPMENT IN GOVERNMENT HOSPITALS USING IOT AND DEEP LEARNING
Name of Inventor	Rathnakar Achary, Chetan Jagannath Shelke, Virendra Kumar Shrivastava, Manoj Kumar Singh	



Dr. Rathnakar Achary
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Dr. Chetan J. Shelke
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Dr. Virendra Kumar Shrivastava
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Abstract

Predictive Maintenance and Real-Time (PMRT) Fault Detection of Medical Equipment in Government Hospitals Using IoT and Deep Learning The present invention discloses a predictive maintenance and real-time fault detection system for medical equipment in government hospitals using IoT and deep learning. The system comprises IoT-enabled sensors embedded within medical devices to collect operational data, a cloud-based server for data storage and processing, and a deep learning-based fault detection module for real-time analysis. Upon detecting anomalies, the system generates automated alerts to notify hospital

administrators, maintenance service providers, and government health authorities, facilitating timely maintenance interventions. The method enhances predictive accuracy through continuous learning and prioritizes alerts based on severity, ensuring optimal resource allocation. Additionally, the centralized monitoring dashboard provides real-time visualization, maintenance logs, and performance trends. This invention aims to reduce equipment downtime, optimize hospital operations, and improve healthcare service delivery by implementing a proactive and intelligent medical equipment maintenance system.

Application No	202541022065	Title of the invention	IOT-INTEGRATED MACHINE LEARNING FRAMEWORK FOR AUTOMATED FLYOVER CONSTRUCTION AND MAINTENANCE
Name of Inventor	Ms. Asha Rani N R , Dr.Mahalingegowda H R, Aditya Dayal Tyagi, Senthamarai N, Prof. Shivanand Bhimashankar Konade, Mr. G. K. Jakir Hussain, Dr. K. Prabhavathi		



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

Abstract

The proposed invention introduces an IoT-integrated machine learning framework for automated flyover construction and maintenance, enhancing efficiency, safety, and sustainability. The system utilizes IoT sensors to monitor structural parameters, drones for aerial inspections, and robotics for automated construction and repairs. Machine learning algorithms analyze real-time and historical data to predict structural failures, enabling proactive maintenance and reducing costs. The system leverages 5G and edge computing for seamless data transmission, ensuring remote access to live infrastructure

data. By automating high-risk tasks, the framework improves worker safety and minimizes construction errors. Additionally, it integrates with smart city networks to optimize traffic management and infrastructure planning. This invention significantly reduces maintenance costs, extends the lifespan of flyovers, and promotes sustainable construction practices through resource optimization. The adaptable, data-driven approach ensures its applicability in diverse environments, making it a transformative solution for modern flyover infrastructure management.

Application No	202541022324	Title of the invention	A MODEL EXPLAINING NEXUS BETWEEN DIGITAL LEADERSHIP, ORGANIZATIONAL CULTURE, EMPLOYEE TRUST AND ORGANIZATIONAL COMMITMENT IN BANKING AND FINANCIAL SERVICES SECTOR
Name of Inventor	Jibu P Joseph, Ravikumar T , Ganesh L, Sangeetha Mehrolia		



Dr. Ravikumar T
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Abstract

A Model Explaining Nexus between Digital Leadership, Organizational Culture, Employee Trust and Organizational Commitment in Banking and Financial Services Sector Abstract In the evolving landscape of the Banking and Financial Services (BFS) sector, digital transformation has become essential for competitiveness. This study explores the relationship between digital leadership and organizational culture, emphasizing the mediating roles of employee trust and organizational commitment. Digital leadership, characterized by the strategic use of technology to drive innovation and efficiency, significantly influences organizational culture by fostering adaptability,

collaboration, and resilience. The research employs a survey-based methodology, collecting data from BFS employees using validated measurement scales. Mediation analysis using Macro Process reveals that digital leadership positively impacts organizational culture, with trust and commitment serving as key mediators. Strong trust between employees and leaders enhances teamwork and psychological empowerment, contributing to improved organizational outcomes. Additionally, employee commitment—driven by ethical leadership, reward systems, and a conducive work environment—plays a crucial role in sustaining innovation and performance. The findings

underscore the necessity for BFS organizations to adopt strong digital leadership practices while fostering trust and commitment to build a thriving organizational culture. This research provides

valuable insights for financial institutions seeking to navigate digital transformation successfully and enhance long-term sustainability through strategic leadership and cultural development.

Application No	202541022990	Title of the invention	AN AI-ENABLED SYSTEM FOR PREDICTING CHRONIC DISEASE ONSET USING MULTI-MODAL HEALTHCARE DATA
Name of Inventor	Ifrikhar Aslam Tayubi, Vedavyas Gurla, Dr. Shrabhan Kumar Apat, Mr. Deependra Pandey, Dr. Amar Choudhary		



Dr. Amar Choudhary
Assistant Professor
Alliance School of Applied Engineering

Abstract

The present invention discloses an AI-driven system for predicting chronic disease onset using multi-modal healthcare data. The system integrates diverse data sources, including EHRs, medical imaging, genetic markers, and wearable sensor data, to provide accurate disease risk assessments. Deep learning models, including CNNs, RNNs,

and hybrid architectures, analyze complex data patterns and generate predictive insights. The system incorporates interpretability techniques to assist healthcare professionals in making informed decisions. The proposed invention enables early detection, personalized treatment planning, and improved patient outcomes.

Application No	202541023048	Title of the invention	AI-DRIVEN METHOD FOR ANALYZING LEGAL OUTCOMES IN ALTERNATIVE DISPUTE RESOLUTION PROCESS
Name of Inventor	Prof.(Dr.) K. Sita Manikyam, Dr. LVK Prasad, Dr. Kota Pallavi, Mr. Lammata Ashish Kumar, Mr. Modukuru Chandra Shekar, Ms. Sarakula Keerthi Priya, Mr. V. Abhinav Deep Dora, Mr. Bahaa Abbas Sachit, Ms. P. Suneetha, Dr. Upankar Chutia		

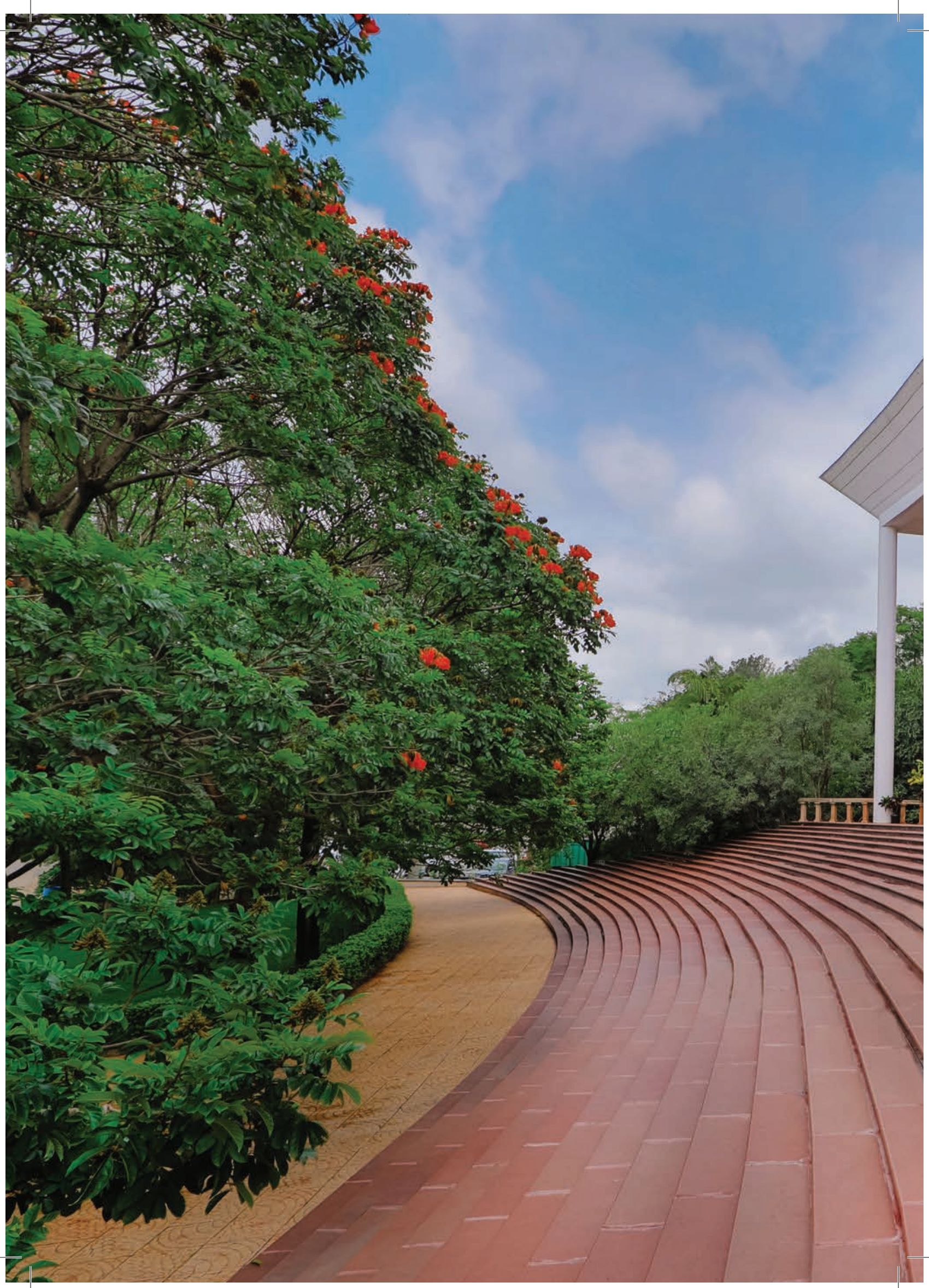


Dr. Upankar Chutia
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Abstract

The presents invention an AI-driven system for analyzing legal outcomes in Alternative Dispute Resolution (ADR) processes. The system utilizes natural language processing (NLP) and machine learning (ML) models to process legal documents and queries, providing efficient legal analysis and insights. It includes a user interface, a comprehensive legal ADR database, a query

suggestion feature, and a module for generating legal summaries, compliance reports, and risk evaluations. The system helps legal professionals and parties involved in disputes by streamlining decision-making, identifying legal gaps, and legal lacunae and recommendations, thereby improving efficiency in arbitration, mediation, conciliation, and negotiation processes.





Intellectual Property Rights (AU IPR Cell)

DESIGNS

Design No: **434651-001**

Title of the Design:

SOLAR-POWERED OCULUS HMD

Name of Applicant:

Alliance University, Bengaluru, U Ananthanagu, Dr. G S Pradeep Ghantasala, Dr. Pavithra K, Mr. Shivam



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Description

A solar-powered Oculus HMD featuring integrated photovoltaic panels on its surface for continuous energy harvesting, enhancing operational duration and promoting sustainable, self-sufficient virtual reality experiences







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