ALLIANCE UNIVERSITY
CENTRE for RESEARCH

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

ALLIANCE RESEARCH CHRONICLES

FEBRUARY 2025
Volume 2

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ALLIANCE RESEARCH CHRONICLES

FEBRUARY 2025
Volume **2**

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EXIT

ABOUT ALLIANCE UNIVERSITY

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

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

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

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

VISION

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

MISSION

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

ABOUT CENTRE *for* RESEARCH

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

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

VISION

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

MISSION

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

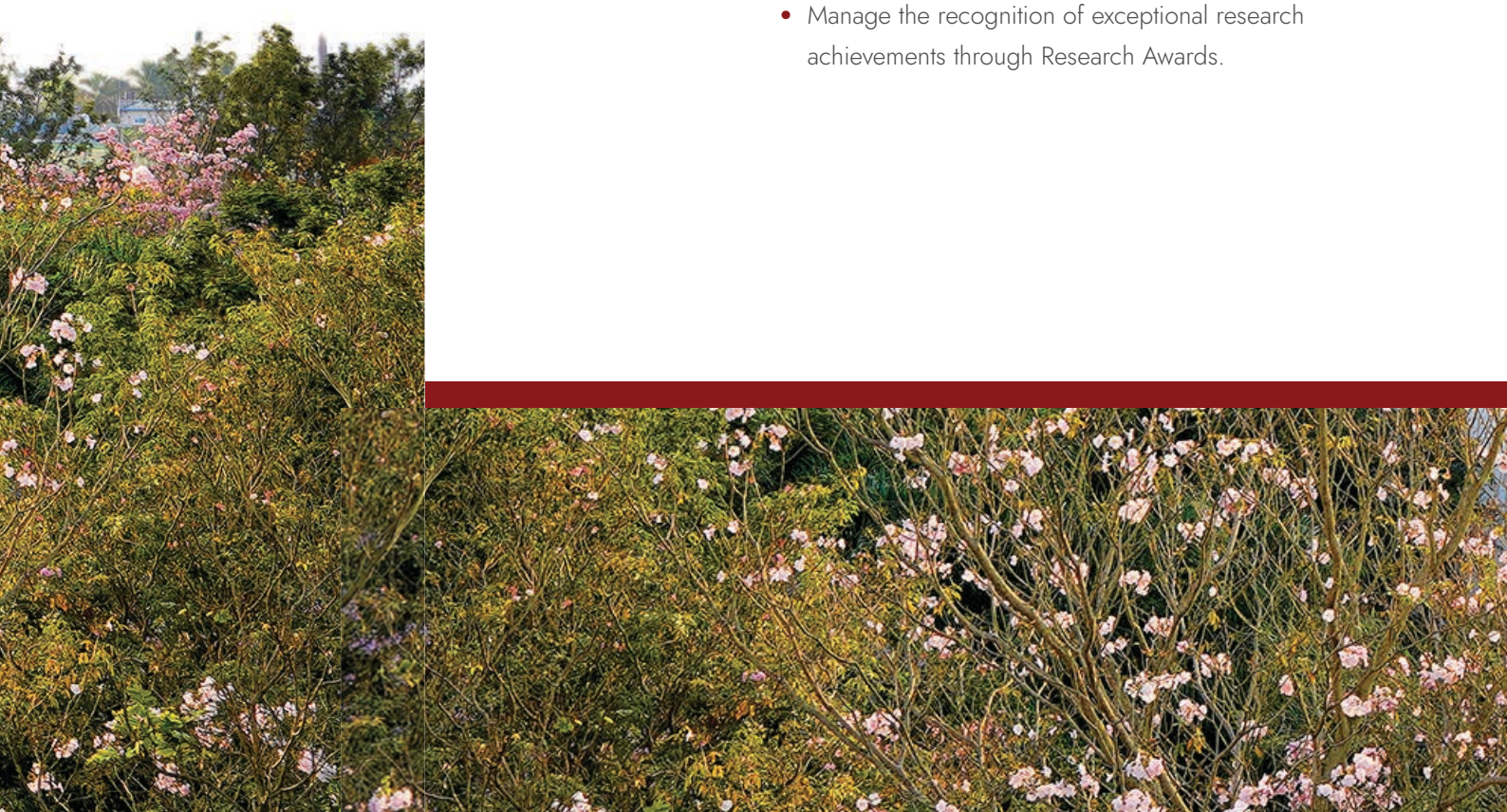
ABOUT CENTRE *for* RESEARCH (Contd.)

CORE VALUES

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

OBJECTIVES

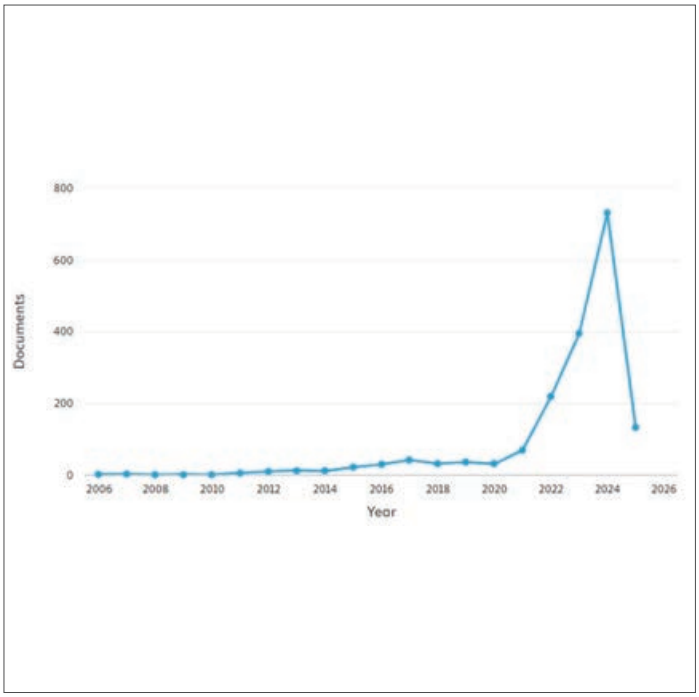
- Support the Ph.D. Admission process and facilitate the Ph.D. Program across all academic units of Alliance University.
- Providing resources and support for faculty, students, and visiting/full-time scholars engaged in research activities.
- Contributing to the advancement of knowledge through publications,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



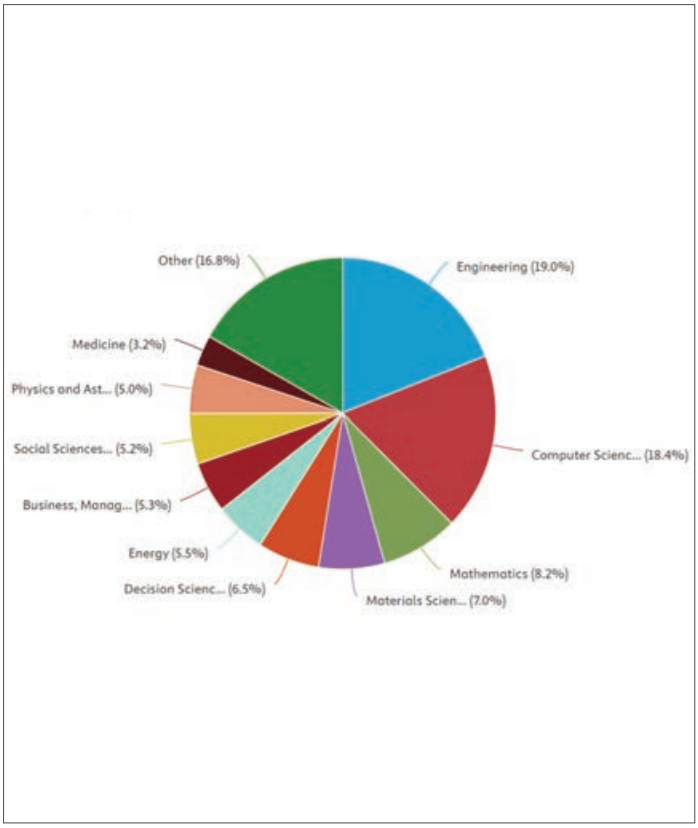
1,772 Documents

586 Authors

Documents by Year



Documents by Subject Area

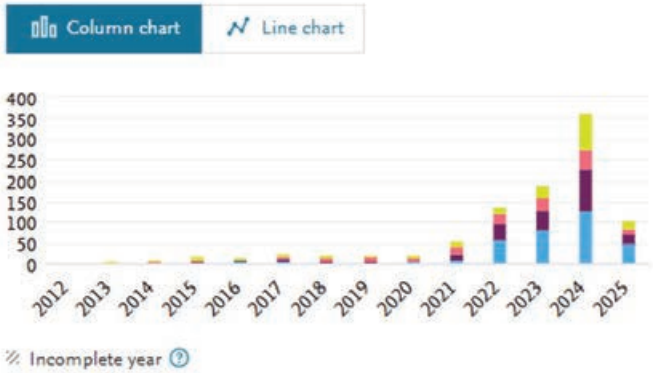


Summary

1600	666	6320	4.0	1.93	19
Scholarly Output	Authors	Citation Count	Citations per Publication	Field-Weighted Citation Impact	h-5 index

19.9%
All Open Access

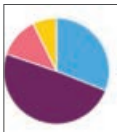
Publication by Journal Quartile



Quartiles	Publications	Publication share (%)
Q1 (top 25%)	356	36.0
Q2 (26% - 50%)	247	25.0
Q3 (51% - 75%)	181	18.3
Q4 (76% - 100%)	205	20.7

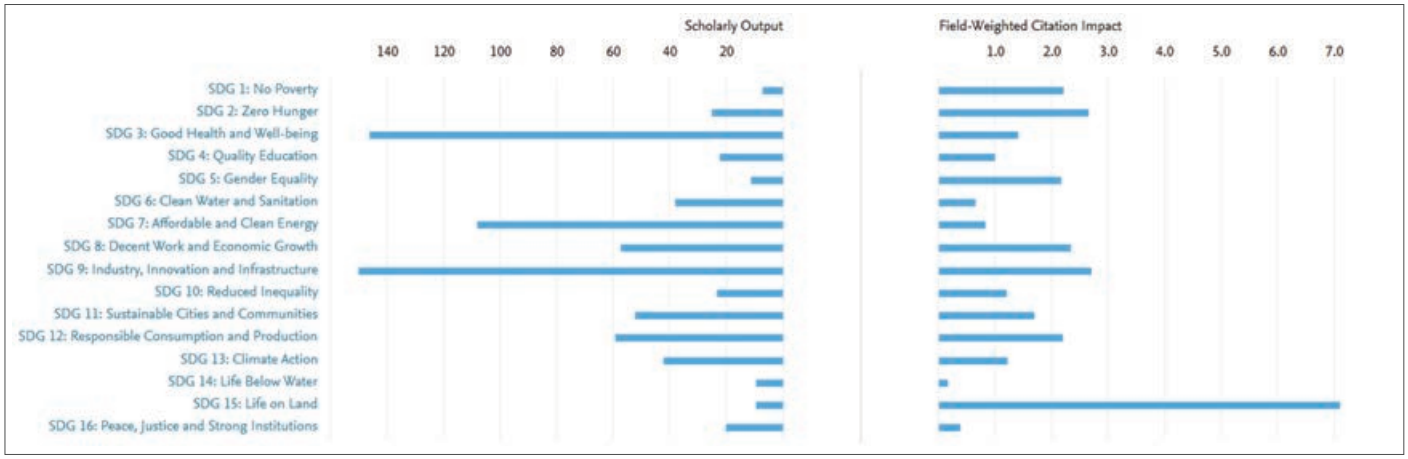
Cumulative shares	Publications	Publication share (%)

Geographical Collaboration Overall

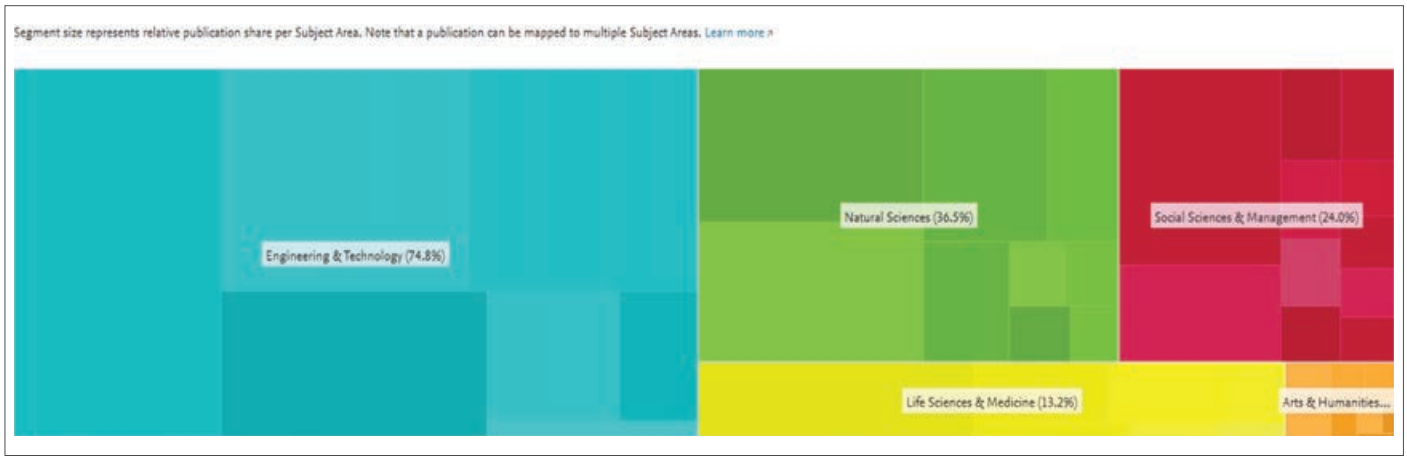


Metric	Publication share	Scholarly Output	Citations	Citations per Publication	Field-Weighted Citation Impact
International collaboration	31.0%	543	3,877	7.1	2.08
Only national collaboration	49.3%	864	3,170	3.7	2.11
Only institutional collaboration	12.4%	218	268	1.2	0.67
Single authorship (no collaboration)	7.3%	128	312	2.4	0.55

Publication by SDG



Subject Areas

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Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	**82nd**	**3.9**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

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

Senthamaraikannan P.; Arokiasamy F.S.; Selvan M.T.; Divakaran D.; **Suyambulingam I.**; Balan A.V.; Rao H.J.

Journal of Inorganic and Organometallic Polymers and Materials 2025

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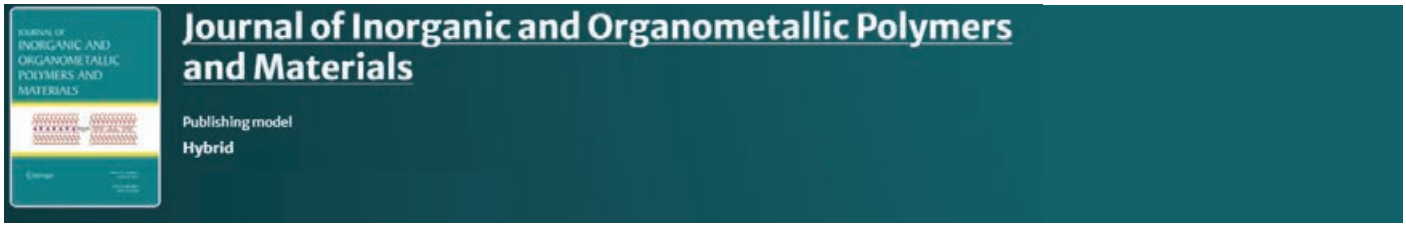

Abstract

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

Author keywords- Bioplasticizers; Characterization; Surface morphology; Sustainable biomaterials; Thermal analysis; Thespesia populnea

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	**82nd**	**3.6**	

RURAL MULTIDIMENSIONAL POVERTY AND LIVELIHOOD MIX: A MICRO LEVEL STUDY IN BIHAR, INDIA

Onyeyirichi O.A.; **Deepika M.G.**

Heliyon Open AccessVolume 11, Issue 428 February 2025.

Dr. Deepika M. G.
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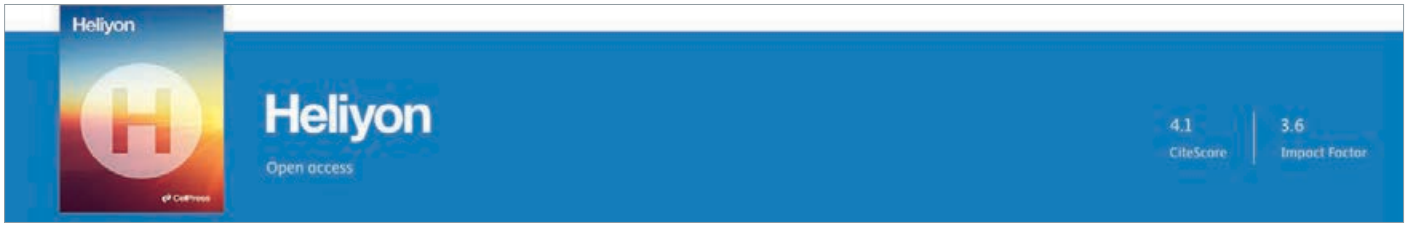

Abstract

Understanding the livelihood dynamics of rural households is crucial for formulating rural, pro-poor policies. Quite a few studies in the past have explored the impact of several aspects of livelihoods on rural poverty using unidimensional or multidimensional poverty measures, which fail to capture the nuances of rural poverty sufficiently. Identifying the gap in the literature, we explore the dynamics of rural poverty in relation to access to livelihood capitals and livelihood diversification of the rural households in India. We measure the rural poverty using the Rural multidimensional poverty index (RMPI) developed by FAO and OPHI (Oxford Poverty and Human Development Initiative) in 2022, access to livelihood capitals using the Alkire-Foster method and livelihood diversification using the Simpson's Diversification Index (SDI). We examine whether livelihood diversification mediates the relationship between access to livelihood capitals and rural multidimensional poverty, as suggested by the Sustainable Livelihood Framework. Our results show that there is low livelihood diversification and lack of access to livelihood capitals in our study area. We also find that livelihood diversification does not mediate the relationship between access to livelihood capitals and rural multidimensional poverty, but access to livelihood capitals is instrumental for poverty reduction in rural communities.

Author keywords- Rural multidimensional poverty; Access to livelihood capitals; Livelihood mix; Livelihood diversification; Sustainable livelihoods India

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	**89th**	**6.6**	07 AFFORDABLE AND CLEAN ENERGY

FLEXURAL INTEGRITY OF THE KEVLAR FABRIC-CRUMB RUBBER REINFORCED SANDWICH COMPOSITE: EXPERIMENTAL ASSESSMENT SUPPORTED BY ANALYTICAL AND NUMERICAL APPROACHES

Chenrayan V.; Shahapurkar K.; Natarjan P.S.; Tirth V.; Algahtani A.; Petrů J.; Bashir M.N.; Soudagar M.E.M.; Bhaviripudi V.R.

Journal of Materials Research and Technology, 2025

Dr. C Venkatesh
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Abstract

Recycling of waste materials reinforces the effort of promoting a sustainable environment and ecological management. In parallel, growing technologies unfold their wings to develop new materials from waste materials. The present study advocates the meticulous usage of crumb rubber (CR) a by-product of waste tyres to transform a lightweight -high-strength structural member. The usual open moulding technique was followed to fabricate a polymer composite sandwich wherein cover sheets were prepared by the resin-impregnated- Kevlar mat sheets and the core was fabricated by CR-reinforced epoxy. Four different variants of CR inclusion were followed (0, 5, 10 and 15 wt%) to cast a core. The structural integrity was evaluated using three-point flexural testing. The flexural testing results declare a 50% enhancement in both flexural strength and flexural modulus for the higher-content CR-reinforced core. The analytical evaluation of flexural stiffness, transverse rigidity and core shear modulus acknowledges the improved interfacial shear strength to combat the delamination. A stringent post-fracture study explores the nature of strengthening mechanisms and endorses core strengthening. The finite element-based numerical validation of experimental results substantiates the good agreement between the experiment results at the expense of approximately 10% accuracy.

Author keywords- Crumb rubber, Sandwich core, Flexural strength, Core shear modulus, Finite element analysis

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q2	59th	3.8	07 AFFORDABLE AND CLEAN ENERGY; 09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

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

Balan P.; Priyadharshini G.S.; Divakaran D.; **Suyambulingam I.**; Sunesh N.P.; Rangappa S.M.; Siengchin S.

Asian Journal of Psychiatry Volume 104 February 2025 Article number 104355

Dr. Indran Suyambulingam
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Alliance School of Applied Engineering

Abstract

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

Author keywords- Mangifera indica, Biofiller, Biomass, Cellulose, Biowaste to material

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q2	**65th**	**3.5**	12 RESPONSIBLE CONSUMPTION AND PRODUCTION

DETAILED ANALYSIS AND CHARACTERISATION OF MICROCRYSTALLINE CELLULOSE DERIVED FROM OCIMUM TENUIFLORUM LEAVES

Sunesh N.P.; S**enthamaraikannan P.**; Divakaran D.; Benitha V.S.; **Suyambulingam I.**; Vijay R.; Perumal K.,
Biomass Conversion and Biorefinery 2025

Dr. P. Senthamaraikannan
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Dr. Indran Suyambulingam
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Alliance School of Applied Engineering

Abstract

Cellulose, an abundant biopolymer, is present in an extensive variety of materials derived from plants. At this time, waste management is the predominant subject of scientific investigation. Presently, the utilisation of phytochemical-rich plants is widespread. We conducted our research utilising Ocimum tenuiflorum leaves with just an eye toward the future. Acid hydrolysis was employed to extract cellulose from the leaves of the Ocimum tenuiflorum plant in the present study. The practical implementation of this study is particularly focused on the utilisation of unintended plant materials. In order to verify the cellulose that was extracted, FT-IR spectroscopy was utilised. The surface smoothness and quality of the cellulose were both elucidated by SEM. The size and crystallinity index determined by X-ray diffraction are 13.38 nm and 68.94%, respectively. As indicated by the differential thermogram curve, the highest temperature at which degradation takes place is 187.83 °C. The microparticles, which have a diameter of 10 to 20 µm on average, are identified by employing ImageJ. The surface morphology and allowable skewness of cellulose particles were assessed by means of atomic force microscopy. The yield and density of synthesised cellulose are 45.58% and 1.398 g/cm3 respectively. Therefore, by improving its properties, the obtained cellulose could potentially gain greater viability for future applications.

Author keywords- Ocimum tenuiflorum leaf, Cellulose, Macromolecules, Biofiller, Biopolymer, Biomass

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q2	61st	2.16	07 AFFORDABLE AND CLEAN ENERGY

REVOLUTIONIZING DIAGNOSTIC INSIGHTS: EXPLORING ADVANCED IMAGE PROCESSING TECHNIQUES AND NEURAL NETWORKS IN TRADITIONAL INDIAN MEDICINE

Srinivasan R.; **Korah R.**; Ravichandran M

Engineering, Technology and Applied Science ResearchOpen AccessVolume 15, Issue 1, Pages 19214 – 19220 February 2025.

Dr. Reeba Korah
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Engineering, Technology & Applied Science Research *Vol. 15, No. 1, 2025, 19214-19220* 19214

Revolutionizing Diagnostic Insights: Exploring Advanced Image Processing Techniques and Neural Networks in Traditional Indian Medicine

Abstract

The Siddha and Ayurveda traditional Indian medicine practices utilize non-invasive diagnostic methods, such as Neikuri and Taila Bindu Pariksha, for patient diagnosis through urine analysis. While these methods have proven effective for centuries, their accuracy highly depends on the subjective experience of practitioners. To address this limitation, this study explores the use of advanced image processing techniques and deep learning, specifically Convolutional Neural Networks (CNNs), to automate and enhance diagnostic image analysis. This study utilized five pre-trained CNN models, namely DenseNet, ResNet, VGG-19, Inception, and EfficientNet, on a dataset of Neikuri images acquired from a Siddha medical institute, to standardize and improve the accuracy of patient diagnosis. The comparative evaluation revealed DenseNet as the best-performing model, achieving a classification accuracy of 93.33%, while Inception v3 followed with 90.5%. This study highlights the potential of integrating modern neural networks with traditional diagnostic practices, paving the way for more objective, efficient, and accessible healthcare solutions in traditional Indian medicine.

Author keywords- Convolutional Neural Networks (CNNs), deep learning, traditional medicine, Siddha, Ayurveda, urine test images, patient diagnosis, medical image analysis, Neikuri, Taila Bindu Pariksha, Mutra Pariksha

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	**88th**	**2.6**	07 AFFORDABLE AND CLEAN ENERGY

EXPLORING THE IMPACT OF CREATIVE MOVEMENT ON EXPERENTIAL LEARNING IN INDIAN PRIMARY SCHOOL EDUCATION

N Swetha.; U Kalebar R.; Mahadev A.V.R.; Katoch G.

E-Learning and Digital Media 2025

Dr. Swetha N
Associate Professor
Alliance Ascent College

Exploring the impact of creative movement on experential learning in Indian primary school education

Swetha N, Rajiv U Kalebar, [...], and Gaurav Katoch +1 View all authors and affiliations

OnlineFirst | https://doi.org/10.1177/20427530251313715

Abstract

This research paper explores the potential of creative dance as an innovative pedagogy for experiential learning in Indian primary school children. The study investigates the impact of incorporating creative dance into the curriculum on various aspects of child development, including cognitive skills, social-emotional growth, and physical well-being. Through a mixed-methods approach, including quantitative assessments and qualitative observations, the research examines the effectiveness of creative dance in enhancing learning outcomes and overall educational experiences. The findings suggest that creative dance can serve as a powerful tool for experiential learning, fostering creativity, critical thinking, and holistic development among Indian primary school children.

Author keywords- child development; Creative dance; experiential learning; India; pedagogy; primary education

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	96th	7.7	07 AFFORDABLE AND CLEAN ENERGY

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

Kings A.J.; **Suyambulingam I.**; Narayanaperumal S.; Miriam L.R.M.; Divakaran D.; Murali A.; Han S.S. ,
International Journal of Biological Macromolecules Volume 300, April 2025.

Dr. Indran Suyambulingam
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International Journal of Biological Macromolecules
Supports open access
13.7 CiteScore
7.7 Impact Factor

Abstract

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

Author keywords- Pistia stratiotes aquatic plant, Microcrystalline cellulose, Biofillers, Biowaste, Biomaterials

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q2	**66th**	**2.1**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

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

Rout A.; Mahanta G.B.; **Champatiray C.**; Deepak B.B.V.L.; Biswal B.B.

International Journal on Interactive Design and Manufacturing 2025

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Abstract

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

Author keywords- Robot orientation, Laser sensor, Focal length, Joint trajectory, Weld quality, Fuzzy logic, EMONSGA-II

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q2	50th	0.9	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

ANTIOXIDANT, ANTI-INFLAMMATORY AND FOURIER TRANSFORM INFRARED (FTIR) ANALYSIS OF FLAVONOID FRACTIONS FROM GYMNOPSORIA MONTANA

Sutariya S.; Gupta A.; Thapliyal A.; Singh P.; Dabral A.; **Shaikh A.C.**; Bajpai A.B.

Research Journal of Pharmacy and TechnologyVolume 18, Issue 1, Pages 81 - 882025

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Antioxidant, Anti-inflammatory and Fourier Transform Infrared (FTIR) Analysis of Flavonoid fractions from Gymnopsoria montana

Abstract

Gymnosporia montana, a medicinal plant species, has been traditionally used by people for the treatment and cure of various infectious ailments. In this study, phytochemical profiling and biological evaluation (anti-inflammatory and antioxidant) of hydroethanolic leaves and fruit fractions (acetone, chloroform, and petroleum ether) obtained through the soxhlet extraction approach of Gymnosporia montana were investigated. Further, hydroethanolic fractions were also subjected to FT-IR analysis in order to influence the companionship of functional groups in miscellaneous phytoconstituents. The results of antioxidant based assays of methanolic leaf and fruit fractions showed that the acetone and chloroform fractions of leaves had the strongest DPPH antioxidant potential, which may directly have correlated with enhancement in phenolic and flavonoid content as compared to fruit fractions. However, the acetone and chloroform fractions of the leaves also showed anti-inflammatory activity against typhoid vaccine. Further, functional groups were identified using FT-IR and the results of these FT-IR studies showed the presence of various functional groups like amines, aromatic compounds, alcohols, phenols, etc., which aid in each of their medicinal properties. It is possible to conclude that the presence of different pharmacological compounds gives them different characteristics, and the presence of different functional groups aids their medicinal properties. In short, these results support the possible use of the acetone and chloroform leaf fraction of hydroethanolic leaf extract containing flavonoids from Gymnosporia montana as antioxidant and anti-inflammatory agents.

Author keywords- Gymnosporia montana, Chloroform, Acetone, Petroleum ether, Antioxidant, Anti-inflammatory

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q2	**63rd**	**3.1**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

COMPARATIVE ANALYSIS OF SCM MUSCLE FATIGUE IN OFFICE WORKERS WITH HUNCHED POSTURE: A STUDY ON CHRONIC LOWER BACK PAIN VERSUS NON-AFFECTED INDIVIDUALS

Guduru R.K.R.; Ramineni J.; Ramakrishna M.M.; **Sridhar D.**; Bharathi H.

Biotechnology and Applied Biochemistry 2025

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Comparative Analysis of SCM Muscle Fatigue in Office Workers with Hunched Posture: A Study on Chronic Lower Back Pain versus Non-Affected Individuals

Rama Krishna Reddy Guduru ✉, Joshna Ramineni, Ramakrishna M. M., Sridhar D., Hema Bharathi

Abstract

This study examines the disparities between people suffering from chronic lower back pain (LBP) and those who do not, with a particular focus on how extended periods of sitting with poor posture affect fatigue and discomfort in the sternocleidomastoid (SCM) muscles among office employees. Eighty university staff and students were enrolled in the study by matching age, BMI, and type of job. They were split into two groups later: a control group (n = 40) with no back pain and a pain group (n = 40) with a history of lower back pain (LBP). Pain intensity was measured using a Visual Analog Scale (VAS), while SCM muscle activity was measured via surface electromyography (sEMG) during both normal and hunched postures. Participants maintained each posture for a specified duration of 30 min. The study revealed that Pain_Hunched group exhibited significantly reduced SCM muscle activity compared to the Control_Hunched group (mean difference = −9.728, $p < 0.001$). Furthermore, the SCM muscle activity in the Pain_Hunched group was significantly lower than that of the Pain_Normal group (mean difference = −2.769, $p = 0.041$). These results highlight the heightened SCM muscle activity during hunched postures, particularly in individuals with LBP. The results emphasize the crucial role posture plays in influencing SCM muscle activation and pain perception among individuals with LBP. These results imply that correcting one's posture could be a useful pain management intervention technique for this population. The long-term impacts of postural adjustments and their possible advantages in clinical contexts, such as incorporating ergonomic interventions or specific exercise regimens, should be investigated in future studies.

Author keywords- SCM muscle fatigue; chronic lower back pain; electromyography (EMG); hunched posture; musculoskeletal imbalance; neck pain

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q3	30th	0.93	05 GENDER EQUALITY, 08 DECENT WORK AND ECONOMIC GROWTH

YOUNG WOMEN'S PERCEPTIONS OF SUCCESSFUL ENTREPRENEURSHIP: EVIDENCE FROM THE KINGDOM OF BAHRAIN

Sengupta D.; El Khoury C.M.; **Titus R.**; Valera S.

International Journal of Business and Emerging Markets Volume 17, Issue 1, Pages 26 – 48 2025

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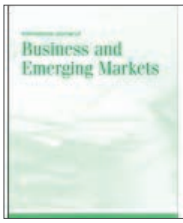

Editor in Chief
Prof. Charbel Salloum

ISSN online
1753-6227

ISSN print
1753-6219

Abstract

The perception of women concerning entrepreneurship remains among the current and most critical topics that require constant exploration. This research aims to understand the perception of young women concerning successful entrepreneurship in Bahrain. A narrative inquiry method was chosen to collect the data. More precisely, 17 semi-structured interviews with Bahraini women nationals and residents were conducted, and responses were generated using thematic analysis. Findings show that perceptions regarding successful entrepreneurship among young women in Bahrain can be categorized into five themes: triumph over adversity, autonomy and work-life balance, sense of worth (inward) and sense of accomplishment (outward), path to prosperity, and leaving a discernible social impact. While the first three belong to the psychological success indicator, the fourth one is related to social influence, and the fifth fits with the economic return indicator of entrepreneurial success.

Author keywords- entrepreneurial intention, entrepreneurial success, young women, entrepreneurial perception

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q4	17th	1.26	07 AFFORDABLE AND CLEAN ENERGY; 09 INDUSTRY, INNOVATION AND INFRASTRUCTURE; 11 SUSTAINABLE CITIES AND COMMUNITIES; 12 RESPONSIBLE CONSUMPTION AND PRODUCTION

EDGE COMPUTING- SMART CITIES: OPTIMIZING DATA PROCESSING & RESOURCE MANAGEMENT IN URBAN ENVIRONMENTS

Rajagopal S.; Tripathi P.K.; Deshmukh M.; Choudari S.; Kumar A.; Long C.S.

Journal of Information Systems Engineering and Management, Volume 10, Pages 473 - 4822025

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Journal of Information Systems Engineering and Management
Journal of Information Systems Engineering & Management is published quarterly
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DOI: https://doi.org/10.55267/iadt

Abstract

As urbanization accelerates, smart cities are emerging as innovative ecosystems that integrate technology to address challenges related to sustainability, mobility, and infrastructure. Among these technologies, edge computing has gained prominence as a transformative solution to optimize data processing and resource management in urban environments. This paper explores the role of edge computing in enabling efficient, real-time decision-making by bringing computational power closer to data sources. Unlike traditional cloud-centric models, edge computing reduces latency, enhances data security, and improves bandwidth utilization by distributing data processing across decentralized nodes. The integration of edge computing in smart cities supports various applications, including intelligent transportation systems, energy-efficient smart grids, and real-time public safety monitoring. By processing data locally, edge devices can handle massive volumes of information generated by Internet of Things (IoT) devices, ensuring seamless service delivery without overwhelming centralized systems. Furthermore, this decentralized approach enhances resilience by reducing dependency on remote servers, a crucial factor for mission-critical urban applications. A significant focus of this paper is on resource management, particularly the allocation of computational resources across edge nodes. Strategies such as dynamic resource scheduling, load balancing, and adaptive task offloading are analyzed for their effectiveness in maintaining operational efficiency. Moreover, the research highlights the importance of leveraging machine learning and artificial intelligence algorithms within edge computing frameworks to predict traffic patterns, optimize energy consumption, and enhance waste management systems. Security and privacy concerns, often considered barriers to edge computing adoption, are addressed through advanced encryption techniques and secure communication protocols. This paper also evaluates challenges associated with edge computing deployment, such as hardware limitations, interoperability issues, and the need for robust regulatory frameworks. Case studies from leading smart city projects illustrate successful implementations and offer insights into overcoming these obstacles. In addition to technical aspects, this research underscores the socioeconomic benefits of edge computing in urban settings. Improved public services, reduced environmental impact, and cost-effective infrastructure management demonstrate the potential of edge computing to revolutionize city living. By enabling real-time analytics and localized decision-making, edge computing supports a more responsive and adaptive urban ecosystem. The findings presented in this paper emphasize the critical role of edge

computing in bridging the gap between urban challenges and technological solutions. As cities continue to evolve, adopting edge computing technologies will not only enhance operational efficiency but also foster innovation, sustainability, and inclusivity. Future research directions include exploring hybrid models combining edge and cloud computing, advancing hardware capabilities, and developing standardized frameworks to accelerate adoption. This paper contributes to the growing body of knowledge on edge computing, offering a comprehensive analysis of its applications, challenges, and potential in shaping the future of smart cities. By optimizing data processing and resource management, edge computing emerges as a cornerstone technology for creating smarter, more resilient urban environments.

Author keywords- Edge computing, Cloud computing, Internet of Things, Real-time applications, Smart cities

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	**95th**	**6.9**	

ISOLATION AND CHARACTERIZATION OF MICROCRYSTALLINE CELLULOSE FROM RICE STALK AGRO-WASTE AND ITS APPLICATION IN ENHANCING INHERENT PROPERTIES OF PBAT BIOFILM

Sivanantham G.; Divakaran D.; **Suyambulingam I.**; Suganya Priyadharshini G.; Munusamy Y.; Murali A.; Han S.S. ,
Process Safety and Environmental Protection Volume 196 April 2025

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Abstract

This study addresses the global demand for sustainable materials by isolating and characterizing microcrystalline cellulose (MCC) from rice stalk agro-waste and applying it to enhance the mechanical properties of poly(butylene adipate-co-terephthalate) (PBAT) biofilms. Rice stalk MCC (RSMCC) was extracted using chemical treatments, including alkalization, acid hydrolysis, and bleaching. The extracted MCC was characterized by Fourier-transform infrared spectroscopy (FTIR), energy-dispersive X-ray spectroscopy (EDX), X-ray diffraction (XRD), atomic force microscopy (AFM), UV–visible spectroscopy, and thermogravimetric analysis (TGA). RSMCC was incorporated into the PBAT films at 0–5 wt% concentrations using the solution casting method, and the biofilms' mechanical properties were evaluated. RSMCC exhibited a crystallinity index of 75.75 %, thermal stability up to 200 °C, and an average particle size of 134.068 μm. Incorporating 4 wt% RSMCC into PBAT achieved the highest tensile strength (28.16 MPa) and modulus (15.92 MPa). The results demonstrated RSMCC's effectiveness of RSMCC as a reinforcing agent, enhancing the mechanical and thermal properties of PBAT biofilms. These findings support RSMCC's potential of RSMCC for the development of biodegradable and sustainable packaging materials.

Author keywords- Microcrystalline cellulose (MCC), PBAT, Rice stalk, Biopolymer, Biomaterial

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q4	3rd	NA	16 PEACE, JUSTICE AND STRONG INSTITUTIONS

FORENSIC ODONTOLOGY IN SEXUAL OFFENCES – A REVIEW BASED ON DECIDED CASES

Govindarajan V.D.; **Bhaskar A.**

Multidisciplinary Reviews, Volume 8, Issue 6 2025

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ISSN 2595-3982
Multidisciplinary Reviews

Abstract

Forensic odontology as a scientific tool, that aids the crime investigations, is believed to be providing indisputable, reliable and convincing evidence in the form of expert testimony and reports that the courts relies on to pronounce its judgements. It has aided the investigators and courts in various landmark judgements such as that of the Megan Kanka case, the Nirbhaya rape and murder case, the Lisa Levy case, etc. However, the field is being criticized of lacking in strengthened foundations, particularly in establishing reliability due to issues and conflicts existing within the field. While the bite mark analysis is a debatable topic, the other advantages offered by the forensic odontology such as the salivary DNA analysis, DNA extraction from the teeth, DNA derived from the saliva and mucosa and the DNA derived from the left overs on the bite marks are undeniable evidence that can aid the crime investigation and can form the basis for various judgements. This paper identifies the commendations and criticisms for and against the field of forensic odontology through the review of a few decided cases and proposes the measures to instilling faith and belief in the field of forensic odontology to aid the crime investigations and instil justice.

Author keywords- forensic odontology, forensic dentistry, bite mark analysis, dentition analysis, dental DNA

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q4	23rd	1.2	08 DECENT WORK AND ECONOMIC GROWTH; 09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

A REVIEW OF ASEAN-INDIA FREE TRADE AGREEMENT AFTER A DECADE: EVIDENCE FROM STRUCTURAL GRAVITY MODEL ESTIMATES

Kumari Mamta

Journal Of East-West Business, Feb 2025

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Abstract

Amidst the ongoing review of the ASEAN-India Free Trade Agreement (AIFTA), this study empirically reassesses the impact of AIFTA on trade between India and ASEAN nations. Employing a structural gravity model with three-way fixed effects and accounting for intranational trade flows, the analysis addresses biases in earlier estimates and highlights overlooked dynamics. By controlling for intranational trade, the study corrects the upward bias in earlier estimates of AIFTA's bilateral trade effects and uncovers significant unilateral effects. Findings demonstrate that AIFTA significantly benefits both members and nonmembers. Furthermore, it uncovers differential impacts of AIFTA on India's exports and imports across ASEAN members.

Author keywords- ASEAN-India FTA, economic integration, gravity model, panel data

Indexing/Quartile	Percentile	Impact Factor	SDG
WOS/Q4	14th	0.8	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

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

Bakshi, Avijit; Reddy, Pujari Sudharsana,

International Journal Of Indian Culture And Business Management, Volume. 34 Issue. 1, Feb 2025

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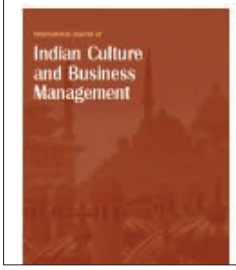

Editor in Chief
Prof. Angappa Gunasekaran
ISSN online
1753-0814
ISSN print
1753-0806

Abstract

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

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

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q3	**48th**	**2.8**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

PROPERTIES AND APPLICATIONS OF ORMOSIL FOR BIOSENSING

Justa, Purnima; Jaswal, Nancy; Rana, Deeksha; Kumar, Hemant; Yadav, Neha; **Bahadur, Vijay**; Kumar, Pramod,
SILICON, FEB 2025

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Abstract

Ormosil, known for its unique attributes such as tuneable porosity, ability to possess a high amount of exposed surface area relative to their volume, and compatibility with living organisms, is promising as a biosensor material. This review covers current advances, methods, and obstacles associated with the use of Ormosil-based biosensors for the recognition of various analytes, including biomolecules, ions, and gases. Synthesis methods specifically tailored to biosensing are discussed, with an emphasis on strategies to brush up the sensitivity, selectivity, and stability of the sensors. It concludes by outlining prospects and challenges, emphasizing the potential of Ormosil-based biosensors in healthcare, environmental monitoring, industrial control processes, drug delivery and food safety. It highlights the need for interdisciplinary collaboration and innovative approaches to overcome current limitations and fully exploit Ormosil's capabilities in biosensor applications.

Author keywords- Ormosil, Biosensor, Biomolecules, Healthcare, Environment, Food safety

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	**82nd**	**4.9**	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

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

Yadav, Ankita; **Talreja, Neetu**; Chauhan, Divya; Khan, Suphiya; Ashfaq, Mohammad,

Microchemical Journal, Volume.209, Feb 2025

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Abstract

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

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

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	**82nd**	**7.2**	

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

Chandrashekar, Akshatha; Hegde, Madhushree; Siya; Reddy, B. Karthik; Gopi, **Jineesh Ayippadath**; Ravichandran, Vanmathi; Varrla, Eswaraiah; Prabhu, T. Niranjana,

Applied Materials Today, Volume.42, Feb 2025

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Abstract

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

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

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q2	62nd	3.6	11 SUSTAINABLE CITIES AND COMMUNITIES

SUSTAINABLE BIOCOMPOSITES BASED ON POLYLACTIC ACID AND AGRO WASTE BIOFILLERS FOR LIGHTWEIGHT APPLICATIONS: FABRICATION AND PROPERTIES

Ramesh, M.; **Rajeshkumar, L.**; Sanjay, Mr; Siengchin, Suchart,

Journal of Thermoplastic Composite Materials, Feb 2025

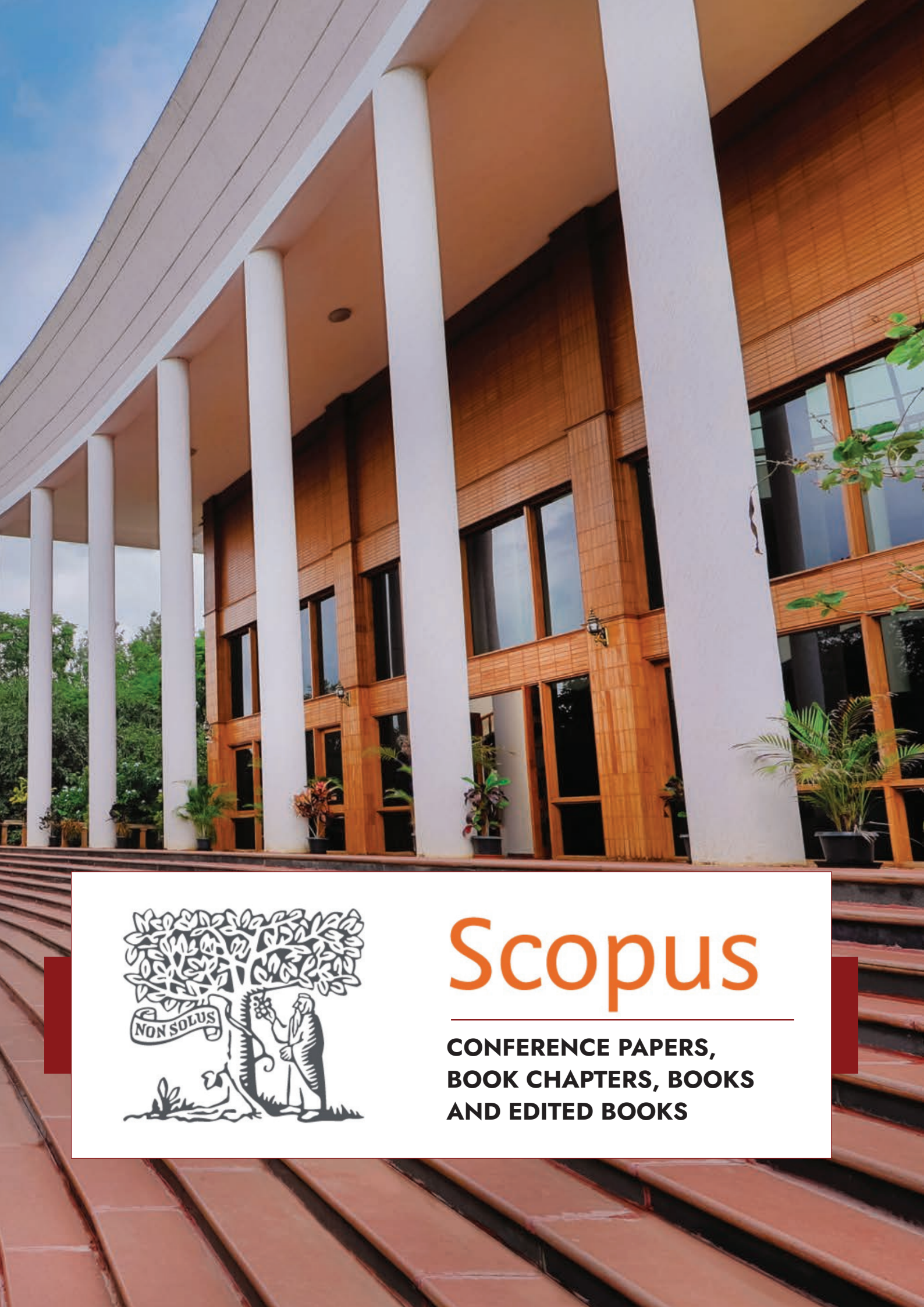
Dr. Rajeshkumar Lakshminarasimhan
Professor
Alliance School of Applied Engineering

The *Journal of Thermoplastic Composite Materials* (JTCM) publishes peer-reviewed research on polymers, nanocomposites, and particulate, discontinuous, and continuous-fiber-reinforced materials in the areas of processing, materials science, mechanics, durability, design, non destructive evaluation, addictive manufacturing and ... | View full journal description
This journal is a member of the Committee on Publication Ethics (COPE).

Abstract

The utilization of agricultural biomass residues as biofillers in polymer composites enhances the evolution of green and sustainable biocomposites that assist in progressing towards sustainable development goals. Agricultural biomass residues such as peels, seeds, stalks, and bunches increase with the increase in crop production. The current research focuses on evaluating the influence of waste pomegranate peel biofiller as a novel particulate reinforcement on the mechanical, thermal, and thermomechanical properties of polylactic acid (PLA)-based biocomposites. The pomegranate peel particulate biofillers were characterized using various characterization techniques. Different concentrations of biofillers ranging from 5-25 wt. % was used for the preparation of PLA-based composites. The fabricated composites were subjected to various mechanical and thermal tests. The experimental investigations showed that 15 wt. % of biofiller-reinforced biocomposites exhibited a 13.6 % increase in tensile strength, 42 % increase in tensile modulus, 9.34% increase in compressive strength, 41% in impact strength, and 26 % increase in hardness and better thermal and thermomechanical behaviour when compared with virgin PLA. The failure morphology of the biocomposites portrayed better interfacial bonding between composite constituents. It can be concluded from this study that the pomegranate peel powder can act as potential biofiller reinforcements for producing biocomposites for various lightweight structural applications. Hybridization with biofibers and other biofillers may enhance the application spectrum of these biocomposites further.

Author keywords- biocomposites; Biofillers; characterization; mechanical properties; thermal properties



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CONFERENCE PAPERS, BOOK CHAPTERS, BOOKS AND EDITED BOOKS

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	02 ZERO HUNGER; 08 DECENT WORK AND ECONOMIC GROWTH; 12 RESPONSIBLE CONSUMPTION AND PRODUCTION

AGRICULTURAL SUSTAINABILITY THROUGH NANOTECHNOLOGY

Theresa M.; Radhakrishnan E.K.; Jose A.; **Parameswaranpillai J.**,
Agricultural Sustainability through Nanotechnology, Pages 1 - 2641 January 2025

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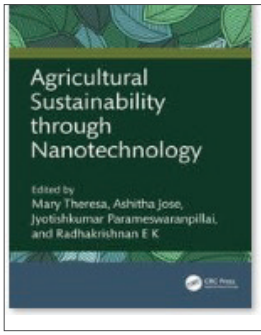

Agricultural Sustainability through Nanotechnology

Edited By Mary Theresa, Ashitha Jose, Jyotishkumar Parameswaranpillai, Radhakrishnan E K

Abstract

Agricultural Sustainability through Nanotechnology focuses on the innovative intersection of agriculture and nanotechnology, offering a comprehensive exploration of how nanotechnological applications are revolutionizing sustainable farming practices. This book is a pioneering work that not only elucidates the immense potential of nanotechnology in agriculture but also provides practical insights into its implementation for enhanced sustainability. With a focus on addressing pressing agricultural challenges, this book sets itself apart by bridging the gap between cutting-edge nanotechnology research and its real-world applications in sustainable agriculture for better productivity. Readers will discover a wealth of knowledge on how nanotechnology can optimize crop production, mitigate environmental impacts, and improve resource efficiency in farming practices. This book is essential reading for researchers, academics, and professionals in the fields of agriculture, nanotechnology, and environmental science. It serves as a valuable resource for readers seeking to understand and harness the momentum of nanotechnology for sustainable agricultural practices.

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

CLASSIFICATION AND DETECTION OF PROSTATE CANCER USING MACHINE LEARNING TECHNIQUES

Vetrithangam D.; Kumar P.; Munawar S.; Biswas R.; Pandey D.; **Choudhary A.**

Natural Language Processing for Software Engineering, Pages 29 - 411 January 2025

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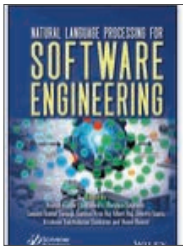

Natural Language Processing for Software Engineering

Editor(s): Rajesh Kumar Chakrawarti, Ranjana Sikarwar, Sanjaya Kumar Sarangi, Samson Arun Raj Albert Raj, Shweta Gupta, Krishnan Sakthidasan Sankaran, Romil Rawat

Abstract

Carcinoma is a significant contributor to the death rates of individuals. Reducing the amount of time it takes to diagnose a patient is very necessary to improve their prognosis. Diagnostic imaging and other traditional methods are used by highly trained medical professionals to identify any telltale indicators that may be present in the bodies of their patients. In spite of the abundance of medical imaging data, manual diagnosis may still be subjective and time-consuming due to the fact that people's perceptions differ so much from one another. One of the primary reasons for the variability is the collecting of data from medical imaging. A proper diagnosis may be more difficult to get as a result of this. When performing activities such as machine learning and the processing of complex pictures, it is important to make use of the most advanced computational power available. Ever since the 1980s, there has been a persistent effort to develop a computer-aided diagnostic system that has the potential to help in the early diagnosis of a wide variety of malignancies. According to the most recent estimates, around one-seventh of men will be diagnosed with prostate cancer at some point in their life. This illness claims the lives of so many men every year, and it is unbearable that the number of men who are diagnosed with prostate cancer continues to climb. It is a tragedy that this number continues to rise. A powerful diagnostic system that is capable of managing high-resolution, multi-dimensional MRI images is an absolute need, in addition to computer-aided design (CAD) software. In the present moment, I am focusing my attention on a project that will make it easier for us to achieve our shared goals. Scientists are now studying methods to improve the speed, accuracy, and precision of computer-aided design (CAD) technology since it has been shown to be valuable. CAD technology has been demonstrated to be effective, as shown by the evidence. The development of techniques for the diagnosis and classification of prostate cancer via the use of MRI image processing and machine learning is the fundamental objective of this study as well.

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

IMPLEMENTATION OF MODIFIED DUAL-COUPLED LINEAR CONGRUENTIAL GENERATOR WITH PARALLEL PREFIX ADDER

Katikala H.B.; **Murthy G.R.**

Circuit Design for Modern Applications, Pages 371–3821, January 2025

Dr. G. Ramana Murthy
Professor & Program Director - Ph.D.
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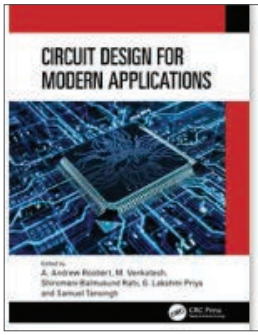

Book

Circuit Design for Modern Applications

Edited By A. Andrew Roobert, M. Venkatesh, Shiromani Balmukund Rahi, G. Lakshmi Priya, Samuel Tensingh

Edition 1st Edition

Abstract

In the digital world, securing data during transmission is crucial, especially when data generation is in pseudo-random bits. There are many existing topologies to generate pseudo-random bits using different adders. The design of successive adders with low power consumption, delay, and area is critical for random bit generation. Henceforth, a proposed model adder is integrated into the existing topology for memory optimization. The parametric simulation of the proposed adder is implemented in the Xilinx tool and the result analysis has proven to have less delay, power consumption and occupy the minimum area.

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

OPTIMIZED MACHINE LEARNING TECHNIQUES FOR SOFTWARE FAULT PREDICTION

Shelke C.; Jadhav A.M.; Anjimoon S.; Asha V.; Nijhawan G.; Dhanraj J.A.

Natural Language Processing for Software Engineering, Pages 207 - 2191 January 2025

Dr. Chetan J. Shelke
Associate Professor
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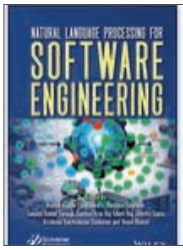

Natural Language Processing for Software Engineering

Editor(s): Rajesh Kumar Chakrawarti, Ranjana Sikarwar, Sanjaya Kumar Sarangi, Samson Arun Raj Albert Raj, Shweta Gupta, Krishnan Sakthidasan Sankaran, Romil Rawat

Abstract

Software fault prediction serves to improve testing efficiency and software quality by enabling the early discovery of software problems. This is accomplished via improved program quality. In most cases, the procedure of categorizing is used for the purpose of error detection. During the classification process, coding features and other characteristics are used to produce predictions about the potential occurrence of mistakes. Due to the fact that software defect detection is heavily influenced by poor categorization judgments, it is necessary to have an improved decision-making model to anticipate trends by making use of the attributes retrieved from datasets. Through the use of a collection of software failure datasets, these researchers evaluate the performance of the offered techniques in comparison to that of a wide variety of machine learning classifiers. Accuracy, balance, area under the curve, false alarm rate, detection rate, or recall rate were some of the performance criteria that were used in the evaluation of the recommended approaches.

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

FUTURE BATTLEFIELD SYSTEM USING GRAPH DATABASE AND INTERNET OF THINGS (IOT)

Shelke C.; Chowdhary H.; Gupta P.; Swathi B.; Kansal L.; Acharjee P.B.
Recent Trends in Engineering and Science for Resource Optimization and Sustainable Development, Pages 189 - 1921 January 2025

Dr. Chetan J. Shelke
Associate Professor
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Recent Trends In Engineering and Science for Resource Optimization and Sustainable Development

Abstract

The Internet of Things (IoT) concept is rapidly evolving and is expected to influence each field of the computational realm. These advances have an impact on any nation's defence force. The defense industry's solution mostly depends on detectors and their installations. The major goal of sensory statistics is to provide information that may be used for strategic choices and evaluation in future battling fields. Each piece of statistics, from documenting a soldier's essential health metrics to its ammunition, weapons, and position circumstance, has a function and is especially important to the strategic commander stationed in the control unit. This research proposes an innovative approach that combines the IoTs with the growing graph database to produce a contextual consciousness regarding each characteristic of the personnel on the battlefield. We show a projected future battlefield application condition in which we explore the graph database for contextual consciousness patterns to gain a strategic benefit over our competitors.

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

KEY TECHNOLOGIES, PROTOCOLS, AND APPLICATIONS FOR THE INTERNET OF THINGS

Gupta N.K.; Gupta P.; Veena C.H.; **Shelke C.**; Kansal L.; Prasanna S.G.,
Recent Trends in Engineering and Science for Resource Optimization and Sustainable Development, Pages 189–1921, January 2025

Dr. Chetan J. Shelke
Associate Professor
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Recent Trends In Engineering and Science for Resource Optimization and Sustainable Development

Abstract

The paper gives an outline of the Web of Things (IoT) with an accentuation on empowering technology, rules, and application-specific difficulties. The Internet of Things is made possible by the most recent expansions in RFID, intelligent sensors, technology for correspondence, and Web conventions. The fundamental thought is to have savvy sensors interact with one another directly and autonomously to produce a completely new set of uses. The ongoing ascent in machine-to-machine (M2M), portable, and Web innovation should be visible as the beginning of the Web of Things (IoT). Before long, it is projected that the IoT will link physical objects to improve intelligent decision-making, fusing various technologies to create new applications.

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	15 LIFE ON LAND

IMPROVING CYBERSECURITY IN BUSINESS SETTINGS: THE CHALLENGES AND SOLUTIONS OF INTERNET OF THINGS

Rao L.; Keerthiraj; Mishra M.; **Mishra A.**; Arora A.S.; Vadi V.R.

Recent Trends in Engineering and Science for Resource Optimization and Sustainable Development, Pages 189—1921, January 2025

Dr. Apoorva Mishra
Assistant Professor
Alliance School of Law

Recent Trends In Engineering and Science for Resource Optimization and Sustainable Development

Abstract

Cybersecurity which is mostly about IoT applications in the corporate world comes with a number of challenges that are topmost among [the] priority of stakeholders. The development of more IoT devices in business operations has increased the attacked field greatly, thus posing different cyber threats, compared to traditional security methods. These problems range from compromise of the security of IoT Devices, weak authentication, intrusion of privacy, and complexity of multidomain IoT ecosystem management. This research, as the paper reflects, analyses issues related to cybersecurity in IoT-powered enterprise environments and comes up with solutions. One of the strategies to implement in the case of the gateway is to adopt multiple-element authentication, regular updates of the IoT firmware, as well as thorough risk assessment. Also, the paper underlines paying no less attention to cybersecurity training and awareness of crews to eliminate mistakes and insider threats. Agencies can shift the situation from this demanding environment to rather a safer posture by enforcing these proposed solutions, which will eventually aid in protecting sensitive information from cyber-attacks. On the other hand, these types of groups are required to bear their substantial SAT-IV axis, safeguard their IoT networks, and adapt their cybersecurity measures to the ever-changing threats in the dynamic digital environment.

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/NA	NA	NA	15 LIFE ON LAND

TECHNOLOGICAL ADVANCES FOR DIGITAL TWINS IN THE METAVERSE FOR SUSTAINABLE HEALTHCARE: A RAPID REVIEW

Ingale A.K.; Kim H.; Divya U.J.; Patil S.S.; Don S.

Digital Twins for Sustainable Healthcare in the Metaverse, Pages 77 - 1064 February 2025

Ms. Anupama K Ingale
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Digital Twins for Sustainable Healthcare in the Metaverse

Rajmohan R. (SRM Institute of Science and Technology,Kattankulathur, India), Subrata Chowdhury (Sreenivasa Institute of Technology and Management Studies, India), Seifedine Kardy (Noroff University College, Norway), Robertas Damaševičius (Kaunas University of Technology, Lithuania), and Ramya Govindaraj (Vellore Institute of Technology, India)

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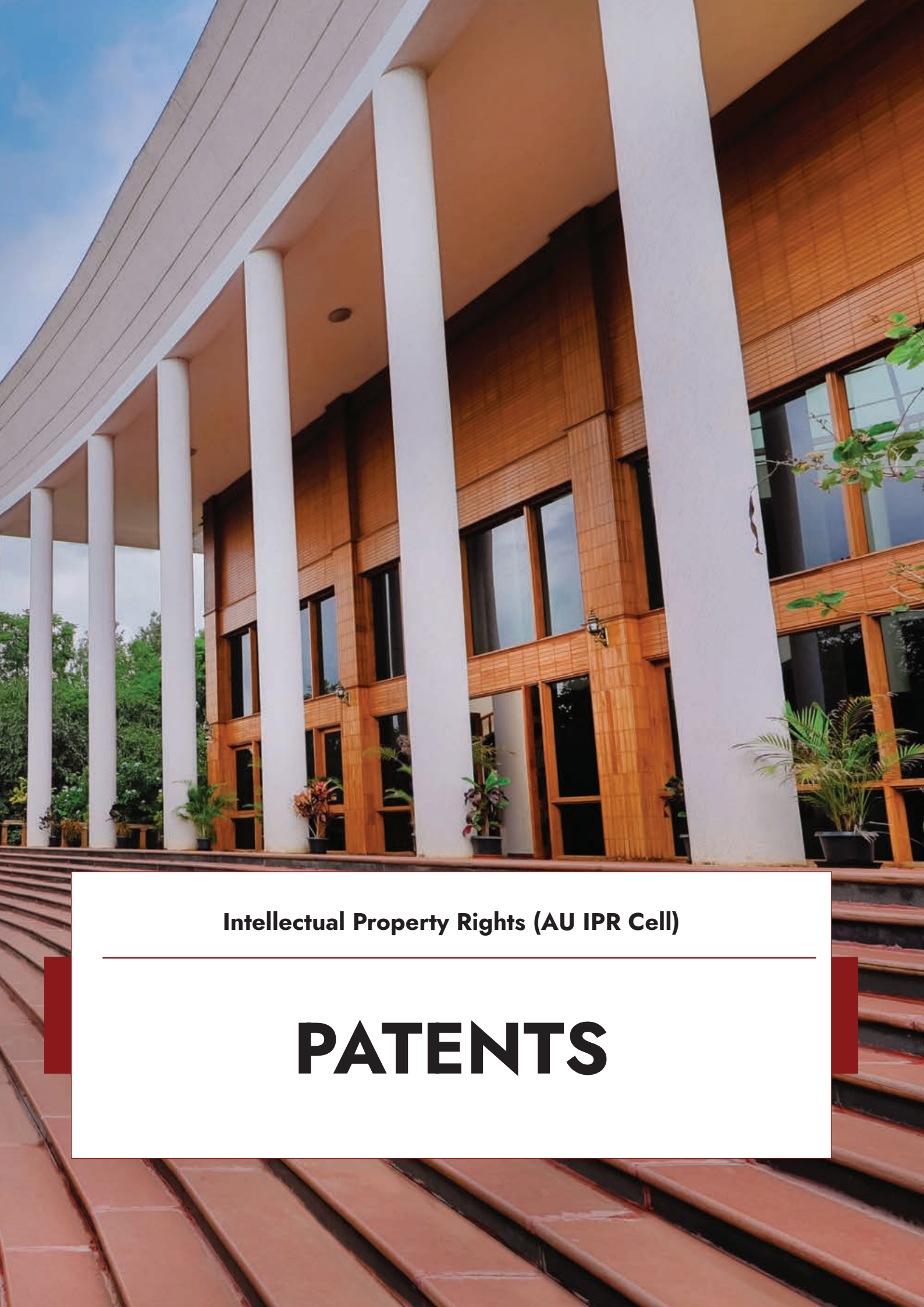
Abstract

The emergence of digital twin technology has the potential to drastically change how we manage and interact with physical assets in every aspect of society. As we approach 2024 and beyond, digital twins' practically infinite potential will allow us to revolutionize a number of industries and open up new creative outlets. This comprehensive analysis encompasses the most recent developments in digital twin technologies in the healthcare industry with the incorporation of metaverse technology. In particular, we focus on how metaverse enhances the physical interactions and user experience of digital twins, and we discuss the main features and communication channels. Next, we proceed into the open- ended research issues, explore evaluation measures, and examine the most recent applications. Lastly, we highlight recent developments and unexplored avenues for this field of study. The finding addresses the need to address challenges like data integrity and privacy, user interaction and acceptance, ethical consideration, clinical validation.



Intellectual Property Rights (AU IPR Cell)

PATENTS

Application No **202541007746**

Title of the invention **ENHANCING AGRICULTURE WITH EARLY PLANT DISEASE DETECTION AND IMPROVED CROP YIELDS USING AI-POWERED SOLUTIONS**

Dr. Senbagavalli M
Associate Professor
Alliance School of Advanced Computing

Name of Inventor: Dr. RVS Praveen, Dr. Krishan Pal Singh Rana, Dr. N. Satheeshkumar, Dr Suniti Kumar Kuriyal, Konduru Jagadeeswari, Dr. Shalini Rawat, A. Dineshkumar, Dr. A. Senthilrajan, Pulicherla Siva Prasad, R.Manoja, P Bhanu Prakash, **Dr Senbagavalli M**

Abstract

Enhancing Agriculture with Early Plant Disease Detection and Improved Crop Yields using AI-Powered Solutions is the proposed invention. The proposed invention focuses on understanding the functions of Improved Crop Yields. The invention focuses on analyzing the parameters of Agriculture with Early Plant Disease Detection using algorithms of AI Approach.

Application No **202541008991**

Title of the invention **AI-ENHANCED POTATO DISEASE RECOGNITION AND MANAGEMENT SYSTEM FOR FARMING**

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

Name of Inventor: **Ms. Asha Rani N R**, Dr. R. Kokila, Dr. Mousmi Syed, Nilesh Laxman Kshirsagar, Shwetha MR, Dr. K. Prabhavathi, Dr. T. Suresh, Dr. Rajinigirinath Dhandapani

Abstract

The AI-enhanced Potato Disease Recognition and Management System integrates machine learning, image processing, and environmental monitoring to offer early, accurate detection of diseases in potato crops. Using real-time data from cameras and sensors, the system identifies various diseases, including bacterial, fungal, and viral infections, often before visible symptoms emerge. It also incorporates predictive models that analyze environmental conditions such as temperature and humidity to forecast potential outbreaks, allowing farmers to take preventive actions. Through an easy-to-use mobile or web interface, the system provides real-time alerts and tailored recommendations for effective disease management, promoting sustainable practices by optimizing pesticide use and minimizing environmental impact. As the system collects more field data, it continuously enhances its predictive accuracy, ensuring evolving, precise solutions for disease management. This innovative technology supports farmers in improving crop yield, maintaining crop health, and contributing to sustainable agricultural practices.

Application No **202541011292**

Title of the invention **AI-DRIVEN SYSTEM FOR AUTOMATED DETECTION OF DIABETIC RETINOPATHY USING FUNDUS IMAGES**

Dr. Amar Choudhary
Assistant Professor
Alliance school of Applied Engineering

Name of Inventor: M Anand, D Bhavya Varma, Dr. D Chitra, Deependra Pandey, **Dr. Amar Choudhary**

Abstract

The present invention relates to an AI-driven system for automated detection of diabetic retinopathy using fundus images. The system integrates deep learning models, image preprocessing techniques, and explainability frameworks to enhance accuracy, robustness, and interpretability in DR screening. The invention includes a preprocessing module for image enhancement, a feature extraction and classification model for DR detection, an explainability module for interpretable AI predictions, and a cloud-based deployment framework for real-time diagnosis. The proposed system aims to assist ophthalmologists in early DR detection, ensuring timely medical intervention and reducing the risk of vision loss in diabetic patients.

Application No **202541013906**

Title of the invention **LEARNABILITY QUOTIENT AMONG EDUCATED INDIVIDUALS: A MEASUREMENT SCALE**

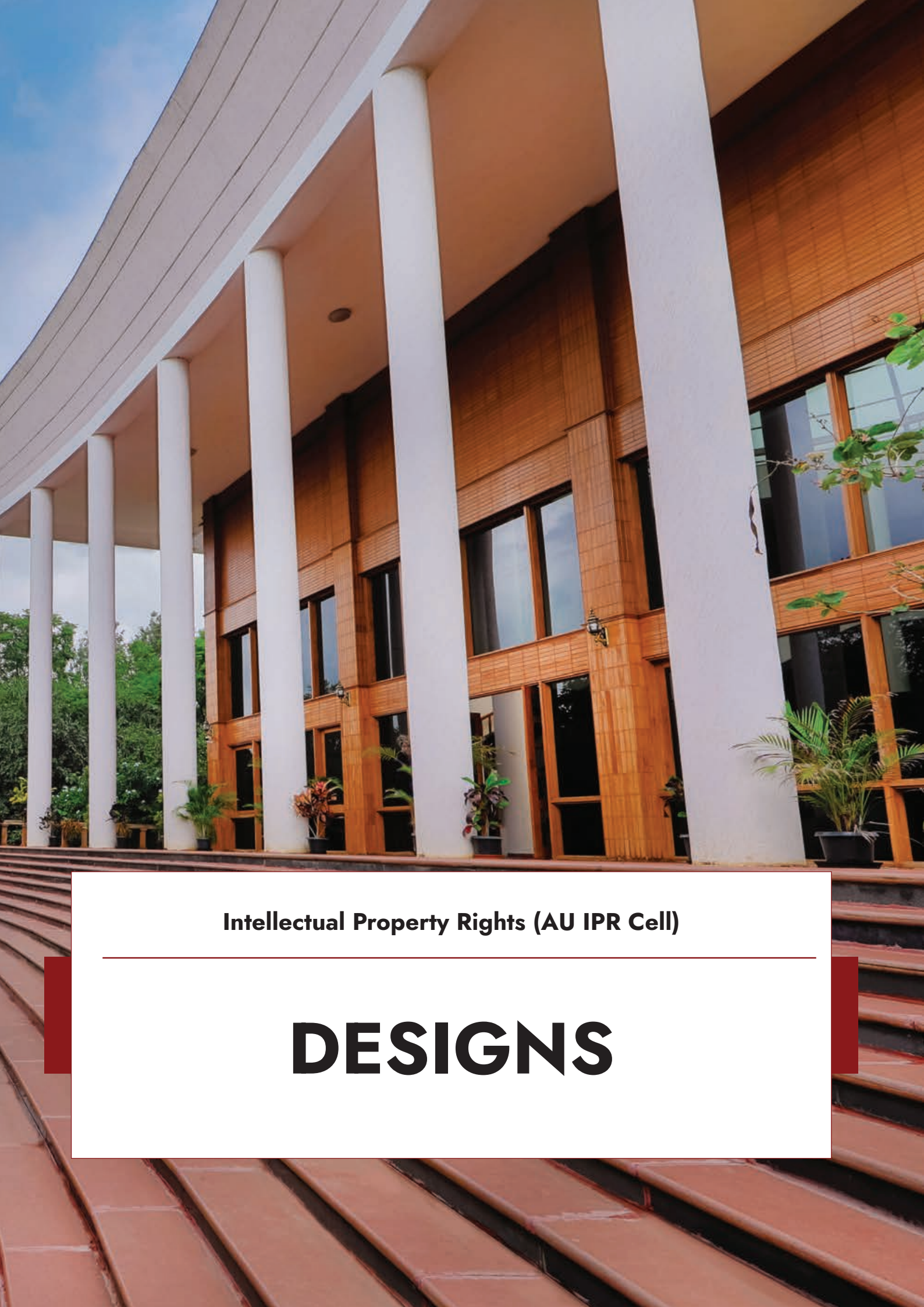
Dr. Ravikumar T
Professor
Alliance School of Business

Name of Inventor: Sony Varghese, **Ravikumar T**, Jain Mathew, Sathiyaseelan B

Abstract

Learnability Quotient among Educated Individuals: A Measurement Scale Abstract The idea of Learnability Quotient (LQ) is firmly established in psychological theories regarding learning and intelligence, utilizing insights from fields like educational psychology, cognitive science, neuroscience, and workforce advancement. LQ acts as a gauge for assessing a person's preparedness to participate in learning endeavors and adjust to fresh challenges in various areas. This interdisciplinary framework considers diverse elements that affect learnability, such as cognitive skills, individual characteristics, and environmental influences. Elements influencing Learnability Quotient include aspects like Self-Regulated Curiosity, Problem-Solving Curiosity, Lifelong Reflective Learning, as well as Exploratory Reflective Thinking. Every factor explains various aspects of a person's ability to learn, solve problems, and adapt. Grasping and assessing LQ holds considerable consequences for education, work, and individual growth. In educational environments, LQ helps customize instructional methods to fit students' learning requirements, whereas in workplace contexts, it supports employers in recognizing flexible individuals who thrive in changing work settings. Although there are no standardized measures for LQ, researchers have created evaluation techniques such as cognitive assessments, learning style inventories, and behavioral assessments to measure learnability in different populations. Additionally, recent research has explored the creation of customized surveys to assess LQ within demographics,

including adults in India. These surveys include sub-dimensions like cognitive abilities and types of curiosity, highlighting the subtle factors that influence learnability across different cultural settings. The investigation of Learnability Quotient highlights the complex aspects of human learning and adaptation, providing understanding of how people gain new knowledge, skills, and abilities in various areas of life.



Intellectual Property Rights (AU IPR Cell)

DESIGNS

Design No: **421482-001**

Title of the Design:

WIND ENERGY GENERATOR KITE

Name of Applicant:

Alliance University, Bengaluru, Prof. **Gisa G S**, Ms. Harshitha B. Masur, Ms. Anisha Fathima, Ms. Spandana Vinod

Prof. Gisa G S
Assistant Professor,
Alliance School of Applied Engineering

Description

A wind energy generator kite utilizing a six-bladed cross-pattern rotor design for capturing high-altitude wind currents, enhancing power generation efficiency and enabling portable renewable energy harvesting.

Design No: **421483-001**

Title of the Design:

BIOMETRIC AUTHENTICATION STUDY TABLE

Name of Applicant:

Alliance University, Bengaluru, **Dr. Tina Babu, Dr. Rekha R. Nair, Prof. Ebin P M, Dr. Pavithra K**

Dr. Tina Babu
Assistant Professor
Alliance School of Advanced Computing

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

Mr. Ebin P.M.
Assistant Professor
Alliance School of Advanced Computing

Dr. Pavithra K
Assistant Professor
Alliance School of Advanced Computing

Description

A biometric authentication study table featuring a sleek minimalist design with integrated storage drawers and embedded fingerprint sensor technology, enhancing security for personal belongings while maintaining functional workspace efficiency.

Design No: **434643-001**

Title of the Design:

SPEED MONITORING AND NOTIFICATION SYSTEM FOR VEHICLES

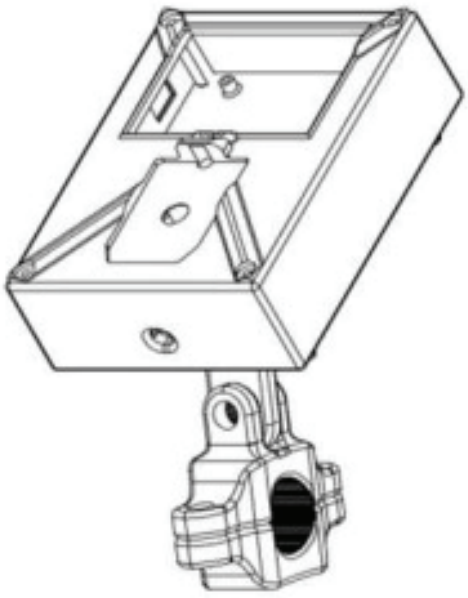
Name of Applicant:

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

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

Description

A speed monitoring and notification system for vehicles utilizing a compact roadside camera unit with internal processing components and adjustable mounting bracket, enabling real-time traffic surveillance and automated speed violation detection to enhance road safety enforcement.



Design No: **441763-001**

Title of the Design:

WIRELESS ELECTRICITY CONSUMPTION MONITORING DEVICE

Name of Applicant:

Dr. Swetha Shekarappa G, Dr. Kaushik Sit, Dr. Sheila Mahapatra, Dr. Suhas Deb, Dr. Juhi Nishat Ansari, Dr Senbagavalli M

Dr. Swetha Shekarappa G
Assistant Professor & HOD
Alliance School of Applied Engineering

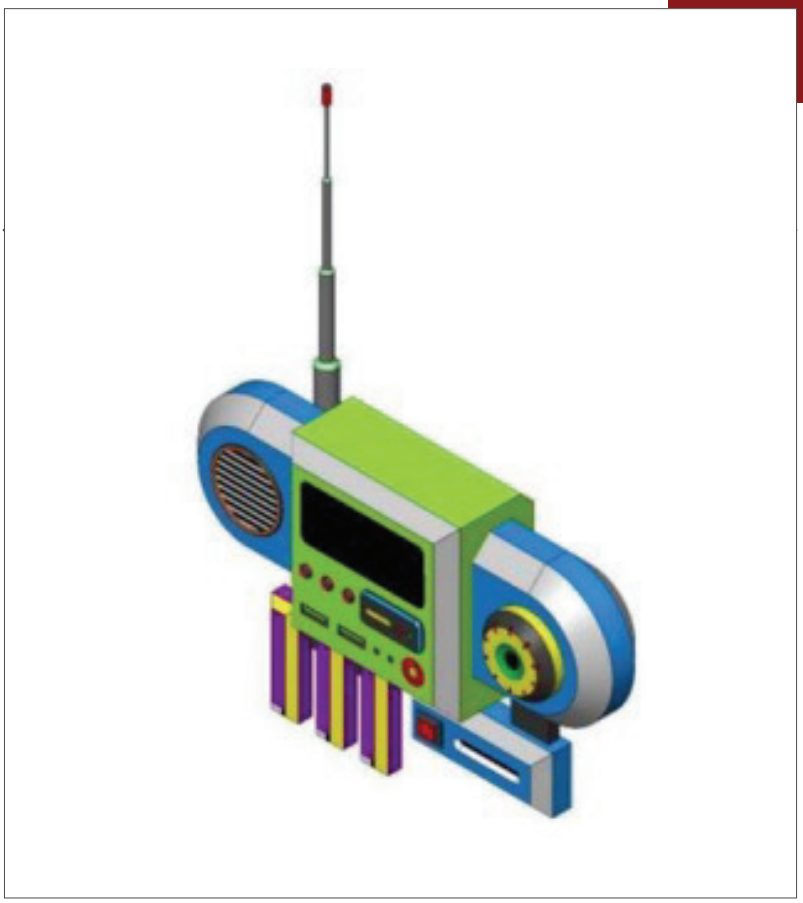
Dr. Kaushik Sit
Assistant Professor
Alliance School of Applied Engineering

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

Dr. Senbagavalli M
Associate Professor
Alliance School of Advanced Computing

Description

A wireless electricity consumption monitoring device featuring a compact multicolor housing with integrated digital display, extendable antenna, and multiple sensor connections, enabling real-time power usage tracking and remote data transmission for efficient energy management in residential and commercial settings.



Design No: **439452-001**

Title of the Design:

BLOCKCHAIN BASED BIOMETRIC LOCK

Name of Applicant:

S.A. Engineering College (Autonomous), Nalini Manogaran, **Neeba Eralil Abi**, Dhivya Venugopal, Malarvizhi Nandagopal, Kavita Saini

Dr. Neeba E A
Associate Professor
Alliance School of Advanced Computing

Description

A blockchain-based biometric lock featuring a compact vertical housing with integrated fingerprint scanner, digital display interface, and reinforced locking mechanism, enabling secure access control through decentralized authentication protocols while maintaining tamper-proof operation for high-security applications.

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ALLIANCE RESEARCH CHRONICLES

FEBRUARY 2025
Volume **2**

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