



ALLIANCE  
UNIVERSITY  
CENTRE for RESEARCH



# ALLIANCE RESEARCH CHRONICLES

MAY 2025

Volume 5





# ALLIANCE RESEARCH CHRONICLES

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MAY 2025

Volume 5

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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.



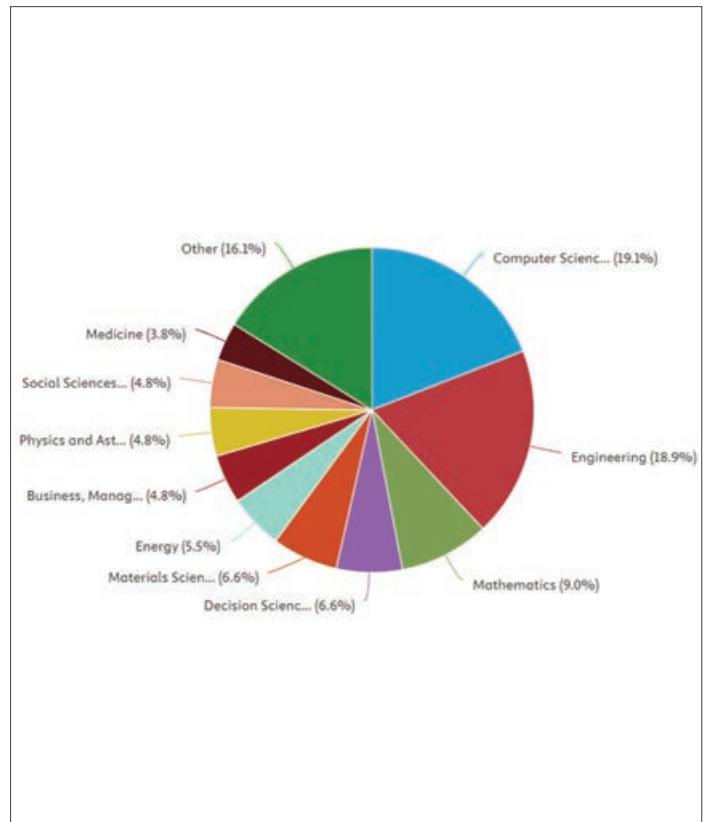
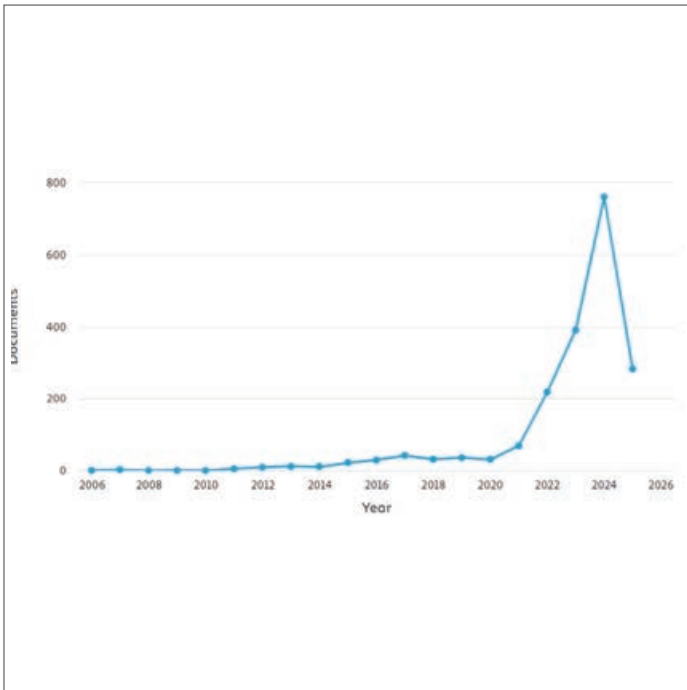


1,948  
Documents

680  
Authors

### Documents by Subject Area

### Documents by Year



### Summary

**1765**

Scholarly Output

**18.5%**

All Open Access

**771**

Authors

**7264**

Citation Count

**4.1**

Citations per Publication

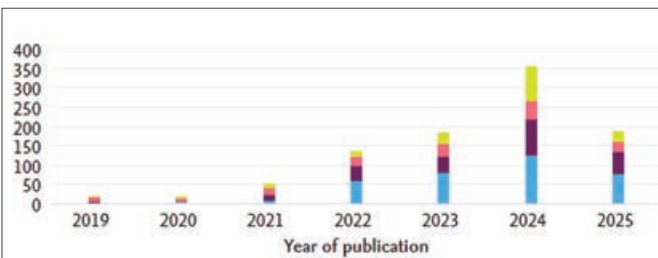
**1.76**

Field-Weighted Citation Impact

**19**

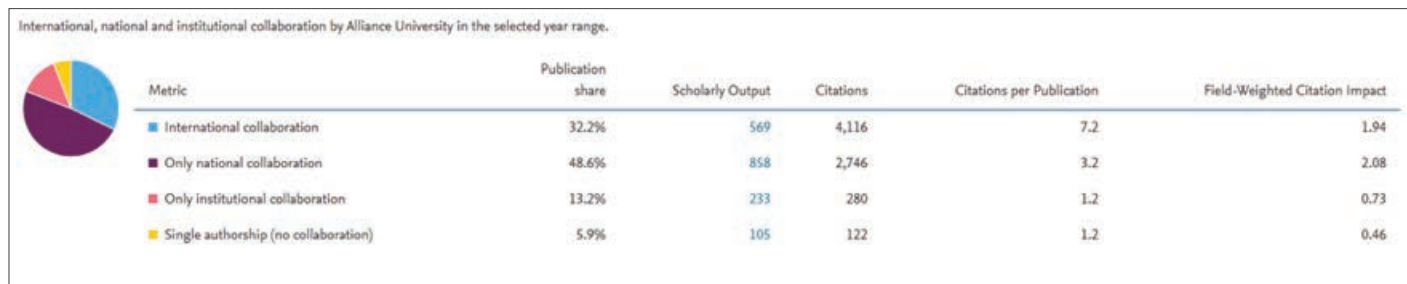
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### Publication by Journal Quartile

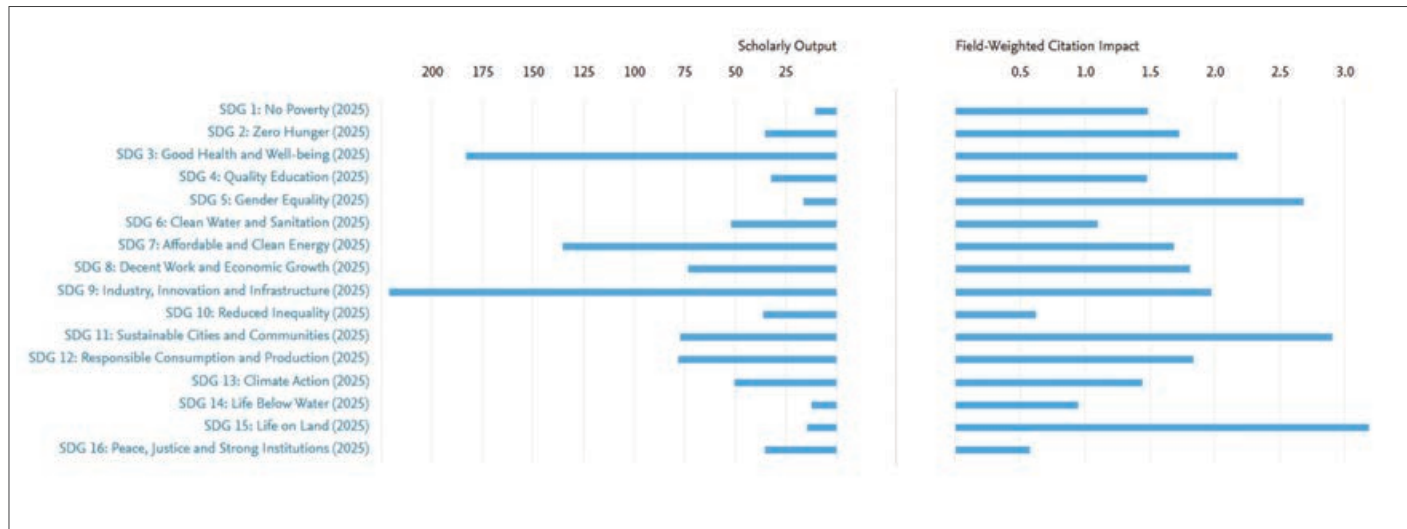


Quartiles	Publications	Publication share (%)
Q1 (top 25%)	358	36.9
Q2 (26% - 50%)	257	26.5
Q3 (51% - 75%)	168	17.3
Q4 (76% - 100%)	187	19.3
<b>Cumulative shares</b>		
Q1 to Q2 (top 50%)	615	63.4
Q1 to Q3 (top 75%)	783	80.7

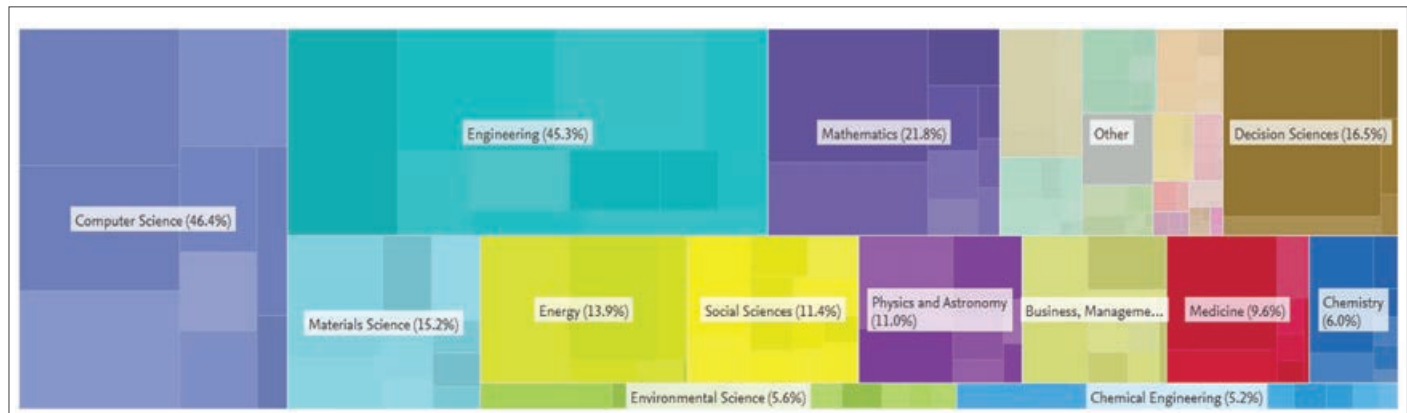
## Geographical Collaboration Overall



## Publication by SDG



## Subject Areas





Scopus  
JOURNALS

The logo features a stylized 'C' composed of three overlapping curved segments in purple, green, and black. To the right of this symbol, the word 'Clarivate' is written in a bold, black, sans-serif font, followed by a small 'TM' trademark symbol. Below 'Clarivate', the words 'Web of Science' are written in a similar bold, black, sans-serif font, stacked on a second line.

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**Web of Science**

Indexing/Quartile

Percentile

Impact Factor

SDG

**SCOPUS/WOS/Q1****88<sup>th</sup>****3.9**

## ENVIRONMENTAL BENIGN CATALYST DEVELOPED BY FRUIT WASTE FOR SYNTHESIS OF $\beta$ -AMINO ALCOHOL WITH THE OPTIMUM COMBINATION THROUGH STATISTICAL ANALYSIS

**Bahadur V.**; Tiwari R.; Bhati P.; Lamba N.P.; Prasad J.; Sharma U.K.; Srivastava S.C.; Chauhan M.S.

*Scientific Reports* Volume 15, Issue 1 December 2025 Article number 17148



**Dr. Vijay Bahadur**

Assistant Professor  
Alliance School of Sciences

# scientific reports

### Abstract

An Eco-catalysis approach reported in this manuscript, is developed by the kinnow peel waste as the green catalyst for the ring opening of epichlorohydrin with aromatic amines and its derivatives. The prepared green catalyst is used in three different variants i.e. kinnow peel powder (KPP), Bare component, and ash of KPP. Prepared catalyst characterized

by TEM, SEM-EDX, FTIR, TGA, and XRD. Statistical analysis is a full factorial analysis of variance technique to identify the optimum combinations of types of catalyst, catalyst quantity, and derivative type.

© The Author(s) 2025.

**Author keywords-** Eco-catalyst; Green catalyst; Ring-opening; Statistical analysis;  $\beta$ -amino alcohol

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q1</b>	<b>82<sup>nd</sup></b>	<b>6.73</b>	 

## OPTIMIZED BIODIESEL PRODUCTION FROM JAVA OLIVE SEEDS USING A NOVEL MAGNETIC NANOBIOCATALYST AND ADVANCED OPTIMIZATION TECHNIQUES

Miriam L.R.M.; Kings A.J.; Marshel J.B.; Raj R.E.; **Indran S.**; Divya D.

*Biomass and Bioenergy* Volume 199 August 2025 Article number 107942



**Dr. Indran Suyambulingam**

Professor  
Alliance School of Applied Engineering



### Biomass and Bioenergy

Supports open access

## Abstract

Biodiesel, a renewable and eco-friendly diesel alternative, faces challenges like high costs, feedstock needs, catalyst efficiency, and achieving high yields with minimal resources. A novel Fe-coated silica magnetic nanobiocatalyst was derived from *Petalium murex* by chemical achieved a 95 % biodiesel yield with 12.5 wt % usage, demonstrating excellent catalytic properties and reusability in transesterification. Java olive plant seeds, known for their high oil yield, were collected by manual, extracted by mechanical expeller, and converted into biodiesel by transesterification using optimized parameters determined by response surface methodology. These parameters included a methanol/oil ratio of 0.25 v/v, a stirring speed of 1100 rpm, a processing time of 4.5 h, a temperature of 65 °C, and the

specified concentration of the nanobiocatalyst. The process again integrated a deep learning neural network, which was optimized by Enhanced Artificial Bee Colony, Fast Cuckoo Search and Grey Wolf Optimization algorithms to enhance the efficiency of biodiesel synthesis. Comparative analysis of the optimization techniques demonstrated the superiority of hybrid methods in achieving higher process efficiency. Finally, a comprehensive analysis of the biodiesel properties was conducted to confirm its compatibility with automotive vehicles, ensuring it meets the necessary standards and performance criteria for efficient and safe operation in engines, thereby validating its suitability for broader application in the transportation sector. © 2025 Elsevier Ltd

**Author keywords-** Biodiesel; Hybrid optimization; Java olive; *Petalium murex*, magnetic nanobiocatalyst

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q2</b>	<b>53<sup>rd</sup></b>	<b>1.5</b>	

## IMPACT OF ZIRCONIUM NANOPARTICLES ON BORON-PARAFFIN WAX-BASED HYBRID PROPELLANT IN DUCTED ROCKET APPLICATIONS

**Hashim S.A.**; Anghan P.P.; Arah A.A.; Ahmed M.A.; Batabyal P.; Mishra D.; Mandal S.; Karmakar S.; Roy A.  
*Engineering Research Express* Volume 7, Issue 230 June 2025 Article number 025536



**Dr. Syed Alay Hashim**  
 Associate Professor & Director - Centre of Excellence (Propulsion Systems)  
 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 past few years, boron has gained a lot of attention as a solid fuel because of its high energy density, high combustion temperature, controlled burn rate, and reduced smoke and emissions. Boron is the second-most energetic metalloid in the periodic table. Nonetheless, it has been discovered that it is particularly reactive with oxygen, resulting in the formation of a boron oxide (B<sub>2</sub>O<sub>3</sub>) layer around the active boron, which radically altered the boron burning efficiency. In previous literature, several experiments have been carried out to improve the boron’s combustion performance, and it is recommended that the fuel carrying boron particles offers a lot of potential for ducted rocket (DR) engines. In the present study, a lab-scale hybrid-fuel ducted rocket (HFDR) is used to evaluate

the combustion performance parameters (regression rate and combustion efficiency) of the solid fuel. Zirconium (Zr) nanoparticles are mixed with boron-based solid fuel to enhance the ignition and combustion properties of boron particles. A total of three distinct solid fuel samples—pure paraffin wax, paraffin wax loaded with boron particles, and paraffin wax loaded with boron and zirconium particles—are investigated experimentally. It is revealed that the introduction of Zr particles in boron-based solid fuel increased combustion efficiency by 33%.

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**Author keywords-** boron combustion; HFDR; thermal analysis; zirconium nanoparticles

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	88 <sup>th</sup>	4.4	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

## INFLUENCE OF Co<sup>2+</sup> IONS DOPING IN Ni<sub>0.7-x</sub>Co<sub>x</sub>Zn<sub>0.3</sub>Fe<sub>2</sub>O<sub>4</sub> NANOFERRITES: A STUDY OF STRUCTURAL, MORPHOLOGICAL, OPTICAL, AND MAGNETIC PROPERTIES

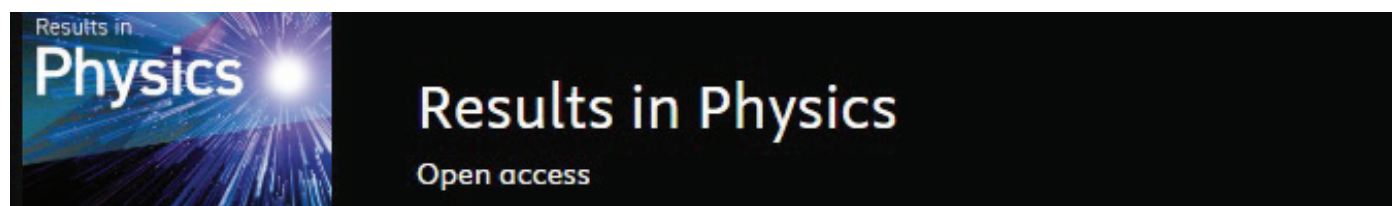
Kebede B.Z.; **Rathore D.**; Battoo K.M.; Shibeshi P.T.

*Results in Physics Open Access Volume 74/July 2025 Article number 108295*



**Dr. Deepshikha Rathore**

Associate Professor  
Alliance School of Sciences



### Abstract

In the last few years, there has been a notable focus on the synthesis of soft magnetic nanoferrites with different properties for different applications. Highly efficient Cobalt (Co) assisted Ni<sub>0.7-x</sub>Co<sub>x</sub>Zn<sub>0.3</sub>Fe<sub>2</sub>O<sub>4</sub> ( $x = 0.0, 0.1, 0.2, 0.3, 0.4,$  and  $0.5$ ) nanoferrites were prepared via citrate gel combustion technique. XRD analysis revealed the single-phase cubic lattice growth, with a typical crystal size spanning between 33.81 and 42.45 nm. The unit cell volume and lattice parameter of Ni<sub>0.7-x</sub>Co<sub>x</sub>Zn<sub>0.3</sub>Fe<sub>2</sub>O<sub>4</sub> exhibited a significant increment with varying Co concentration ( $x = 0.1, 0.3,$  and  $0.5$ ), primarily because of expanded ionic radius of Co. Analysis with HRTEM revealed crystal sizes varying between 39.3 and 69.8 nm, confirming the nanocrystalline nature of the synthesized samples. Additionally, FESEM images indicated a spherical-like morphology for the nanoferrites. EDX analysis further validated the existence of all required elements such as Ni, Zn, Co, Fe, and O within the samples. SAED patterns and HRTEM images describe the pure and homogeneous crystalline cubic spinel lattice of nanoferrite including Moire fringes and d-spacing values consistent with XRD data and standard references. The FT-IR patterns exhibited absorption peaks within 533.1–545.6 cm<sup>-1</sup> range, associated with metal–oxygen bond stretching

vibration. The optical characteristics of the nanoferrites indicated activity in both the ultraviolet and visible ranges. The enhancement of visible light absorption in Ni<sub>0.7</sub>Zn<sub>0.3</sub>Fe<sub>2</sub>O<sub>4</sub> nanoferrite through Co doping has been achieved. The band gap energy was noted to be reduced from 1.66 eV to 1.37 eV as the Co content increases from  $x = 0.0$  to  $0.5$  in Ni<sub>0.7-x</sub>Co<sub>x</sub>Zn<sub>0.3</sub>Fe<sub>2</sub>O<sub>4</sub> nanoferrites. Magnetic characterization of the Co-doped samples reveals significant enhancements in magnetic behaviour. Saturation magnetization ( $M_s$ ) improved from 69.93 to 80.36 emu/g with Co-doping, indicating an improved magnetic response. Similarly, the coercivity ( $H_c$ ) and remanent magnetization ( $M_r$ ) showed substantial increases, from 86.18 Oe to 160.97 Oe and from 13.65 emu/g to 25.61 emu/g, respectively. Among the samples, the nanoferrite with  $x = 0.4$  exhibited the maximum value of  $M_s$ , while  $x = 0.5$  demonstrated the highest values of  $M_r$  and  $H_c$ , suggesting the impact of Co concentration on optimizing magnetic properties across different compositions. Hence,  $x = 0.4$  and  $0.5$  compositions of Ni<sub>0.7-x</sub>Co<sub>x</sub>Zn<sub>0.3</sub>Fe<sub>2</sub>O<sub>4</sub> nanoferrites would be strong candidates for electronic devices like sensors and memory storage. © 2025

**Author keywords-** Band gap; Citrate gel combustion; Moire fringes; Nanoferrites; Rietveld refinement; Saturation magnetization

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q4</b>	<b>17<sup>th</sup></b>	<b>0.25</b>	



## BRIDGING THE CULTURAL DIVIDE: A STUDY OF THE CARTOGRAPHY OF LOVE IN CHITRA BANERJEE DIVAKARUNI’S OLEANDER GIRL

**Krishnan C.**

*Journal of Global Postcolonial Studies* Volume 13, Issue 1, Pages 3 – 16 March 2025



**Dr. Chitra Krishnan**  
 Assistant Professor  
 Alliance School of Liberal Arts and  
 Humanities




### Abstract

Oleander Girl is a skilfully crafted novel in which the author, Chitra Banerjee Divakaruni, pens a tale that puts forth manifold expressions of love and loss against a wide geographical canvas. The book negotiates love and relationships that crisscross continents, generations, and cultures to encapsulate the personal and emotional metamorphosis of its protagonists. The beauty and venomousness of the Oleander plant symbolizes the different hues and nuances of love deftly examined in the book’s various relationships. As Korobi tells the readers her gripping story, recounting her protected and traditional upbringing, as well as the mystery and silence related to her parents, it becomes clear that there is a family

secret hidden deep beneath the surface which explodes on her grandfather’s death. Her grandmother, Sarojini, admits how she and her husband Bimal had conspired to hide the news of her father being alive from Korobi all her life. This sets her off on an expedition to find him amid all the expectations of family and society, which subsequently changes her life forever. Consequently, she finds herself in a space filled with confusion and must either opt for a life in India with Rajat or the newfound freedom in America and an opportunity to be close to her father. Oleander Girl is a multilayered story with parallel plots that connect the dots between relationships, differing cultures, and identity concerns. Copyright © University of Florida Press.

**Author keywords-** crisis; culture; love; modernity; tradition

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q2</b>	<b>69<sup>th</sup></b>	<b>3.5</b>	12 RESPONSIBLE CONSUMPTION AND PRODUCTION 

## VALORIZATION OF AVOCADO PEEL WASTE: EXTRACTION AND CHARACTERIZATION OF CELLULOSE NANOFIBERS FOR MULTIFUNCTIONAL APPLICATIONS

P. V V.; K. V N.; Sabura Begum P.M.; Hounfodji J.W.; Sankar S.; Muraleedharan S.; Kamath A.N.; Ajithkumar T.G.;

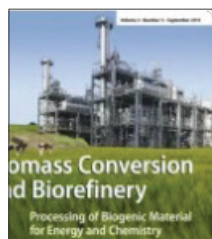
**Parameswaranpillai J.**; C. D M.D.

*Biomass Conversion and Biorefinery* Volume 15, Issue 8, Pages 12789 – 12800 April 2025



### Dr. Jyotishkumar Parameswaranpillai

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## Biomass Conversion and Biorefinery

Processing of Biogenic Material for Energy and Chemistry

Publishing model


Hybrid

### Abstract

This study explored the utility of underutilized avocado peels for extracting cellulose nanofibers (CNFs). Mild oxalic acid hydrolysis assisted by steam explosion was employed after alkali hydrolysis and chlorine-free bleaching to prepare cellulose nanofibers. The structural, atomic, and elemental features of the extracted fibers were studied using Fourier transform infrared spectroscopy (FTIR), <sup>13</sup>C solid-state nuclear magnetic resonance (<sup>13</sup>C NMR) spectroscopy, and energy dispersive X-ray (EDAX) analysis, respectively. The crystallinity index of the nanofibers was 87%, which was 53% greater than that

of the crude sample. The elution of hemicellulose and lignin was evident from the scanning electron microscopy (SEM) images, and the nanofibers had a fiber diameter of 30–82 nm according to the transmission electron microscopy (TEM) analysis. The applied chemical treatment also elevated the thermal stability of the fibers. The extracted fibers can be applied in numerous fields, including electronics, packaging, automobiles, biomedicine, and cosmetics. © The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature 2024.

**Author keywords-** Avocado peels; Cellulose nanofibers; Mild acid hydrolysis; Sustainability

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q2</b>	<b>69<sup>th</sup></b>	<b>3.5</b>	12 RESPONSIBLE CONSUMPTION AND PRODUCTION 

## NELUMBO NUCIFERA BIOMASS WASTE-BASED BIOFILLER: A COMPREHENSIVE CHARACTERIZATION FOR UTILIZATION AS BIODEGRADABLE FILLERS

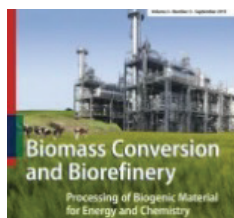
Ram G.; Arjunan T.V.; Vinoth Kumar K; Loganathan T.G.; **Suyambulingam I.**; Siengchin S.

*Biomass Conversion and Biorefinery* Volume 15, Issue 8, Pages 11523 – 11535 April 2025



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## Biomass Conversion and Biorefinery

Processing of Biogenic Material for Energy and Chemistry

Publishing model

**Hybrid**

### Abstract

The widespread application of composite materials in diverse fields warrants the need of biocompatible materials to favor environmental sustainability and eco-friendliness. In this context, the rhizome of the lotus aquatic plant has attracted the exploration of its qualities for composite application. The *Nelumbo nucifera* (NN) is the botanical name of the lotus plant whose unused rhizome has been extracted, dried, crushed, and analyzed. The NN rhizome powder is characterized by Fourier-transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM), X-ray diffraction (XRD), energy-dispersive X-ray analysis (EDX), dynamic light scattering

(DLS), and thermogravimetric analysis (TGA). The rhizome powder has hydroxyl, carboxyl, and ether functional groups with heterogeneous surface morphology, uneven dimensions particle sizes, and coarse structure. The XRD and TGA test reported the crystalline nature of the rhizome powder with CI 57.7%, crystallite size of 2.2 nm, and thermal stability up to 290 °C. These characteristics and results extend the NN rhizome as a natural filler in polymer composites with enhanced biological sustenance.

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**Author keywords-** EDX; FTIR; *Nelumbo nucifera*; Rhizome; TGA; XRD

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q2</b>	<b>70<sup>th</sup></b>	<b>2.61</b>	

## Ti-DIFFUSED LiNbO<sub>3</sub> BASED REVERSIBLE TR GATE: AN ELECTRO-OPTIC DESIGN AND APPLICATIONS

**Awasthi S.**; Chowdhury B.; Majumder A.; Metya S.K.

*Iranian Journal of Science and Technology - Transactions of Electrical Engineering* Volume 49, Issue 2, Pages 853 – 864  
June 2025 Article number 022102



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## Iranian Journal of Science and Technology, Transactions of Electrical Engineering

### Abstract

In recent times, reversible logic has been fast tracked in an attempt to reduce the excess heat generation in conventional CMOS circuits so as to meet Landauer's limit of  $kT \ln 2$ . This can be done in the most convenient way by utilising photons instead of electrons. There have been quite a few works carried out on various optical switches (OS) to implement optical reversible gates along with arithmetic and logical circuits. In this regard, the electro-optic Mach Zehnder interferometer (EO-MZI) is an efficient OS that initially employs electrode voltage to determine lights propagation path through it. This paper targets to explore a Titanium (Ti) diffused Lithium Niobate (LiNbO<sub>3</sub>)-based EO design of a reversible TR gate with an

optimum MZI count. Furthermore, this TR gate is used to design an EO reversible 2:1 multiplexer, where the Feynman gate is embedded to act as a select line. The study also intends to design a 2N:1 RMUX with a full analysis of counts of ancilla inputs, garbage outputs, the Feynman gate, the TR gate, and the MZI. The design and simulation are carried out in the OptiBPM tool to verify the truth table, whereas the mathematical power modelling is validated through MATLAB. A system-level analysis of the TR gate is analyzed as a function of Ti diffusion length and wavelength in terms of extinction and coupling ratio.

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**Author keywords-** Mach–Zehnder Interferometer; Reversible Logic; Reversible multiplexer; TR gate

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q2</b>	<b>67<sup>th</sup></b>	<b>4.4</b>	



## VALORIZING SACCHARUM OFFICINARUM AND PLASTIC WASTE BIOCHAR WITH ZN-AL LDH FOR CONGO RED DYE REMOVAL: KINETICS AND ISOTHERMS INSIGHTS

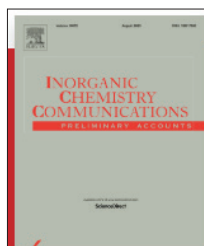
**Bahadur V.**; Jaswal N.; Sahil; Sharma A.K.; Kumar P.

*Inorganic Chemistry Communications* Volume 178 August 2025 Article number 114654



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**Inorganic Chemistry Communications**

Supports open access

### Abstract

Environmental pollution, especially water contamination resulting from organic compounds such as synthetic dyes, has become a significant global issue. The current study aims to enhance the catalytic efficiency of mixed biochar of (Sugarcane bagasse and Plastic) i.e. SB-BC-500 to remove Congo red (CR) color from textile water. As-prepared materials were examined using various characterisation techniques such as FT-IR, XRD, UV, SEM, Zeta potential, BET, TGA and XPS. According to photocatalytic studies, Zn–Al LDH@BC composite significantly outperforms pristine Biochar with respect to CR dye degradation. The optimization parameters revealed that

pH 3 along with adsorbent dosage of 0.01 g of Zn–Al LDH@BC provided the most effective conditions for removing CR. The adsorption kinetics were further analysed using Langmuir as well as Freundlich isotherms. Moreover, kinetic models, including pseudo-first-order and pseudo-second-order, were evaluated. The results revealed that pseudo-second-order model ( $R^2 = 0.9999$ ) best matched the experimental data. This research presents a sustainable method to improve adsorption efficiency by utilizing modified biochar, offering an eco-friendly and economical solution for wastewater treatment.

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**Author keywords-** Adsorption kinetics; Congo Red; Environmental remediation; Mixed biochar; Photocatalysis

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q2</b>	<b>74<sup>th</sup></b>	<b>3</b>	

## ARTIFICIAL INTELLIGENCE BASED MACHINE LEARNING ALGORITHM FOR PREDICTION OF CANCER IN FEMALE ANATOMY

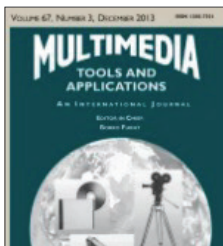
**Ghantasala G.S.P.;** Hung B.T.; Chakrabarti P.; R S.; Pellakuri V.

*Multimedia Tools and Applications* Volume 84, Issue 16, Pages 15735 – 15761 May 2025



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### Multimedia Tools and Applications An International Journal

Publishing model  
**Hybrid**

### Abstract

Breast and cervical cancers account for more than 85 percent of all cancer-related fatalities in developing nations, according to the World Cancer Research Fund. As a result, breast and cervical cancer have become one of the leading causes of mortality among women worldwide. This field is still in its infancy, with only a few studies in gynaecology and computer science looking into the detection of breast and cervical cancer. According to the researchers, medical records and early testing from individuals with breast and cervical cancer will be used in this study to determine the prognosis of those suffering from the diseases. To assess our cervical cancer predictions, we employed machine learning models such as Optimized Hybrid Ensemble Classifier (OHEC), which were trained on patient behavior and variables revealed to be associated with patient behavior. The datasets in this study have a substantial number of missing values, and the distribution of those values has been altered as a function of the missing values. OHEC classifier performance has been shown to

improve when the number of features is reduced and the problem of high-class imbalance is resolved, because the accuracy, sensitivity, and specificity of the classifier, as well as the number of false positives, were used to demonstrate the success of feature selection in the suggested model's predictive analysis. This has been demonstrated through the use of numerous tests involving categorization challenges. The study underscores the critical significance of early detection and prognosis in combating breast and cervical cancers, which remain leading causes of mortality worldwide. Through the utilization of machine learning models like the OHEC, the authors have demonstrated the potential for improved predictive accuracy and clinical outcomes. The findings highlight the importance of addressing challenges such as missing data and class imbalance in enhancing the performance of predictive models for effective cancer management strategies.

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**Author keywords-** Breast cancer; Cervical cancer; Feature selection; Hybrid machine learning; Metaclassifier; Performance metrics

Indexing/Quartile

SCOPUS/WOS/Q2

Percentile

69<sup>th</sup>

Impact Factor

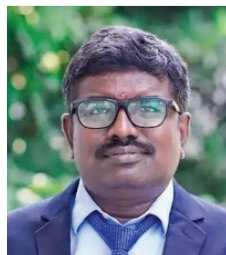
3.5

SDG



## ISOLATION AND CHARACTERIZATION OF NOVEL NATURAL FIBER FROM STREBLUS ASPER

Rao H.J.; **Senthamarai kanna n P.**; **Suyambulingam I.**; **Parameswaranpillai J.**; Priyadharshini G.S.; Senthilkumar B.  
*Biomass Conversion and Biorefinery* Volume 15, Issue 9, Pages 14271 – 14285 May 2025



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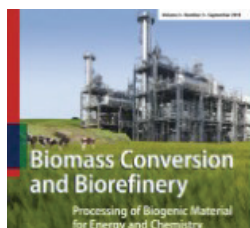
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## Biomass Conversion and Biorefinery

Processing of Biogenic Material for Energy and Chemistry

Publishing model

Hybrid

### Abstract

Determining cost-effective and sustainable materials is challenging. So far, the fibers from *Streblus asper* have not been studied for versatile applications. The current investigations focused on the extraction and characterization of novel fiber from the *Streblus asper* tree through the water retting process. The study revealed that the extracted fiber has a cellulose content of  $55.4 \pm 5.6$  wt.%, hemicellulose of  $12.24 \pm 3.31$  wt.%, and lignin of  $14.25 \pm 4.56$  wt.%. Also, the study revealed that the fiber has a density of  $1388 \pm 75$  kg/m<sup>3</sup>, tensile strength of  $347.5 \pm 16.4$  MPa, thermal stability of ca.

250 °C, crystallinity index of 29.9%, and crystalline size of 1.45 nm. Additionally, the surface morphology and the elemental composition analysis indicated fibril bundles and the presence of calcium, silicon, chlorine, and potassium, along with carbon and oxygen. Furthermore, atomic force microscopy revealed high surface roughness for the extracted fiber. These findings suggest that the *Streblus asper* fiber is a suitable substitute for many synthetic fibers used in plastic-reinforced composites.

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**Author keywords-** Chemical composition; Crystalline properties; Fiber-reinforced plastics; Surface roughness; Thermal stability

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	86 <sup>th</sup>	6	12 RESPONSIBLE CONSUMPTION AND PRODUCTION

## CHARACTERISATION OF PINEAPPLE LEAF FIBRE/POLY(METHACRYLIC ACID) SEMI-INTERPENETRATING NETWORK HYDROGEL

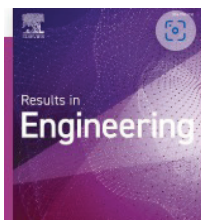
Bakhori N.M. ; Daud M.Y.M. ; Hassan M.Z.; **Suyambulingam I.**

*Results in Engineering* Volume 26 June 2025 Article number 105184



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Results in Engineering

Open access

### Abstract

This work presented a novel semi-interpenetrating (semi-IPN) hydrogel of a poly(methacrylic acid) (PMAA) matrix by incorporating pineapple leaf fibre (PALF). The reinforcement significantly enhanced its mechanical properties, thermal stability, and pH-responsive swelling behavior. FTIR confirmed the strong intermolecular interactions between PALF and PMAA while TGA and XRD show enhanced crosslinking and crystallinity with a cellulose I peak at  $2\theta = 22.5^\circ$  and a crystallinity index of 86.07%. At pH 7, the hydrogel expanded 2.3 times, demonstrating pH-sensitive swelling as well.

Dynamic mechanical analysis (DMA) revealed the highest storage modulus ( $E' = 5.50$  MPa), damping factor ( $\tan \delta =$

0.33), and glass transition temperature ( $T_g = 100$  °C) of PALF/PMAA semi-IPN2 confirming its good energy dissipation, and high stiffness. Conversely to pure PMAA hydrogels, the optimised PALF/PMAA hydrogel exhibited a significantly greater compressive strength and Young's Modulus of 184.80 and 26.30 MPa, respectively. SEM imaging verified that PALF was uniformly distributed and had porous shape, both of which enhanced the mechanical characteristics. This is the first study to use PALF as a reinforcing agent in PMAA-based hydrogels, creating a strong, pH-responsive material with great potential for biomedical, environmental, and drug delivery applications.

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**Author keywords-** Mechanical properties; Pineapple leaf fibres; Poly(methacrylic acid); Semi-IPN hydrogels; Swelling

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/Q3</b>	<b>30<sup>th</sup></b>	<b>NA</b>	



## GRAD-CAM BASED VISUALIZATION FOR INTERPRETABLE LUNG CANCER CATEGORIZATION USING DEEP CNN MODELS

**Mothkur R.**; Soubhagyalakshmi P.; **Swetha C.B.**

*Journal of Electronics, Electromedical Engineering, and Medical Informatics* Volume 7, Issue 3, Pages 567 – 580 July 2025



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# JOURNAL OF ELECTRONICS, ELECTROMEDICAL ENGINEERING, AND MEDICAL INFORMATICS

### Abstract

The Grad-CAM (Gradient-weighted Class Activation Mapping) technique has loomed as a crucial tool for elucidating deep learning models, particularly convolutional neural networks (CNNs), by visually accentuating the regions of input images that accord most to a model's predictions. In the context of lung cancer histopathological image classification, this approach provides discernment into the decision-making process of models like InceptionV3, XceptionNet, and VGG19. These CNN architectures, renowned for their high performance in image categorization tasks, can be leveraged for automated diagnosis of lung cancer from histopathological images. By applying Grad-CAM to these models, heatmaps can be generated that divulge the areas of the tissue samples most influential in categorizing the images as lung adenocarcinomas, squamous cell carcinoma, and benign patches. This technique allows for the visualization of the network's focus on specific regions, such as cancerous cells or abnormal tissue structures,

which may otherwise be difficult to explicate. Using pre-trained models fine-tuned for the task, the Grad-CAM method assesses the gradients of the target class concerning the final convolutional layer, generating a heatmap that can be overlaid on the input image. The results of Grad-CAM for InceptionV3, XceptionNet, and VGG19 offer distinct insights, as each model has unique characteristics. InceptionV3 pivots on multi-scale features, XceptionNet apprehend deeper patterns with separable convolutions, and VGG19 emphasizes simpler, more global attributes. By juxtaposing the heatmaps generated by each architecture, one can assess the model's focus areas, facilitating better comprehension and certainty in the model's prophecy, crucial for clinical applications. Ultimately, the Grad-CAM approach not only intensify model transparency but also aids in ameliorating the interpretability of lung cancer diagnosis in histopathological image categorization.

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**Author keywords-** Explainable AI; Grad-CAM; InceptionV3; VGG19; XceptionNet

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	80 <sup>th</sup>	5.5	12 RESPONSIBLE CONSUMPTION AND PRODUCTION

## SMART AND SUSTAINABLE PVA/CELLULOSE-ZnO/ANTHOCYANIN FILMS: DUAL-ACTION PACKAGING FOR EXTENDED SHELF LIFE AND REAL-TIME FRESHNESS DETECTION

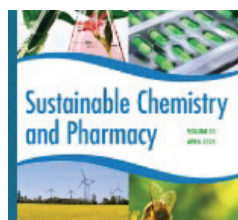
V N.K.; Badawi M.; **Parameswaranpillai J.**; K H.; Abraham A.L.; Begum P.M.S.; Dominic C D M.

*Sustainable Chemistry and Pharmacy* Volume 45 June 2025 Article number 102033



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## Sustainable Chemistry and Pharmacy

### Abstract

Sustainable sensing films for intelligent packaging applications are the need of the hour. Herein, for the first time, cellulose nanofibers (CNFs) from pineapple pomace are used as the host polymer for preparing cellulose-ZnO (C-ZnO) powder. The structural and dimensional properties of the C-ZnO powder were confirmed using different characterization techniques. Red cabbage-derived anthocyanin and C-ZnO were infused with polyvinyl alcohol (PVA) to make the antibacterial sensing films (C-ZnO/PVA (CPVA) and C-ZnO/anthocyanin/PVA (CAPVA)). The effective bonding between the PVA and the fillers is studied using the AT-FTIR analysis. The incorporation of C-ZnO and C-ZnO/anthocyanin resulted in the improving the UV screening ability of the developed films. The tensile strengths of the CPVA and CAPVA films were 14 and 11 % greater than that of the neat PVA film. The interaction with water was significantly reduced when C-ZnO was added to PVA making the material more hydrophobic. This was further confirmed using wettability studies. In 100 days, in wet conditions, the PVA, CPVA, and CAPVA showed biodegradability of 17, 37, and 39 %, respectively. As a packaging material, CPVA and CAPVA films increased the shelf life of fresh shrimp by up to 4 days as they have significant water barrier properties and antibacterial activity with an inhibitory zone of 28 and 20 mm (for CAPVA) against *S. aureus* and *E. coli* respectively. Furthermore, the release of volatile amines from shrimp spoilage caused the color of the CAPVA films to change over time from pink to yellow, indicating the possibility of using these films for real-time freshness monitoring. © 2025 Elsevier B.V.

**Author keywords-** Cellulose-ZnO powder; Polyvinyl alcohol; Real-time monitoring

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q3</b>	<b>30<sup>th</sup></b>	<b>0.9</b>	



## ACCELERATION AND VELOCITY OF QUADCOPTER BY COMPARING QUAD X AND QUAD PLUS CONFIGURATION USING PID CONTROLLER

**Munusamy R.**; Chaturvedi S.K.; Ramesh R.; Shakhivel S.

*Journal of Aeronautics, Astronautics and Aviation* Volume 57, Issue 4, Pages 1095 – 11122025



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Journal of Aeronautics, Astronautics and Aviation

[All Volumes](#)

### Abstract

Drone’s technologies are very useful for commercial and military applications such as surveillance, reconnaissance, and spying. The Quad-PID controller is developed by converting mathematical modeling into an engineering model within MATLAB environment. The proposed research shows the comparative analysis of Quad X and Quad Plus configurations to increase the rpm of Quad X and Quad Plus. Thus, the attitude of Quad X is more stable and can withstand wind turbulence and higher wind velocities. The controllers are used to minimize the error between desired input and feedback output with external disturbance. The mathematical modeling of the propeller is done by using blade element theory to analyze drone forces such as lift and drag coefficients. The thrust and

torque of the drone are calculated at different velocities. While the Dryden and von Kármán turbulence models are useful for characterizing turbulence in open skies, may not accurately capture the complexities of airflow in urban environments, where spatial and temporal scales are smaller. At 11.4 volts, motor RPM is reduced from 25%, which we interpret as the motor’s speed at this voltage being 25% less than the maximum no-load speed. The airflow around buildings can create turbulent and unpredictable wind patterns, making it challenging to control and navigate multi-rotor UAVs effectively.

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**Author keywords-** Blade element theory; Drone dynamics; PID controller; Unmanned Aerial Systems

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q2</b>	<b>74<sup>th</sup></b>	<b>2.8</b>	 12 RESPONSIBLE CONSUMPTION AND PRODUCTION

## CHARACTERIZATION OF POTASSIUM PERMANGANATE TREATED NATURAL FIBERS AND ITS ECO-FRIENDLY FRICTION COMPOSITES

Jiyas N.; Sasidharan I.; Bindu Kumar K.; **Senthamarai kanna n P.**; Kumar R.

*Journal of Natural Fibers* Volume 22, Issue 12025 Article number 2502647



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### Journal of Natural Fibers

 An open access journal

Publishes research in processing natural raw materials, particularly fibers; related lifecycle assessment; sustainable agriculture; bioreclamation.

## Abstract

This study explores the transformative effects of permanganate treatment on *Pseudoxytenanthera stocksii* (*P. stocksii*) bamboo fibers, benchmarking their enhanced properties against other natural fibers. *P. stocksii* fibers, enriched by a 15.5% increase in cellulosic content through permanganate treatment, exhibit remarkable improvements in material performance, including a 4% increase in density, 52% enhanced water absorption resistance, and significantly reduced moisture content. These fibers demonstrate exceptional thermal stability, achieving a maximum degradation temperature ( $T_{max}$ ) of 353.15°C, outclassing hemp fibers ( $T_{max}$  336.2°C). With a porosity of 7%, density of 1.19 g/cc, and hardness of 89 hRB, the treated fibers reinforced friction composites exhibit superior structural

integrity. Tribological analysis further underscores their utility, with a coefficient of friction of 0.52, a specific wear rate of  $1.87 \times 10^{-5}$  mm<sup>3</sup>/Nm, and an impressive friction stability of 95%. These results position permanganate-treated *P. stocksii* bamboo fibers as a viable candidate for friction-assistive applications, paving the way for sustainable innovations in composite materials. The findings not only highlight the untapped potential of *P. stocksii* fibers in advancing green tribology but also underscore their broader implications for reducing environmental impact in engineering applications.

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**Author keywords-** chemical modification; fibre characterization; Natural fibers; tribological characterization

Indexing/Quartile	Percentile	Impact Factor	SDG	
<b>SCOPUS/WOS/Q2</b>	<b>58<sup>th</sup></b>	<b>0.56</b>		

## ISOCLINISM IN LIE–YAMAGUTI ALGEBRAS

**Nandi N.**

*Journal of Algebra and its Applications* 2025 Article number 2650238



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### Journal of Algebra and Its Applications

ISSN (print): 0219-4988 | ISSN (online): 1793-6829  
 Supports Open Access

### Abstract

A Lie–Yamaguti algebra is equipped with bilinear and trilinear operations. In this paper, we introduce the concept of isoclinism in Lie–Yamaguti algebras. From the definition of isoclinism, it is clear that isomorphism implies isoclinism, however the reverse may not be true. Further, we define a factor set for Lie–Yamaguti algebras and discuss some of its

properties. By examining the factor set, we establish a condition under which the converse implication holds true for these algebras. In particular, we show that the notions of isoclinism and isomorphism are equivalent for two finite-dimensional Lie–Yamaguti algebras of the same dimension.

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**Author keywords-** Factor set; isoclinism; Lie–Yamaguti algebras

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/Q4</b>	<b>3<sup>rd</sup></b>	<b>0.40</b>	



## INTEGRATION OF GREEN INFRASTRUCTURE IN URBAN DESIGN: ENHANCING ECOLOGICAL AND SOCIAL RESILIENCE

Sethi Dipak; **Mamatha.N**; Upadhya Manas, Islam Ashraful; Ravider B.

*Journal of Applied Bioanalysis*, Vol. 11, No. 2, 2025



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# Journal of Applied Bioanalysis

### Abstract

Climate change creates heat stress and loss of biodiversity and the challenges of sustainability of the environment and community well-being in the context of urbanization. The use of green infrastructure (GI) in urban design can be seen as a strategy to address these challenges, improve ecological stability, and promote social inclusion. This article synthesizes current literature about the contributions of GI such as green roofs, urban parks, and rain gardens in managing environmental challenges in urban areas and enhancing public health. The review also compares the advantages of GI in terms of environmental impact, including the protection of ecological systems, reduction of the urban heat island effect, and the social impact, including the promotion of the health

of the community and the improvement of social interactions. However, there are disadvantages like financial problems, lack of information, bureaucratic issues, and expenses for maintenance which prevent the implementation of the method. These challenges can be addressed and overcome using other mechanisms such as strategic policy frameworks, innovative approaches in urban planning, and active community engagement to fully harness the benefits of GI. This study shows that there is a need to factor in GI in urban planning to achieve sustainable and adaptive cities for future environmental and social change.

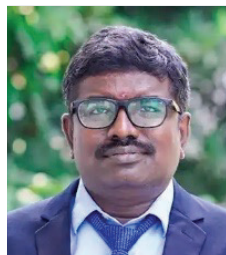
© 2025, Green Publication. All rights reserved.

**Author keywords-** Ecological resilience; Green infrastructure; Social resilience; Sustainable development; Urban design

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q2</b>	<b>74<sup>th</sup></b>	<b>2.8</b>	12 RESPONSIBLE CONSUMPTION AND PRODUCTION

## ISOLATION AND ANALYSIS OF CELLULOSIC FIBER DERIVED FROM ANISOMELES MALABARICUS STEMS

**Senthamarai kanna n P.**; Sahayaraj A.F.; Selvan M.T.; **Suyambulingam I.**; Priyadharshini G.S.; Durai P.N.; Kumar R.  
*Journal of Natural Fibers* Volume 22, Issue 12025 Article number 2502055



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### Journal of Natural Fibers

An open access journal

Publishes research in processing natural raw materials, particularly fibers; related lifecycle assessment; sustainable agriculture; bioreclamation.

## Abstract

This study characterizes the *Anisomeles malabaricus* Stem Fiber (AMSF) to examine the potential of using a polymer as reinforcement. The analysis delves into the composition, structure, and thermal behavior of AMSF to elucidate its potential applications in various industries. AMSF exhibits a complex matrix comprising 55.32 wt.% cellulose, 15.34 wt.% hemicelluloses, and 13.64 wt.% lignin, highlighting its rich composition essential for mechanical strength and resilience. The higher percentage of cellulose IV in the fiber was identified via XRD analysis, and the crystallinity index of the AMSF was measured at 36.26%. Fourier Transform Infrared (FTIR) analysis identified functional groups, including hydroxyl groups (3739  $\text{cm}^{-1}$ ) from cellulose and carbonyl groups (1755  $\text{cm}^{-1}$ ) from

lignin and wax, further contributing to AMSF's diverse chemical constituents. Thermogravimetric Analysis (TGA) showcased AMSF's notable thermal stability withstanding temperatures up to 320°C. The kinetic activation energy of the AMSF was derived as 71.86 kJ/mol, which once again confirmed the higher thermal stability of the AMSF. Single fiber tensile test revealed AMSFs provide higher rigidity and resistance to deformation a crucial property for load-bearing composite applications. These findings underscore the versatility and potential of AMSF for use in textiles, composites, and biomaterials.

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**Author keywords-** *Anisomeles malabaricus* stem fiber; chemical analysis; crystallinity index (CI); thermal stability and surface topography

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/Q3</b>	<b>30<sup>th</sup></b>	<b>0.83</b>	



## MANAGING JOB CONTENT PLATEAU THROUGH PROACTIVE PERSONALITY: A CONCEPTUAL FRAMEWORK

Jena B.P.; Choudhary A.; Pal M.K.

*International Journal of Business Innovation and Research* Volume 37, Issue 1, Pages 19 – 412025



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## Abstract

The job content plateau (JCP) is a condition in which employees perceive their occupations as ordinary in nature which has been associated with an employee's turnover intention as well as organisation's dysfunctional outcomes. Considering the intervening factors like job crafting (JCF), proactive personality (PP) and developmental idiosyncratic deals (DID) between JCP and career commitment (CC) a conceptual framework has been developed and empirically validated. In this research work, survey data were collected from executives across various industries based on the position level, total years of experience, and education level. The confirmatory factor analysis (CFA) and structural equation modelling (SEM) has been carried out to check the effectiveness of the proposed model and test hypothesis proposition. The results of the study revealed that JCF and DID have a mediating role between JCP and CC, which facilitate proactive executives to lead their CC and reduce the negative consequences of JCP. Copyright © 2025 Inderscience Enterprises Ltd.

**Author keywords-** career commitment; development

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/Q3</b>	<b>47<sup>th</sup></b>	<b>1.08</b>	



## DESIGN AND DEVELOPMENT OF A SHAMROCK LEAF-SHAPED FRACTAL ANTENNA WITH INTEGRATED FILTERING FOR WLAN/WIMAX APPLICATIONS

Vijayalakshmi N.; Palanisamy S.; Sathishkumar N.; Nivethitha T.; Nageswari D.

*International Journal of Computing and Digital Systems Volume 18, Issue 12025*



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### International Journal of Computing and Digital Systems

#### Abstract

Microstrip patch antennas have had problems for a long time with their gain, power handling, and impedance bandwidth, which makes them less useful for both portable electronics and fixed-location networks. To overcome these challenges, we introduce an innovative fractal shamrock leaf-shaped antenna with integrated filtering capabilities, utilizing a stepped impedance resonator (SIR). This design seeks to enhance multi-band performance, minimize size, and improve harmonic suppression. The primary goal is to develop a compact, multi-band antenna with built-in filtering to mitigate harmonic distortion. The suggested antenna has a fractal design with many layers, resembling a shamrock leaf. It can resonate at 2.4 GHz and 5.8 GHz for WLAN, 3.5 GHz for WiMax, and 7.9 GHz for ITU-R band applications, and it is all built on an FR4 substrate. It features a dual-band band-pass filter based on SIR, along with microstrip line feeding and aperture-coupled slot techniques to reduce harmonics and ensure

identical impedances. We employed an iterative design process to optimize the multi-band characteristics, thereby enhancing key performance metrics, such as gain and return loss. Both simulated and measured results indicate substantial improvements in radiation performance and bandwidth. The proposed antenna achieves gains of 3.3 dBi with a return loss of -38 dB at 2.4 GHz, 3.8 dBi with -26 dB at 3.5 GHz, 4.1 dBi with -32 dB at 5.8 GHz, and 3.9 dBi with -20.5 dB at 7.9 GHz. These metrics demonstrate superior performance when compared to conventional designs. This design offers a compact solution with enhanced multi-band operation and integrated filtering, making it highly suitable for contemporary wireless communication applications. The capacity to suppress harmonics and operate over a broad frequency range underscores the effectiveness and versatility of the proposed antenna. © 2025 University of Bahrain. All rights reserved.

**Author keywords-** aperture-coupled slot; filtering; multi-band fractal shamrock leaf-shaped antenna; second order band; stepped impedance resonator

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q2</b>	<b>65<sup>th</sup></b>	<b>1.7</b>	 

## BORON-LADEN SOLID-FUELED HYBRID GAS GENERATOR: ITS FEASIBILITY FOR POTENTIAL APPLICATION IN DUCTED ROCKETS

Hashim S.A.; Mandal S.; Divvela R.; Karmakar S.; Roy A.

*Combustion Science and Technology* 2025




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## Combustion Science and Technology

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CST is an international journal which publishes research in the various radiation and thermochemistry.

### Abstract

This study presents a novel approach to enhance the performance of ducted rockets by using a hybrid gas generator (HGG) as an alternative to conventional solid propellant-based gas generators. The HGG (primary combustor) consists of a single perforated solid fuel through which the oxidizer is passed during combustion, akin to a hybrid rocket. However, by intentionally maintaining the fuel-rich combustion enables the byproducts/effluents of the gas generator to be combusted again in a secondary combustor (ram-combustor) along with the incoming ram air, thus improving the overall performance. The primary benefit of this type of gas generator is its ability to be actively throttled. This study aims to test the proof of concept and feasibility of the HGG for its potential application in ducted rockets (DRs). Hence, in this investigation, the emphasis is made on characterizing the gas generator without ram-combustor, i.e. hybrid rocket mode, with a comparative analysis between hydroxyl-terminated polybutadiene (HTPB) and 10% boron-laden HTPB (HB10) solid fuels with gaseous oxygen. The equivalence ratio is maintained above one during its operation for all the cases, aligning with ducted rocket requirements. The

results indicate that HB10, operated with gaseous oxygen as the primary oxidizer, generally demonstrates slightly improved performance in regression rate (2–7%) and chamber pressure (3–8%). Also, successful ignition and combustion of boron within the HGG are observed. Additionally, the study evaluates static motor performance in hybrid rocket mode (HGG), revealing HB10's marginal superiority over HTPB in terms of specific impulse (for the equivalence ratio greater than 1.2). The trend of characteristic velocity ( $c^*$ ) for the HB10 fuel increases with increasing equivalence ratio and outperforms HTPB after reaching 1.4 (approximately), whereas the  $c^*$  efficiency shows the reverse trend. The HGG operating on HB10s also has relatively higher thrust (0.6–10%). Although these parameters do not directly determine ducted rocket performance, they offer insights into HGG feasibility and potentiality. These modest performance enhancements of the boron-laden solid-fueled gas generator hold significant promise for enhancing ducted rocket capabilities, particularly due to the possibility of two-stage combustion, a promising technique for enhancing boron combustion efficiency. © 2025 Taylor & Francis Group, LLC.

**Author keywords-** air-augmented ramjet; boron combustion; Ducted rockets; HTPB and nano-boron fuel; hybrid gas generator

Indexing/Quartile

**SCOPUS/WOS/Q1**

Percentile

**88<sup>th</sup>**

Impact Factor

**3.06**

SDG



## ENHANCED AERODYNAMIC CHARACTERISTICS USING HIGHER ORDER CURVED CONVEX AND CONCAVE MESHING FOR AN INCOMPRESSIBLE FLOW ANALYSIS OVER NACA AIRFOIL(ARTICLE)

**Devi S.**; Nagaraja K.V.; Bolló B.

*Journal of Applied and Computational Mechanics* Volume 11, Issue 3, Pages 625 - 6412025



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**Journal of  
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### Abstract

The present research work focuses on accurate aerodynamic computation and flow investigations of NACA 4-digit airfoil design to enhance the lift performance and consequently improve the efficient usage of fuel for commercial purposes of an aerodynamic device. For a cost-efficient airfoil shape, improved aerodynamic characteristic is essential, which has been computed efficiently by interpreting the effects of Reynolds numbers at different angles of attack. These aerodynamic parameters have been analyzed at various Reynolds numbers ranging from 10,000 to 1,000,000 ( $10^4 < Re < 10^6$ ). This study employs an inventive approach to mesh generation, employing higher order triangular elements to encompass the NACA 0012 airfoil design, utilizing subparametric finite elements for enhanced accuracy and efficiency. It facilitates precise data of the boundary

node information of the NACA 0012 airfoil design which has been utilized for the excellent computation of lift and drag coefficient, and the lift-to-drag ratio and can reduce the hardships of aerospace research associated with flow analysis. The pressure exerted around the airfoil surface has been investigated for Reynolds number  $2 \times 10^4$  at the angle of attack of  $5^\circ$ . The present work also delineates the understanding of the effects of boundary layer flow behavior on airfoil design utilized for aircraft, helicopters etc. at different Reynolds numbers. The present computation is helpful to design an optimized airfoil shape for better lift performance and manufacture a fuel-efficient aerodynamic device for aerospace applications. © (2025), (Shahid Chamran University of Ahvaz). All rights reserved.

**Author keywords-** Drag coefficient, Incompressible flow, Lift coefficient, Lift-to-drag ratio, Mesh generation, NACA 4-digit airfoil, Pressure coefficient, Sub-parametric transformations

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q2</b>	<b>74<sup>th</sup></b>	<b>2.8</b>	

## MECHANICAL, MORPHOLOGICAL AND HYGROSCOPIC CHARACTERIZATION OF BIO-COMPOSITES REINFORCED WITH UNTREATED AND ALKALI-TREATED GREWIA FLAVESCENS FIBERS

Tiwari Y.M.; Sarangi S.K.; Singh A.K.; **Senthamaraikannan P.**; **Suyambulingam I.**; Kumar R.

*Journal of Natural Fibers* Volume 22, Issue 12025 Article number 2502649



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### Journal of Natural Fibers

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Publishes research in processing natural raw materials, particularly fibers; related lifecycle assessment; sustainable agriculture; bioreclamation.

## Abstract

As the world shifts toward biodegradable materials to reduce environmental pollution, natural fiber-reinforced composites are gaining attention as sustainable alternatives to synthetic composites. However, natural fibers exhibit high moisture absorption and poor interfacial bonding with polymer matrices, affecting the mechanical properties of the composites. This study addresses these challenges by reinforcing polyester resin with untreated and alkali-treated Novel *Grewia flavescens* fiber (GFF) to enhance composite performance. Alkali treatment (5% NaOH, 45 min) was used to reduce fiber hydrophilicity and improve surface roughness, leading to better fiber-matrix adhesion. Composites were fabricated using the short fiber with

fiber loadings of 10%, 20%, 30%, 40%, and 50% by weight. Mechanical characterization, including tensile, flexural, and impact tests, revealed that the optimal mechanical properties were achieved at 40% fiber reinforcement, with treated fibers outperforming untreated ones. A hygroscopic test further evaluated the water absorption behavior of the composites. The findings demonstrate that alkali treatment significantly improves the mechanical and moisture resistance properties of *Grewia flavescens* fiber-reinforced polyester composites, making them a promising material for eco-friendly applications.

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**Author keywords-** alkali treatment, Bio-composite, GFF mechanical testing, natural fiber

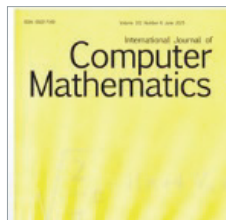
Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q2</b>	<b>53<sup>rd</sup></b>	<b>3.06</b>	

## ENTROPY GENERATION ON BIO-MAGNETIC HYBRID NANOFLUID FLOW ACROSS HUMAN CIRCULATORY SYSTEM: NUMERICAL AND MACHINE LEARNING APPROACH

Santhi K.; Sowmiya B.; **Keerthika V.**; Nivetha S.  
*International Journal of Computer Mathematics 2025*



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### International Journal of Computer Mathematics

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Research on applications, concerns and techniques in computer mathematics including algorithms and machine learning.

### Abstract

In modern days, machine learning techniques have emerged as potent instruments for resolving intricate challenges, refining processes, and extracting insights from extensive datasets, particularly in the field of fluid dynamics. The potential of these small particles in sophisticated medical applications is demonstrated by the growing interest in utilizing nanoparticles (Ag-Cu) in a variety of healthcare sectors. This study intends to resolve non-dimensional equations utilizing the Bvp4c method in MATLAB, emphasizing on entropy creation inside the human circulatory system. This study explores how energy

naturally evolves and dissipates within the complex blood vessel network, providing key insights into both normal circulation and disorders like heart disease, clotting, and blood flow issues. Appropriate tables and graphs efficiently demonstrate the influence of the active parameters on the flow dynamics of the bio-magnetic flow and provide a visual depiction of their impact. A higher Weissenberg number lowers velocity owing to increased viscoelasticity.

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**Author keywords-** Entropy generation, machine learning approach, non-linear thermal radiation, non-uniform heat source/sink numerical method

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q2</b>	<b>74<sup>th</sup></b>	<b>2.8</b>	

## MACHINE LEARNING MODEL COUPLED WITH GRAPHICAL USER INTERFACE FOR PREDICTING MECHANICAL PROPERTIES OF FLAX FIBER

Nageshkumar T.; Shrivastava P.; Ammayapan L.; Jagadale M.; Nayak L.K.; Shakyawar D.B.; **Suyambulingam I.;**  
**Senthamaraikannan P.;** Kumar R.

*Journal of Natural Fibers* Volume 22, Issue 12025 Article number 2502662



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### Journal of Natural Fibers

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Publishes research in processing natural raw materials, particularly fibers; related lifecycle assessment; sustainable agriculture; bioreclamation.

## Abstract

Machine learning model coupled with graphical user interface was developed to predict mechanical properties of flax fiber. The experiment was conducted using test setup which applies constant rate of loading (CRL). Flax fiber was tested under five independent parameters i.e, type of fiber (Tf), moisture content (Mc), weight of sample (Ws), gauge length (Gl) and loading rate (Lr) with response variables, i.e., breaking load and elongation. In this study, a total of 432 patterns of input and output parameters obtained from laboratory experiments were used to develop machine learning algorithms (Random forest, support vector, and XGBoost). Among the machine learning models, random forest regressor yielded high R2

value, low mean squared error (MSE), and mean absolute error (MAE). The SHapley Additive exPlanations (SHAP) analysis was performed and found sample weight and gauge length were the most influential features for breaking load and elongation, respectively. The developed GUI, integrated with a random forest regressor, predicted breaking load and elongation with an error range of  $-2.5\%$  to  $2.3\%$  for raw fiber and  $1.5\%$  to  $6.5\%$  for cleaned fiber. The developed GUI coupled random forest regressor can be used to predict the mechanical properties of fibers with ease.

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**Author keywords-** Breaking load, elongation, GU, random forest

Indexing/Quartile

SCOPUS/WOS/Q1

Percentile

80<sup>th</sup>

Impact Factor

3.2

SDG



## JUDICIAL INTERFACE WITH PERINATAL DEPRESSION IN INDIA: AN EMPIRICAL ANALYSIS AND THEMATIC REVIEW OF PUBLISHED JUDGMENTS

Behl, R.

*Archives of Women's Mental Health* Volume 28, Issue 3, Pages 401 - 414 June 2025

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### Archives of Women's Mental Health

Publishing model

**Hybrid**

### Abstract

In the absence of health law policies focused on perinatal depression (PND) in India, it has primarily remained a biomedical research matter instead of being understood from the human rights perspective. Also, the interplay between PND and the Indian justice delivery system remains unexplored. Hence, it is imperative to understand the medico-legal milieu of PND through the lens of judicial interface with the facet of PND. Most popular Indian electronic legal databases were used to identify the judgments pronounced by the Indian Courts where the PND quotient was involved. The text of the resultant judgments was individually read to evaluate if the subject claim were affected by PND quotient to fit the inclusion criteria. Using the inductive and latent thematic approach, the different emergent themes from the subject claims of every single judgment were used for developing codes. Myriad themes emerged out of the analysis, which helped identify

how PND vastly impacts the justice delivery system in varied types of cases in India. Obliviousness and lack of awareness in Indian judiciary regarding PND, and its consequences was largely observed. Human rights violations were discerned owing to absence of perinatal mental health (PMH) services. This policy gap, in turn, results in absence of data regarding women affected by PND and about administered treatment (if any) for managing PND, and reduced empathy by the law enforcement agencies. The resultant themes depict the urgent and multidimensional benefits of introducing policies for PMH services, which will help create awareness about the human rights dimension of PND amongst the law enforcement agencies including the Indian judiciary, and police. © The Author(s), under exclusive licence to Springer-Verlag GmbH Austria, part of Springer Nature 2023.

**Author keywords-** Empirical analysis, Indian judiciary, Judgments, Perinatal depression, Thematic review

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q2</b>	<b>61<sup>st</sup></b>	<b>2.7</b>	

## PERINATAL DEPRESSION, PERINATAL MENTAL HEALTH, AND LEGAL INTERVENTIONS: A MEDICO-LEGAL ANTHROPOLOGICAL CONCEPT

Behl, R.

*Discover Mental Health* Volume 5, Issue 1 December 2025 Article number 73



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### Discover Mental Health

Publishing model

Open access

### Abstract

Perinatal depression (PND), and perinatal mental health (PMH) are regarded as an underestimated public health concern. A doctoral study was undertaken to analyze the efficacy of existing health laws and policies in India in addressing and managing PND, and the implications of non-recognition of PND as a public health issue. The interdisciplinary and transdisciplinary study involved four disciplines: Psychiatry, Medical Anthropology, Public Health Law, and International Human Rights Law. The study highlighted the need for synergistic assimilation of knowledge from the four disciplines to read

mental health, PND, and PMH. The study novelly emphasized the need to read PND as a 'medico-legal anthropological' concept, which manifests medically, results largely, and is strongly influenced by psychosocial factors, making it imperative to recognize perinatal women as a vulnerable population and safeguard their human rights. This approach will facilitate assessments about interventions for addressing and/or managing PND when policy-making/policy reforms regarding PND are in progress.

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**Author keywords-** Anthropology, Health policies, Medico-legal, Perinatal depression, Perinatal mental health, Psychiatry

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q3</b>	<b>49<sup>th</sup></b>	<b>4</b>	

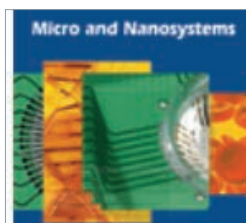
## REVIEW OF ADVANCEMENTS AND FUTURE DIRECTIONS IN THE FABRICATION OF MICROCHANNEL HEAT SINKS FOR ELECTRONIC COOLING

Bal S.; Oza A.D.; Kumar M.

*Micro and Nanosystems 2025*



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### Fabrication of Microchannel Heat Sinks for Electronic Cooling

**Authors:** Sasmita Bal<sup>1</sup>, Ankit D. Oza<sup>2</sup> and Manoj Kumar<sup>3</sup>

[+ View Affiliations](#)

### Abstract

With the increasing demand for enhanced thermal performance and energy efficiency, microchannel heat sinks (MCHSs) have garnered significant attention as an effective method for dissipating the heat flux from thermal systems. Microchannel heat sinks have widespread applications in electronic devices, offering superior heat removal rates and ensuring optimal performance and durability. The fabrication of microchannels has been a long-standing challenge that has spurred continuous research efforts. Innovative techniques have emerged to address this challenge, leading to ongoing research aimed at the development of more efficient and contemporary cooling methods. This review comprehensively explores various microchannel fabrication techniques including

photolithography, wire EDM, ultrasonic microfabrication, and etching. In addition, it provides insights into the selection of appropriate substrate materials. Extensive literature surveys have been conducted to compile a wealth of knowledge regarding these fabrication techniques. Furthermore, a detailed discussion is presented on the advantages and disadvantages of these fabrication methods, considering factors such as time efficiency, cost analysis, surface finish, product quality, and practical applications. While the review covers a broad spectrum of microchannel fabrication techniques, it places particular emphasis on the emerging 3D printing technology for microchannel fabrication, recognizing its potential to revolutionize the field. © 2024 Bentham Science Publishers.

**Author keywords-** composites, EDM, heat transfer, laser lithography, Microchannel, micromachining, polymer roughness

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q2</b>	<b>74<sup>th</sup></b>	<b>2.8</b>	

## NATURAL PARTICULATE REINFORCED BIOCOMPOSITE FILM: A REVIEW

Rathinavel S.; Saravanakumar S.S.; Senthilkumar T.S.; **Senthamarai kanna n P.**; **Suyambulingam I.**; Kumar R.

*Journal of Natural Fibers* Volume 22, Issue 12025 Article number 2500641



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### Journal of Natural Fibers

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Publishes research in processing natural raw materials, particularly fibers; related lifecycle assessment; sustainable agriculture; bioreclamation.

## Abstract

Biocomposite films, which incorporate natural waste materials as fillers and biodegradable polymers as matrix material, have gained significant attention as sustainable alternatives to traditional plastic-based materials. This article aims to give potential insights into the role of natural waste particulates in improving biopolymer-based biocomposite film properties and reducing the use of traditional plastic-based materials in different applications. This review article is structured to explore the different natural waste materials utilized along with different biopolymers to prepare biocomposite films. It also highlights the influence of natural filler on the thermal,

mechanical, antibacterial, and barrier properties of biopolymer-based biocomposite films. Significant improvements in tensile strength, tensile modulus, thermal stability, and antibacterial and barrier properties were reported due to the synergy between natural waste materials and biopolymers, making them suitable for packaging, biomedical, and optoelectronics applications. This literature review provides a gap in the understanding of the importance of natural particulates in developing new biocomposite films for possible applications in many areas.

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**Author keywords-** Biocomposites, biopolymer, biowaste, natural particulates, thin films

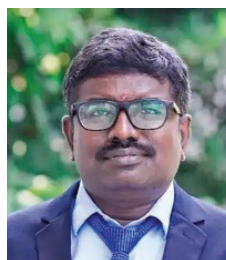
Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q2</b>	<b>74<sup>th</sup></b>	<b>2.8</b>	



## RECENT PROGRESS IN FIBER REINFORCED POLYMER HYBRID COMPOSITES AND ITS CHALLENGES-A COMPREHENSIVE REVIEW

**Senthamaraiannan P.; Suyambulingam I.;** Mohanraj C.M.; Rameshkumar R.; Mariappan M.; Mohankumar A.; Rajendran B.; Kumar R.

*Journal of Natural Fibers* Volume 22, Issue 12025 Article number 2495911



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### Journal of Natural Fibers

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Publishes research in processing natural raw materials, particularly fibers; related lifecycle assessment; sustainable agriculture; bioreclamation.

### Abstract

Global warming and natural calamities have driven scientists and researchers to explore renewable and eco-friendly raw materials for industrial and other applications. Traditionally, structural components in various fields are made of plastic, which is harmful to the environment, or heavy metallic materials, which consume excessive energy during dynamic operations, leading to increased fossil fuel consumption. Composite materials have emerged as a promising substitute for these environmentally detrimental materials. Among them, plant-based fiber-reinforced polymer composites, derived from renewable and abundant natural fibers, have gained significant attention due to their environmental benefits, cost-effectiveness, and potential for sustainability. Recent trends in this field include

the development of hybrid composites, the incorporation of advanced biopolymers, and improved processing techniques to enhance mechanical and thermal performance. However, challenges such as interfacial bonding, water absorption, and durability under extreme conditions still hinder their broader adoption. This review explores the advancements in plant-based fiber-reinforced polymer composites, emphasizing recent progress, ongoing challenges, and future potential. It aims to provide comprehensive insights for researchers and practitioners focusing on this rapidly evolving domain.

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**Author keywords-** chemical treatment; Composites; fiber; hybrid composite; polyester; polymer; strength; water absorption

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q3</b>	<b>43<sup>rd</sup></b>	<b>1.2</b>	

## INDIA-MERCOSUR PREFERENTIAL TRADE AGREEMENT: AN EX-POST EVALUATION UNDER MODERN GRAVITY FRAMEWORK

**Mamta Kumari**

*The Journal of Economic Integration* 2025 June;40(2) :367-390



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Department of Economics



### Abstract

Against the backdrop of expanding the tariff concession list of 450 products to 1500-2000 under India - Southern Common Market Preferential Trade Agreement (India-MERCOSUR PTA), the study analyses the effects of the India-MERCOSUR PTA on the trade flows of member states. The study employs structural gravity model framework to estimate total bilateral, unilateral, and heterogenous trade effects of this PTA. The results indicate that bilateral trade between India and MERCOSUR countries have increased by 63% at the expense of trade diversion from domestic sales. The study also provides evidence that PTA significantly increased India's trade with non-MERCOSUR

countries by 90%. In addition, the hypothesis of heterogeneity effects of PTA across each of its member countries and the direction of trade is confirmed by the estimates. Such empirical evidence of large average impacts on goods trade gives significant boost to the ongoing negotiations for further deepening the existing trade agreement.

JEL Classification

F13: Trade Policy; International Trade Organizations

F14: Empirical Studies of Trade

F15: Economic Integration

**Author keywords-** Gravity Model | Unilateral Effects | Trade Integration | India | MERCOSUR | Panel Data

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q1</b>	<b>75<sup>th</sup></b>	<b>4.7</b>	

## INVESTIGATION OF LOW-VELOCITY IMPACT AND IN-PLANE COMPRESSION RESPONSES OF CRUMB RUBBER-REINFORCED KEVLAR SANDWICH COMPOSITE: EXPERIMENTAL, ANALYTICAL AND NUMERICAL APPROACHES

Venkatesh Chenrayan, A. Saravanakumar, Kiran Shahapurkar, Panneerselvam Natarajan

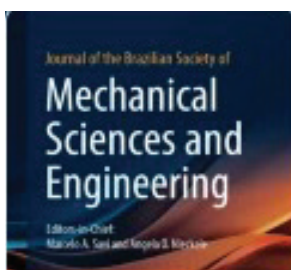
*Mechanical Sciences and Engineering 2025*



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### Abstract

Heavier monolithic construction panels pose greater challenges to energy conservation in the automobile, aerospace, and locomotive sectors. A novel lightweight sandwich polymer composite has been proposed to address the issue. The waste tire-derived crumb rubber (CR) particles were employed for the reinforcement of the core of the Kevlar sandwich epoxy composite in four different composition variations (0, 5, 10, and 15 wt.%). A low-velocity impact analysis was performed experimentally to assess the impact responses. An intense bonding of CR particles with the cover sheet was authenticated by the surface topography of CR. An energy-balance analytical model was implemented to validate the experimental findings. Further, a third layer of validation was attempted through a finite element numerical approach. The experimental approach to

impact response estimation reveals that 87.86% and 17.42% of excess energy absorption and backside deformation are recorded for higher CR content (15 wt.%) variants than the neat sandwich specimen. The analytical and numerical predictions are in close concurrence with the experimental findings. The macroscopic damage assessment result declares the existence of evident delamination followed by matrix cracking for the neat specimen. A 2.48 times higher residual compressive strength with extended straining was observed from the in-plane compression test after the impact for a higher CR variant (15 wt.%) than the neat one. A failure assessment after the in-plane compression manifests the remarkable delamination and core failure of the neat sandwich composite.

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	80 <sup>th</sup>	4.9	09 INDUSTRY, INNOVATION AND INFRASTRUCTURE

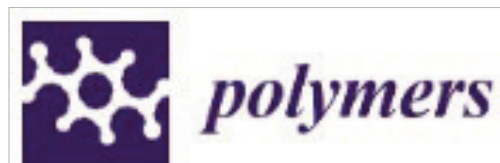
## ADDITIVE MANUFACTURING OF METAL-INFILLED POLYLACTIC ACID-BASED SUSTAINABLE BIOCOMPOSITES—A REVIEW OF METHODS, PROPERTIES AND APPLICATIONS ABETTED WITH PATENT LANDSCAPE ANALYSIS

Sivalingam, Sengottaiyan; Bhuvanewari, Venkateswaran; **Rajeshkumar, Lakshminarasimhan**; Balaji, Devarajan  
*Polymers*



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### Abstract

Innovations in additive manufacturing (AM) methods represent a significant advancement in manufacturing technology, opening new avenues for creating objects in various shapes and sizes. Fused deposition modeling (FDM) is a specialized AM technique in which computers build layers upon each other to form a complete 3D object. The feasibility of producing metal parts using these methods has been thoroughly analyzed, but the design process has yet to catch up with manufacturing capabilities. Biodegradable aliphatic polyester PLA is derived from lactic acid. To enhance its strength, PLA is combined with metal particles, resulting in versatile property improvements and applications. While the aesthetic and functional qualities of PLA–metal composite filaments are intriguing, they also present difficulties related to extrusion, equipment wear, and

maintaining consistent print quality. These challenges could be mitigated, to some extent, with careful tuning and specialized hardware. However, the inferior mechanical properties of bioresorbable PLA filaments highlight the need for the development of infilled PLA filaments to improve strength and other characteristics. This review discusses the 3D printing of PLA infilled with metal particles, various materials used, and their properties as a matter of interest in AM technology. Additionally, the applications of PLA–metal composites, along with their implications, limitations, and prospects, are comprehensively examined in this article. This sets the stage for the development of high-strength, sustainable materials for use in a range of engineering and technology fields.

**Author keywords-** PLA–metal filaments; additive manufacturing; fused deposition modeling (FDM)

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q2</b>	<b>74<sup>th</sup></b>	<b>2.8</b>	

## MECHANICAL AND WEAR CHARACTERIZATION OF SODIUM HYDROXIDE–TREATED FICUS AMPLISSIMA NATURAL FIBER EPOXY COMPOSITE

Rameshkannan, G.; Babu, S. Ramesh; **Senthamaraikannan, P.**; Kumar, R.

*Journal of Natural Fibers*



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### Journal of Natural Fibers

 An open access journal

Publishes research in processing natural raw materials, particularly fibers; related lifecycle assessment; sustainable agriculture; bioreclamation.

### Abstract

Natural fibers have gained popularity in composites because they are inexpensive, lightweight, and biodegradable. However, challenges such as poor bonding and high moisture absorption persist. This study addressed these issues by treating aerial roots of *Ficus amplissima* fibers (ARFAFs) with a 5% NaOH solution at various fiber weight percentages (5%, 10%, 15%, 20%, and 25%). The study found that alkali treatment improved the bond between the polymer matrix and the fibers, resulting in increased tensile, flexural, and impact strength, which improved from 44.76 to 46.71 MPa (4.36% improvement), from 59.38 to 63.12 MPa (6.29% improvement), from 85.66 to 92.22 J/m (7.66% improvement), respectively. Additionally,

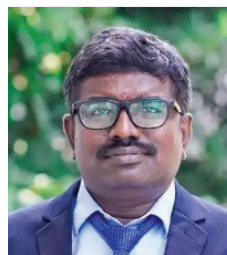
water absorption was reduced compared to untreated fibers. The tribological behavior of ARFAF composites was investigated using a pin-on-disc machine. The experiments were designed using the Taguchi method, and analysis of variance was conducted utilizing Minitab 19 software. Four factors were considered: fiber weight percentage, load, sliding speed, and sliding distance, each at three levels. Results revealed that the applied load was the most significant variable, contributing 41.72% to the sliding wear of the composites. Furthermore, a higher fiber weight percentage improved the wear resistance, resulting in a less mass loss.

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/WOS/Q1	93 <sup>rd</sup>	7.7	12 RESPONSIBLE CONSUMPTION AND PRODUCTION

## EXPLORING THE CHARACTERISTICS OF PITHECELLOBIUM DULCE CELLULOSIC FRUIT PEEL FIBERS: A SUSTAINABLE REINFORCEMENT FOR HIGH-PERFORMANCE BIOCOMPOSITES

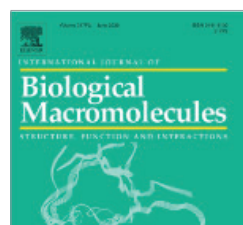
Senthamaraiannan, P.; Ponnusamy, Renuka; Arumugam, Sukantha Tiruchengode; Saravanakumar, S. S.;

*International Journal of biological macromolecules*



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International Journal of Biological Macromolecules

### Abstract

This research focuses on the fiber extraction and detailed characterization of fibers from the peel of *Pithecellobium dulce* fruit (PDF) to evaluate their potential for composite applications. Previous research has shown that PDF peel has strong antimicrobial and antioxidant properties, and this study suggests it has potential as a natural filler for pharmaceutical and food packaging applications. This study explores compostable material as a sustainable alternative to non-biodegradable materials in various industries, highlighting its potential as a largely unexplored resource. The extracted peel fibers were found to contain 72.61 % cellulose, 11.73 % hemicellulose, and

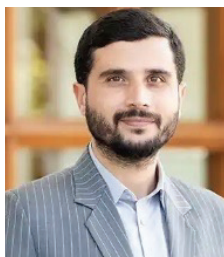
15.76 % lignin, with a density of 1.23 g/cm<sup>3</sup>. The peel fibers exhibited a crystallinity index of 46.02 %, a tensile strength of 529.88 ± 50 MPa, a tensile modulus of 2.12 ± 0.5 GPa, and an elongation at break of 24.99 %. Thermal analysis indicated a maximum degradation temperature of 375.52 °C, whereas surface morphology studies revealed a rough and uneven structure, making the fibers well-suited for forming strong fiber–matrix bonds. In conclusion, it can be stated that the extraction of PDF peel fiber by the aquatic method is an eco-friendly method, and PDF peel fibers have good potential as a filler material for composites.

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q1</b>	<b>76<sup>th</sup></b>	<b>5</b>	03 GOOD HEALTH AND WELL-BEING

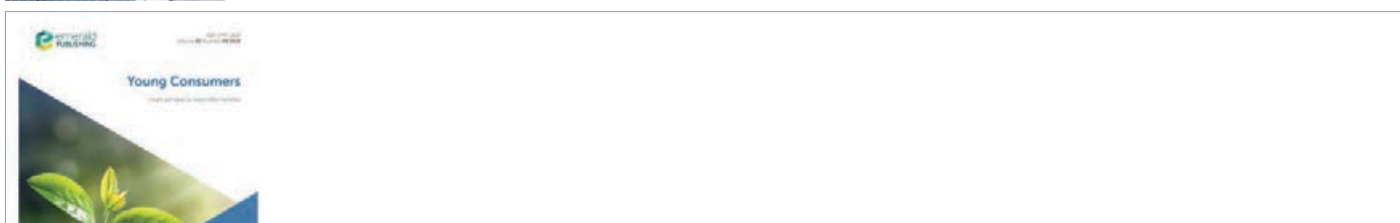
## INDIAN MILLENNIALS’ CONTINUED USAGE INTENTIONS TOWARD ONLINE DATING APPS: THE INTERPLAY BETWEEN TRUST AND PERCEIVED AUTONOMY

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

*Young Consumers*, VOL. 26 NO. 2 2025, pp. 207-226, © Emerald Publishing Limited, ISSN 1747-3616



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### Abstract

**Purpose**

This study aims to empirically examine the role of privacy, security, trust and autonomy in Millennials’ continued use of online dating applications. Emerging markets have been famous for their rapid modernization, growth and cultural shifts. Yet, consumer worries about online dating consumption need to be addressed in the literature through a better understanding of their behavioural intentions. This study examines the interplay of the underlying variables by testing a conceptual framework grounded on the theory of reasoned action (TRA), the self-determination theory (SDT) and the information systems continuance theory (ISCT) with regard to an emerging market.

**Design/methodology/approach**

A cross-sectional and quantitative research design is adopted. Using a well-designed structured questionnaire adapted from established scales, data was collected through a survey featuring 332 substantive responses from actively involved Millennial users of online dating apps in India. The data was analysed using confirmatory factor analysis (CFA) and structural equation modelling (SEM) through IBM SPSS AMOS (Analysis of Moment Structures) 24.0 to provide evidence of the reliability and validity of constructs alongside testing the hypothesis in the proposed model. Furthermore, Preacher and Hayes’ (2004) approach is used to explore mediation effects.

**Findings**

The results show that autonomy and trust positively affect the continued use of online dating apps. The study further reveals that autonomous behaviour motivates Millennials to use online dating apps, overriding their concerns for privacy and security. Furthermore, the results indicate that trust fully mediates the relationship between concern for privacy, perceived security and continued usage intention. Therefore, trust affects users’ intentions to continue using online dating apps as it bridges the effect of users’ concern for privacy and the perceived security in the online dating platform, making these dimensions relevant as a whole.

**Research limitations/implications**

This study provides critical insights into the theory and practice. The findings demonstrate that autonomy is more significant in motivating Millennials to use online dating apps than concerns about privacy and perceptions of security. In addition, trust plays a crucial role in mediating the relationship between these variables. Therefore, app developers, app marketers and app stores can use the findings to motivate Millennials to continue using their platforms by encouraging a sense of freedom and a better inner self, fostering engagement and conveying user trust.

**Originality/value**

Several studies have investigated the pre-adoption behaviour of users of online dating apps, and little attention has been paid

to continuance usage. This study provides a unique theoretical research model and perspective for online dating apps that uncovers the role of concern for privacy, perceived security and trust that affect post-adoption behaviour by integrating the TRA, SDT and ISCT. This integration offers a more futuristic

and refined perspective on human behaviour by considering both cognitive and motivational aspects. The study establishes that autonomy outweighs concern for privacy and perceived security.

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

Indexing/Quartile

Percentile

Impact Factor

SDG

**SCOPUS/WOS/Q1****76<sup>th</sup>****4.7**

## COMPRESSION AFTER IMPACT (CAI) BEHAVIOR AFTER LOW-VELOCITY IMPACT (LVI) OF AGRO-WASTE-BASED PINEAPPLE LEAF FIBER (PALF) AND KEVLAR FABRICS-REINFORCED POLYESTER COMPOSITES FOR AUTOMOTIVE APPLICATIONS

**Suyambulingam, Indran**; Bakhori, Siti Nadia Mohd; Bakhori, Noremylia Mohd; Hassan, Mohamad Zaki; Senthamarai Kannan, P.; Sundaram, Raja Soma; Mahardika, Melbi

*Polymer Composites*



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**POLYMER  
COMPOSITES**

### Abstract

The global production of natural fibers has increased, making them increasingly desirable for composite materials. The unique properties of pineapple leaf fiber (PALF) position it as an outstanding candidate for improving composite structures. This research investigated PALF and Kevlar hybrid composites reinforced with unsaturated polyester, focusing on compression after impact (CAI) and low-velocity impact (LVI). Using the hand lay-up technique, six layering configurations comprising PALF and Kevlar ([PPP]s, PPK]s, [PKP]s, [KKK]s, [KKP]s, and [KPK]s) were fabricated and examined under both dry and wet conditions. Prior to impact testing, the wet samples were submerged in water for 48, 72, 96, and 120 h. The [KPK]s

configuration exhibited a 476.69% increase in indentation force and a maximum energy absorption of 244.06%, suggesting the significance of the first layer in the design of materials resistant to impact. However, prolonged submersion in water reduced perforation resistance and peak load. A circular indentation pattern was observed from the impact damage, which enlarged with longer immersion times. The maximum CAI stress was achieved by the [KPK]s configuration, which was 28.58% greater than that of the [PPP]s configuration. This study underscores the significance of layering sequence and the characteristics of the first layer for the successful construction of PALF/Kevlar hybrid composites.

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q1</b>	<b>81<sup>st</sup></b>	<b>2.8</b>	

## MULTIBAND 3D PRINTED BALUNS FOR HIGH-FREQUENCY NETWORKS

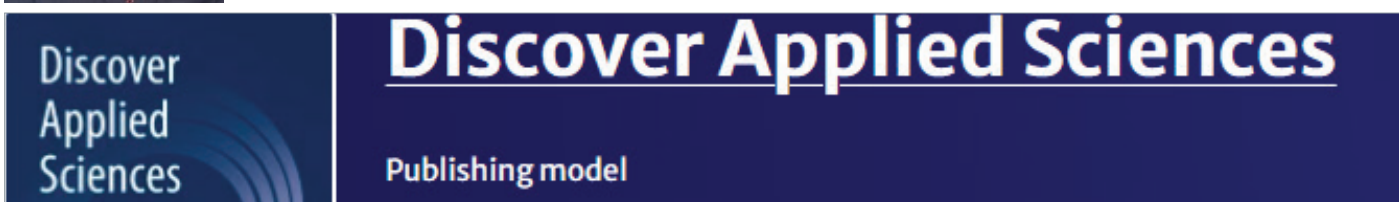
**Itapu, Srikanth**; Uya, Afahaene Edet; Lamsal, Sanjee; Li, Frank X.; Selvendran, S.; Borra, Vamsi

*Discover Applied Sciences*



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### Abstract

This work examines the impact of the choice of manufacturing technique employed and the choice of material on the application of a squared dual-band balun. The balun is designed, simulated, and fabricated (on rigid and flexible substrates) using two additive manufacturing processes and a traditional process on a printed circuit board (PCB). The measured results from the different manufacturing processes are compared. The samples exhibit satisfactory impedance results across various bandwidths. The PCB design shows impressive performance, with a measured return loss better than -10 dB between the frequency ranges of 7.06–7.45

GHz, 10.22–10.99 GHz, 11.5–12.5 GHz, 13.6–14.5 GHz, 15.1–16.8 GHz, 17.5–19.1 GHz, 21.03–22.2 GHz, and 22.8–23.9 GHz. The screen-printed design demonstrates a measured bandwidth ranging between 0.54–0.67 GHz, 2.39–2.53 GHz, 3.06–3.19 GHz, 3.45–3.59, 13.1–14.6 GHz and 21.7–23.7 GHz. While the measured bandwidth for the aerosol jet printed design is between 0.56–0.72 GHz, 2.92–3.59 GHz, and 14.3–18.6 GHz. Additionally, across all designs, the baluns exhibit insertion losses ranging between 0.5 dB to 3 dB.

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/WOS/Q2</b>	<b>50<sup>th</sup></b>	<b>3.6</b>	



## EFFECT OF TiB<sub>2</sub> PARTICLES ON THE COMPRESSIVE, HARDNESS, AND WATER ABSORPTION RESPONSES OF KULKUAL FIBER-REINFORCED EPOXY COMPOSITES

**Shahapurkar, Kiran; Chenrayan, Venkatesh;** Kanaginahal, Gangadhar; Ghazali, Nik Nazri Nik; Kuan, Tze Mei; Ariffin, Azrul Mohd; Arunachalam, Arulraj; Fouad, Yasser; Soudagar, Manzoore Elahi M.; Murthy, Hanabe Chowdappa Ananda

REVIEWS ON ADVANCED MATERIALS SCIENCE



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## REVIEWS ON ADVANCED MATERIALS SCIENCE

Editors-in-Chief: [David Hui](#) and [Vanessa Fierro](#)  
Managing Editor: [Juliusz Skoryna](#)

### Abstract

An investigation on novel Kulkual fibers that were derived from Ethiopia was carried out in this work. An open-mold casting approach was employed to manufacture a lightweight composite comprising chopped Kulkual fibers and titanium diboride (TiB<sub>2</sub>) particles. The primary objective of this study was to scrutinize the interfacial dynamics of the composites upon inclusion of the reinforcements, focusing on compression, hardness, and water absorption characteristics. The incorporation of both TiB<sub>2</sub> and Kulkual fibers markedly augmented the inherent properties of the epoxy matrix, evident in compression testing. Notably, composites containing 5 vol% of fibers exhibited a significantly higher modulus of 87 MPa, while those with 5 vol% of fibers demonstrated an

impressive strength of 90 MPa. Vickers hardness assessments revealed composites containing 5 vol% of fibers displaying a superior hardness value of 45 HV. Subsequent water absorption tests with different types of water unveiled a Fickian behavior, characterized by an initial exponential increase in the absorption rate within the first 50 h. The incorporation of Kulkual fibers amplified this intake rate, particularly evident at the 10 vol% level, which eventually reached saturation after 200 h. Collectively, these findings underscore the optimal efficacy of fiber addition up to 5 vol% in enhancing composite properties, suggesting a threshold beyond which further increments may not yield proportional benefits.

**Author keywords-** Kulkual fiber; composites; compression; hardness, water absorption

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/Q1</b>	<b>86<sup>th</sup></b>	<b>NA</b>	



## FAMILY RECIPE DIARIES AND CONSUMPTION OF TRANSCULTURAL ANGLO-INDIAN IDENTITY

Das A.

*Asian Ethnicity* Volume 26, Issue 3, Pages 552 – 576 2025



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### Indian identity

Arindam Das

Pages 552-576 | Received 11 Jul 2023, Accepted 12 Dec 2024, Published online: 19 Dec 2024

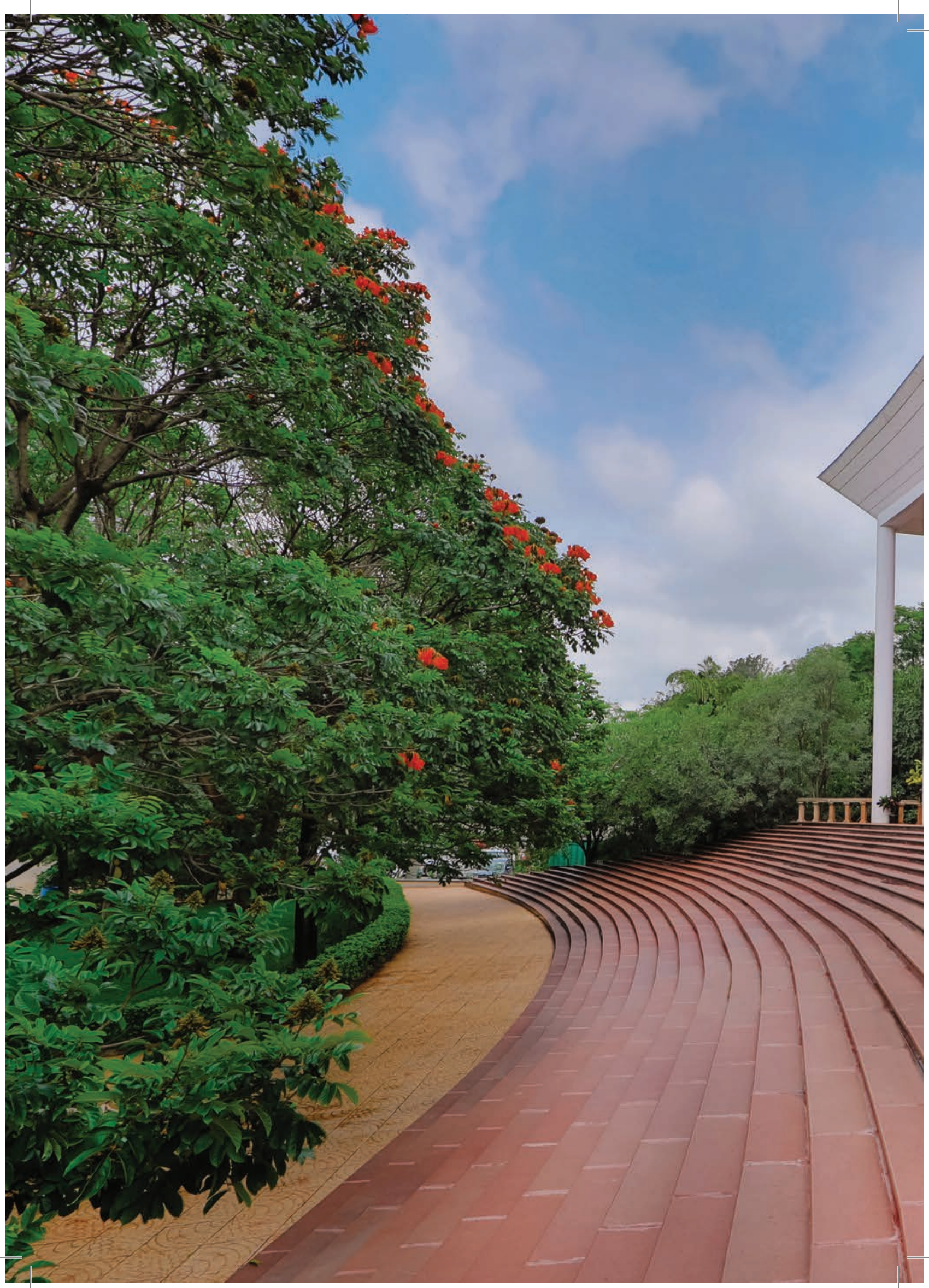
#### Abstract

This article focuses on the present mixed-race Anglo-Indians (a minority community of India) and their ancestrally derived culinary culture. The Anglo-Indians as a race were historically formed at the contact zone of European colonizers and 'native' Indians. The hybrid nature of their culinary culture, vis-à-vis their sociocultural identity, is the prime focus of the research. To this end, I investigate 19 Anglo-Indian family recipe diaries (currently in use) from various regions of India. I read them as

markers of the syncretic cultural character of the community. The hybrid identity of the culture, as reflected in their culinary culture, negotiates cultural differences and affiliations and engages with issues of identity and representations, adapts and appropriates colonial legacies, and subverts any homogeneous notion of 'national food culture'.

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**Author keywords-** Anglo-Indian; culinary consumption; hybridity; identity; transculture





# Scopus

**CONFERENCE PAPERS,  
BOOK CHAPTERS, BOOKS  
AND EDITED BOOKS**

Indexing/Quartile	Percentile	Impact Factor	SDG	
<b>SCOPUS/NA</b>	<b>NA</b>	<b>NA</b>		

## DISTRIBUTED TIME-SENSITIVE SYSTEMS

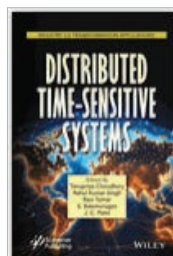
**Patni J.C.**; Choudhury T.; Singh R.K.; Tomar R.; Balamurugan S.;

*Distributed Time-Sensitive Systems* Pages 1 - 359 | 18 July 2025



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### Distributed Time-Sensitive Systems

Editor(s): Tanupriya Choudhury, Rahul Kumar Singh, Ravi Tomar, S. Balamurugan, J. C. Patni

First published: 3 May 2025

Print ISBN: 9781394197729 | Online ISBN: 9781394197798

| DOI: 10.1002/9781394197798

### Abstract

The book provides invaluable insights into cutting-edge advancements across multiple sectors of Society 5.0, where contemporary concepts and interdisciplinary applications empower you to understand and engage with the transformative technologies shaping our future. Distributed Time-Sensitive Systems offers a comprehensive array of pioneering advancements across various sectors within Society 5.0, underpinned by cutting-edge technological innovations. This volume delivers an exhaustive selection of contemporary concepts, practical applications, and groundbreaking implementations that stand to enhance diverse facets of societal life. The chapters encompass detailed insights into fields such as image processing, natural language processing, computer vision, sentiment analysis, and voice and gesture recognition and feature interdisciplinary approaches spanning legal frameworks, medical systems, intelligent urban development,

integrated cyber-physical systems infrastructure, and advanced agricultural practices. The groundbreaking transformations triggered by the Industry 4.0 paradigm have dramatically reshaped the requirements for control and communication systems in the factory systems of the future. This revolution strongly affects industrial smart and distributed measurement systems, pointing to more integrated and intelligent equipment devoted to deriving accurate measurements. This volume explores critical cybersecurity analysis and future research directions for the Internet of Things, addressing security goals and solutions for IoT use cases. The interdisciplinary nature and focus on pioneering advancements in distributed time-sensitive systems across various sectors within Society 5.0 make this thematic volume a unique and valuable contribution to the current research landscape. © 2025 Scrivener Publishing LLC. All rights reserved.

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



## CARBON QUANTUM DOTS FROM NATURAL SOURCES: PROPERTIES, DEVELOPMENT, AND EMERGING APPLICATIONS

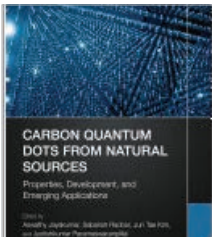
Parameswaranpillai J.; Jayakumar A.; Radoor S.; Kim J.T .

*Carbon Quantum Dots from Natural Sources: Properties, Development, and Emerging Applications* Pages 1 - 4221 January 2025



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CRC Press, 10 Apr 2025 - Technology & Engineering - 434 pages

Carbon quantum dots (CQDs) are a novel class of zero-dimensional carbon nanomaterials. This book introduces the fundamentals of CQDs, natural sources and methods used for their synthesis, and characterization techniques.

- Covers current research and future possibilities
- Details modern fabrication methods and drawbacks

## Abstract

Carbon quantum dots (CQDs) are a novel class of zero-dimensional carbon nanomaterials that are relatively nontoxic and cost-effective and offer desirable properties that make them excellent candidates for various applications. This book introduces the fundamentals of CQDs, natural sources and methods used for their synthesis, and characterization techniques. It addresses applications in biomedical, environmental, electrical, and other areas. · Covers current research and future possibilities · Details modern fabrication methods and drawbacks · Discusses applications in biomedical

use, wastewater treatment, electrical and electronics, dye removal, 3D printing, and metal detection · Provides insight into cytotoxicity and biocompatibility studies on these materials The detailed insight into these nanomaterials in this reference will benefit researchers, scientists, engineers, and advanced students in developing new methods and strategies in this advanced field of materials engineering. © 2025 selection and editorial matter, Aswathy Jayakumar, Sabarish Radoor, Jun Tae Kim and Jyotishkumar Parameswaranpillai; individual chapters, the contributors.

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/NA</b>	<b>NA</b>	<b>NA</b>	



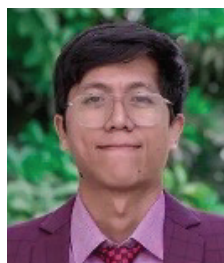
## NAVIGATING INNOVATIONS AND CHALLENGES IN TRAVEL MEDICINE AND DIGITAL HEALTH: NAVIGATING THE WORLD - A GUIDE FOR IMMUNOCOMPROMISED TRAVELERS

**Asha Rani N.R.; Thapa S.; Bal S.**

*Navigating Innovations and Challenges in Travel Medicine and Digital Health* Pages 49 - 68 | 1 April 2025



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**Dr. Sheetal Thapa**  
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**Dr. Sasmita Bal**  
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### Navigating Innovations and Challenges in Travel Medicine and Digital Health: Navigating the World - A Guide for Immunocompromised Travelers

Asha Rani N. R. (Alliance University, India), Sheetal Thapa (Alliance University, India), and Sasmita Bal (Alliance University, India)

### Abstract

This chapter is an attempt at offering a systemic approach to the difficulties of the immunocompromised traveler as they tour different parts of the globe. It stresses preparations that one should undertake before embarking on the journey such as consultative meetings with the doctors, taking vaccinations, risks associated with that specific destination. The chapter also covers issues like medication administration, feeding,

and watering, or adaptation to climate, humidity, temperature, and altitude, among others. It highlights the relevance of technologies including telemedicine, wearable health devices, as well as health tracking applications in promoting safety and independence of the potentially at risk group during travels.

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



## CYBERSECURITY MEASURES FOR PROTECTING MENTAL HEALTH IN THE DIGITAL AGE

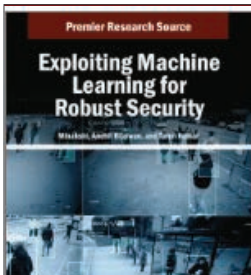
**Reddy H.G.G.;** Dankan Gowda V.; Gaikwad A.S.; Renu; Saini S.

*Exploiting Machine Learning for Robust Security* Pages 233 - 26116 April 2025



**Dr. Govardhana Reddy H. G.**

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### Cybersecurity Measures for Protecting Mental Health in the Digital Age

Dankan Gowda V. (Department of Electronics and Communication Engineering, B.M.S. Institute of Technology and Management, Karnataka, India), Anjali Sandeep Gaikwad (Department of Computer Application, Institute of Management, Bharati Vidyapeeth University, Kolhapur, India), Renu (TMIMT, Teerthanker Mahaveer University, Moradabad, India), H. G. Govardhana Reddy (Alliance School of Applied Mathematics, Alliance University, Bengaluru, India), and Sunil Saini (Department of Computer Science and Engineering, University College of Engineering, Punjabi University Campus, India)  
Source Title: *Exploiting Machine Learning for Robust Security*

### Abstract

As the world advances towards the integration of technology, more emphasis is placed on the relationship between cybersecurity and mental health. In this chapter, the authors discuss the impact of cybersecurity on the preservation of mental health, as well as the processes of safeguarding the related rights upon pointing out the directions of protection against the use of the internet as a weapon, cyber bullying, and harassment. In this chapter, they explore the effects of cybersecurity threats on mental health and the topic of

safe online space. In order to illustrate the best current practices and new technologies protecting users from mental health information leakage, they present the most effective cybersecurity measures. Proof of the successful application of these measures is provided through relevant case studies and examples from practice. In that context, this chapter offers practical advice and directions for organisational policymakers, mental health experts, and tech gurus in the creation and deployment of efficiency cybersecurity structures.

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/NA</b>	<b>NA</b>	<b>NA</b>	



## WOMEN CARE DURING TRAVEL: ENSURING SAFETY AND COMFORT - A COMPREHENSIVE GUIDE TO WOMEN’S CARE DURING TRAVEL

**Asha Rani N.R.**

*Navigating Innovations and Challenges in Travel Medicine and Digital Health* Pages 547 - 574 | April 2025



**Asha Rani N.R**  
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 Alliance School of Applied Engineering



### Women Care During Travel: Ensuring Safety and Comfort - A Comprehensive Guide to Women's Care During Travel

Asha Rani N. R. (Alliance University, India)

Source Title: [Navigating Innovations and Challenges in Travel Medicine and Digital Health](#)

Copyright: © 2025 | Pages: 28

DOI: [10.4018/979-8-3693-8774-0.ch028](https://doi.org/10.4018/979-8-3693-8774-0.ch028)

### Abstract

This chapter explores the evolving dynamics of women’s travel, addressing key challenges such as safety, health, cultural expectations, and accessibility. Despite economic and technological progress enabling women to travel more freely, safety concerns, inadequate health facilities, and systemic biases persist, particularly in low- and middle-income countries. Innovations like safety apps, AI-driven risk tools, and gender-sensitive infrastructure have shown promise, alongside global best practices such as Iceland’s gender equality policies.

Integrated approaches like India’s ‘Accessible India Campaign’ and Thailand’s women-focused initiatives emphasize inclusivity. Empowering women through travel fosters personal growth, equity, and socioeconomic development. A collaborative effort blending global solutions with local practices is essential to create a safer, more inclusive travel ecosystem for women worldwide. © 2025 by IGI Global Scientific Publishing. All rights reserved.

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

13  
CLIMATE ACTION

## AI IN COMPUTER VISION WITH EMERGING TECHNIQUES AND THEIR SCOPE

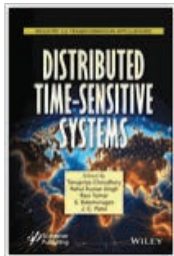
Patni J.C.; Mishra P.K.; Verma S.; Dubey R.

*Distributed Time-Sensitive Systems* Pages 105 - 13218 July 2025



### Dr. Jagdish Chandra Patni

Professor  
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## Distributed Time-Sensitive Systems

Editor(s): Tanupriya Choudhury, Rahul Kumar Singh, Ravi Tomar, S. Balamurugan, J. C. Patni

First published: 3 May 2025

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| DOI: 10.1002/9781394197798

### Abstract

Computer vision is a multidisciplinary discipline that allows computers to interpret and comprehend the visual environment. It is generally called a subfield of artificial intelligence (AI). To provide numerical and figurative information, this field broadly processes, analyzes, and comprehends many sorts of pictures, as well as high-dimensional data from the actual world. Structure identification, which draws out the characteristics of pictures, is at the core of computer vision. The field of computer vision gathers and analyzes sensory data to enable an understanding of three-dimensional environments through 2D mapping.

Recent technical and application advancements are addressed. Investigated and updated are the places where many sorts of approaches originated. The growth and development of knowledge may be advantageous to academic scholars. The applications of identification, visualization, semantic division, and picture restoration are explained in four essential scenarios. Finally, a description of the phases that have evolved over the last ten years is given, focusing on current trends in research for the subsequent work. © 2025 Scrivener Publishing LLC. All rights reserved.

**Author keywords-** Digital image processing; Graphics processing; Pixel restoration; Semantic distribution of image; Visual tracking

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



## BEHAVIORAL AND ENVIRONMENTAL FACTORS CONTRIBUTING TO HEAT-RELATED ILLNESSES AMONG TRAVELERS

Bal S.; Nayak J.; Aich S.

*Navigating Innovations and Challenges in Travel Medicine and Digital Health* Pages 451 - 460 11 April 2025



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### Behavioral and Environmental Factors Contributing to Heat-Related Illnesses Among Travelers

Sasmita Bal (Alliance University, Bangalore, India), Jayashree Nayak (Indira Gandhi Institute of Technology, Sarang, India), and Sabyasachi Aich (Indira Gandhi Institute of Technology, Sarang, India)

#### Abstract

Travelers of tropical or subtropical regions in particular are at higher risk of developing heat-related illnesses such as heat stroke. Heat stroke occurs when the body temperature reaches high levels and can cause damage to the body and nervous system. There are many factors that contribute to the risk. Internal factors include age, previous medical treatment, dehydration, physical fatigue, and the use of certain medications. On the other hand, high ambient temperature, high humidity, prolonged sun exposure, wearing inappropriate

clothing, engaging in strenuous activities, inadequate rest time, lack of cooling mechanisms, and high-pressure relationships are other important factors that make it difficult to survive in high temperatures. When heat stroke occurs, immediate cooling measures should be taken, and then medical attention should be sought to ensure appropriate treatment. The findings highlight the serious effects of dehydration, inappropriate clothing choices, and intense exercise in hot weather.

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**Author keywords-** compositesEDMheat transferlaserlithographyMicrochannelmicromachiningpolymerroughness

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



## NANOFIBER-DRIVEN INNOVATIONS IN BIOMEDICAL ENGINEERING AND ENVIRONMENTAL SUSTAINABILITY

Kumar M.H.; Boopathy G.; Srinivasan V.; Ganesan B.

*Cutting-Edge Advances in Nanofibers and Fibers: Shaping Future Applications* Pages 327 - 380 23 April 2025



### Dr. Mohit Hemanth Kumar

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### Nanofiber-Driven Innovations in Biomedical Engineering and Environmental Sustainability

G. Boopathy (Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, India), V. Srinivasan (Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, India), Mohit Hemanth Kumar (Alliance University,

### Abstract

Polymeric nanofibers are revolutionizing biomedical engineering and environmental sustainability due to their highly unique properties such as a high surface area to volume ratio, an ability to modulate pore size, and mechanical flexibility. Nanofibers mimic extracellular matrix structures to aid tissue engineering, regenerative medicine, and provide targeted drug delivery, such as localized treatments of cancer and infections. Further advances in the diagnostic field, including disease diagnostics biosensors, further demonstrate the

potential of these substrates. Nanofibers are environmentally beneficial by enhancing filtration in air and water, pollutant degradation, and renewable energy systems such as solar cells and batteries. Scalability, cost, and recyclability continue to present challenges, and thus eco-friendly approaches and interdisciplinary cooperation is required. AI and machine learning integration in future promises optimized production and broader applications to serve critical societal challenges.

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Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/NA</b>	<b>NA</b>	<b>NA</b>	



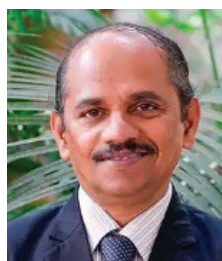
## RECENT ADVANCEMENTS OF ARTIFICIAL INTELLIGENCE IN EDGE COMPUTING

**Shelke C.; Achary R.;** Mekala S.; Ramachandran K.K.; Wagh S.

*Advances in AI for Cloud, Edge, and Mobile Computing Applications* Pages 117 - 1401 January 2025



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Computing

### Recent Advancements of Artificial Intelligence in Edge Computing

By [Chetan Shelke](#), [Rathnakar Achary](#), [Sreenivas Mekala](#), [K. K. Ramachandran](#), [Shaileshkumar Wagh](#)

#### Abstract

The internet of things (IoT) has grown significantly during the past several years. The IoT significantly aided the advancement of artificial intelligence (AI) by supplying sufficient data to train and infer models. The conventional cloud computing model may still have a difficult time autonomously managing the massive volumes of data that IoT generates and satisfying related practical requirements given this background and trend. In response, the academic and industrial communities have given edge computing (EC) a lot of attention. However, as EC research has continued to advance, academics have discovered that traditional (non-AI) methodologies have limitations when it comes to improving EC performance. As EC researchers see how successfully AI is being used in other industries, they start

to concentrate on the subject, particularly from the standpoint intelligent machines, Intelligent automation is a subfield that popularity over the past couple decades. In this essay, we'll first go through the formal definition of EC and the factors that have contributed to its rise as a popular computing model. We list the conventional approaches and draw attention to their shortcomings. In order to explore new research ideas in these two fields and to take use of the beneficial interactions between AI and EC, this article covers the study findings of utilizing AI to optimize EC and applying AI to other disciplines under the EC architecture.

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**Author keywords-** Cloud computing; CNN; Edge computing; RNN

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



## GENDER DIGITAL DIVIDE IN INDIA: A CAPABILITY AND SOCIAL JUSTICE APPROACH ANALYSIS

**Dutta P.; Das A.**

*Handbook of Social Justice in the Global South* Pages 320 - 3321 January 2025



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Department of Economics



**Dr. Arindam Das**  
Professor & Program Director - Ph.D.  
Department of Language & Literature

### 21: Gender digital divide in India

#### A capability and social justice approach analysis

Payel Dutta and Arindam Das

#### Abstract

Information and Communication Technology (ICT) is a boon to the growth of the world economy. However, imbalanced ICT development leads to a digital divide and the distrust of digital consumers, hindering self-realization. The Digital Divide is a gap in ICT access, usage, skill, infrastructure, and content. The same can be said from the angle of social hierarchy, economic position, geographical location, sectors, or gender disparities. In developing countries like India, the digital divide and distrust of the gendered dimension are issues of concern. The same impacts the capabilities of women, further marginalizing them and thus bringing to the fore the challenges of social justice. Gendered technological segregation needs to be narrowed through creative opportunities to engender

holistic socioeconomic growth and justice. With gender-inclusive technology, charting a smooth economic development trajectory for India would be easier, as digital parity positively impacts human dignity and capabilities. In this chapter, we critically discuss the concept of the gender digital divide (GDD) from a Nussbaumian perspective of capability theory and social justice. In the end, we recapitulate briefly the various strategies adopted by the nation-state and private organizations to counter digital social injustice and address the capabilities of marginalized women in the nation.

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**Author keywords-** Capability approach; Economic; GDD; Gender digital divide; ICT; India; Information and communication technology; Nussbaum; Social justice

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



## DIFFERENT REQUIREMENTS IN QUALITY OF SERVICE USING AN ADAPTIVE NETWORK ALGORITHM

**Shelke C.**; Jayaganesh J.; Suresh Kumar K.; Krishna K.H.; Tiwari M.; Vettriselvan R.

*Advances in AI for Cloud, Edge, and Mobile Computing Applications* Pages 323 - 3431 January 2025



**Dr. Chetan J. Shelke**  
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**Different Requirements in Quality of Service Using an Adaptive Network Algorithm**

By [J. Jayaganesh](#), [K. Suresh Kumar](#), [Konda Hari Krishna](#), [Mohit Tiwari](#), [R. Vettriselvan](#), [Chetan Shelke](#)

### Abstract

The availability of video services online has increased lately. Service suppliers nevertheless struggle to deliver high-quality video broadcasting, though, as a result of the programming effectiveness issue and the significant end-to-end latency variations caused by the multiple paths algorithms that are now in use. Networks are anticipated to be able to effectively manage the networking units for achieving quality-of-service (QoS) different requirements to address these two issues that have an impact on the standard of video delivery, which is an issue of concern for broadcast services. For centralized routing calculations and real-time networking to indicate upgrading in digital media uses, this paper suggests an active and adaptive multiple paths routing algorithm (AMRA) beneath

3 limitations (package loss, time latency, and bandwidth) that depend on software described networks (SDN). In comparison to other multiple paths routing concepts, active and AMRA made effective utilization of the most recent broad networking condition data obtained by the Open Flow regulator and actively generated the ideal routes based on the link’s real-time condition data. Furthermore, the suggested technique may substantially decrease the controller’s computing expense while performing extremely fine stream equilibrium. The empirical outcomes reveal that active and AMRA greatly surpass other present scheduling algorithms in terms of improving the QoS by 35%–70%.

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**Author keywords-** Adaptive multiple paths routing algorithm; Broadcasts; Quality of service; Software-described networks; Video services

Indexing/Quartile	Percentile	Impact Factor	SDG	
<b>SCOPUS/NA</b>	<b>NA</b>	<b>NA</b>		

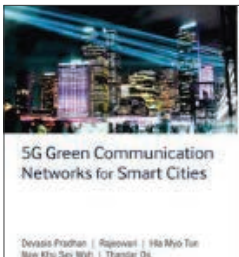
## SECURITY AND PRIVACY OF EHRs SHARING THROUGH BLOCKCHAIN TECHNOLOGY IN SMART CITIES

Rani N.R.A. ; Goje N.S. ; Das D. ; Behera S.K. ; Pradhan D.

5G Green Communication Networks For Smart Cities Pages 215 - 2271 January 2025



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



## Security and Privacy of EHRs Sharing Through Blockchain Technology in Smart Cities

### Abstract

Healthcare information is exceptionally delicate as numerous medical care associations will be extremely hesitant to share health information. In any case, sharing the medical services information has a lot more applications for both the patients just as the examination establishments as well. Additionally, the current Electronic Healthcare Record (EHR) board framework will be put away in the focal data set in the type of plain text. The fast improvement of blockchain innovation advances a protected medical care framework, including clinical records just as persistent related information. This innovation gives

patients broad, unaltered records and gives admittance to EHRs liberated from specialist organizations and treatment sites. The protection of the equivalent from digital attacks alongside protection conservation through verified admittance is one of the huge difficulties for the healthcare area. For this reason, the utilization of blockchain-based networks can prompt a significant decrease in the weaknesses of the medical services frameworks and secure their information.

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**Author keywords-** Attribute-based encryption; Blockchain; Data privacy; Data sharing; Decentralized technology; EHRs; Integrity; Security

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



## ENDOPHYTIC FUNGI: A BIOFACTORIES FOR THE SYNTHESIS OF NANOMATERIALS

Talreja N.; Omar R.A.; Chauhan D.; Ashfaq M.

*Fungal Endophytes, Volume I: Biodiversity and Bioactive Materials* Volume 1, Pages 443 - 4701 January 2025



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Department of Sciences

### Role of Endophytic Fungi in the Biosynthesis of Metal Nanoparticles and Their Potential as Nanomedicines

by Hanadi Sawalha <sup>1,\*</sup> ✉ , Simon E. Moulton <sup>2,3,4</sup> ✉, Andreas Winkel <sup>5,6</sup> ✉ , Meike Stiesch <sup>5,6</sup> ✉ and Bitra Zaferanloo <sup>1,\*</sup> ✉

#### Abstract

Researchers continue to focus on synthesizing novel nanomaterials (NMs) by using environmentally friendly, nontoxic, and facile processes, like biological systems, to enhance the utilization of NMs. Preferential adoption of biological systems for NMs synthesis surpasses traditional chemical methods, which can pose environmental risks. Endophytes are organisms in micron size that sustain inside plant tissues, displaying a non-harmful relationship with the plants. Endophytic microorganisms (EMs) encompass bacteria, archaea, yeast, fungi, and viruses, and they can produce a diverse array of secondary metabolites, rendering them well-

suited agents for the production of NPs. Recently, a novel development in research at the intersection of biology and nanotechnology has emerged through an endophyte-mediated synthesis of NPs. The green or endophytic driven NPs synthesis is one of the most ecological and eco-friendly methods regarded as potential biofactories. These fungi help synthesize NPs and improve stability, controlled size, and biocompatibility, significantly affecting the NPs' efficacy at end applications.

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**Author keywords-** Antibacterial; Anticancer; Endophytic fungi; Green chemistry; Nanomaterials

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/Q2</b>	<b>53<sup>rd</sup></b>	<b>0.8</b>	



## FROM TELEGRAPH TO 5G NETWORK: A TRADE PERSPECTIVE OF INFORMATION AND COMMUNICATION TECHNOLOGY GOODS IN DEVELOPED VIS-A-VIS DEVELOPING COUNTRIES

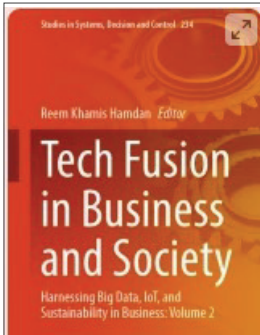
**Kishore V.S.**; Deepa Raj O.K .

*Studies in Systems, Decision and Control* Volume 234, Pages 599 – 604 2025



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Professor & Associate Dean –  
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Alliance School of Law



## Tech Fusion in Business and Society

Harnessing Big Data, IoT, and Sustainability in Business: Volume 2

Book | © 2025

### Abstract

Twenty First century is increasingly a digital world. In developed countries, international trade flow of Information and Communication Technology Goods increasingly contribute towards the rapid pace of technological advancement and digital transformation. However, in developing countries, trade of ICT goods is highly dependent on imports from developed countries. Besides, there exist a digital divide between the developed and developing countries. In order to ensure, digital inclusion and to create a robust digital economy in developing countries there is a need to understand the key challenges involved in the export and import of ICT Goods in developed countries vis-à-vis developing countries. The export and import of ICT goods play a role significant in global economic development. Undoubtedly, ICT goods namely computers,

telecommunications equipment and consumer electronics contribute widely towards technological enhancement, health sector, educational infrastructure, research and development. The purpose of this research is to study and understand the export and import of ICT goods in developing countries and how far trade of ICT goods ensures more ICT devices flow to developing countries and attain a more digital inclusive and a empowered digital citizens in developing countries. The study also aims to analyse various ICT disputes of WTO Dispute Settlement Body to understand the complexities of developing country in global trade regulations in the export and import of ICT Goods. © The Author(s), under exclusive license to Springer Nature Switzerland AG 2025.

**Author keywords-** Developing countries; Digital inclusion; Export; Import; Information and communication technology goods

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



## PORPHYRIN-FUNCTIONALIZED HYBRID MATERIALS FOR BIOSENSING APPLICATIONS

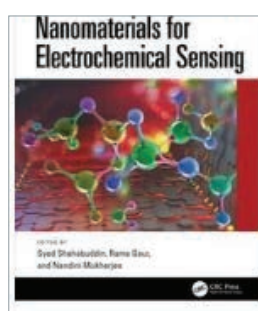
**Bahadur V.**; Khatri V.; Yadav P.; Singh M.P.; Singh A.K.; Rajput S.S.; Parshad B.

*Nanomaterials for Electrochemical Sensing* Pages 249 - 2651 January 2025



**Dr. Vijay Bahadur**

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### Porphyrin-Functionalized Hybrid Materials for Biosensing Applications

By Vinod Khatri, Preeti Yadav, Vijay Bahadur, Manvendra Pratap Singh, Avinash Kumar Singh, Shatruhan Singh Rajput, Badri Parshad

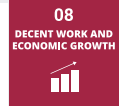
#### Abstract

A variety of porphyrin-based materials have been explored for biosensing applications owing to their advanced photophysical and electrochemical properties. Depending upon the chemistry utilized, porphyrinoid composites can be prepared by functionalizing porphyrin moiety on metallic nanoparticles, metal-organic frameworks, carbon-based materials, organic polymers, and hydrogels. These porphyrin hybrid systems have been found to display higher accuracy and specificity and can sense a range of biomolecules including dopamine, carbohydrates, amino acids, nucleic acid, and proteins. While

incorporating properties of both components, the hybrid material can exhibit significantly improved or even entirely new properties while retaining the characteristics of individual incorporating components. The present chapter outlines the impact of porphyrin conjugates on their physiochemical properties and their specificity in a range of biosensing applications.

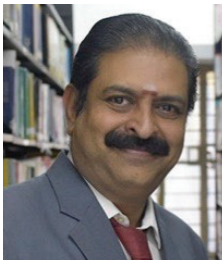
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Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/Q3</b>	<b>30<sup>th</sup></b>	<b>NA</b>	



## INDIA-JORDAN TRADE RELATIONS—ANALYZING CONSISTENCY AND CHANGE IN INDIA'S MIDDLE EAST POLICY SINCE 2014

Aravamudhan V.; Aljazi R.; Alghizzawi M.; Sengodan A.; Prasanna Mohan Raj M.; AlWadi B.M.; Mohanasundaram K.  
*Studies in Big Data* Volume 164, Pages 237 – 248 2025



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 Alliance Ascent College



### Big Data in Finance: Transforming the Financial Landscape

Volume 1


Book | © 2025

### Abstract

A lot of witnesses have focused on retuning of India's stance under PM Narendra Modi for the Middle East. These accounts have mainly highlighted public overtures of PM Modi for Israel, including the unexpected visit in 2017, as official signs of break with typical pro-Palestine and pro-Arab approach of India. Others have interpreted successive visits of PM Modi to Saudi Arabia, UAE, Qatar, Jordan, Iran, and Oman as signs of new outreach to all common actors. Has diplomatic balance showed significant change in foreign policy among regional stakeholders? Can shifting Middle-East policy of India be

explained by a huge number of smooth regional and global opportunities and challenges? Can factors like religious and ideological policies at domestic and national levels help account for absence or changes in Middle-East policy of India? Building on the context of foreign policy, this study is based on theoretical understanding and expectation from India's role in redefining regional policy to address traditional knowledge of engagement with the Middle East as a symbol of significant change in foreign policy. © The Author(s), under exclusive license to Springer Nature Switzerland AG 2025.

**Author keywords-** India; Jordan; Middle East; Middle East policy; Saudi Arabia; Trade relations

Indexing/Quartile	Percentile	Impact Factor	SDG	02 ZERO HUNGER 
<b>SCOPUS/NA</b>	<b>NA</b>	<b>NA</b>		

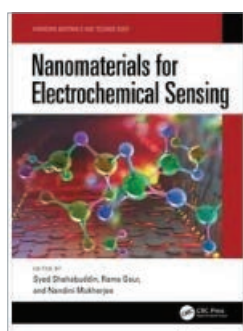
## MYCOTOXINS AS FOOD CONTAMINANTS AND THEIR DETECTION METHODS

Singh A.K.; Singh M.P.; Parmanand; **Bahadur V.**; Rajput S.S.

*Nanomaterials for Electrochemical Sensing* Pages 173 - 1921 January 2025



**Dr. Vijay Bahadur**  
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Alliance School of Sciences



Book

### Nanomaterials for Electrochemical Sensing

Edited By **Syed Shahabuddin, Rama Gaur, Nandini Mukherjee**


Edition

1st Edition

### Abstract

Mycotoxins are secondary metabolites produced by several fungi that, when taken as contaminants in food items, cause harmful pathological alterations in both animals and humans. Mycotoxicosis is the term used to refer to diseases brought on by mycotoxins. Based on their structure and lethal effects, these deadly disease-producing toxins have been divided into distinct groups. Four distinct mycotoxins including aflatoxin, fumonisin,

ochratoxin, and deoxynivalenol (DON) have been discussed. To detect these mycotoxins, detection tools including conventional diagnostic methods and biosensors are being discussed. We have also discussed the development of biosensors including electrochemical biosensors. © 2025 selection and editorial matter, Syed Shahabuddin, Rama Gaur, and Nandini Mukherjee; individual chapters, the contributors.

Indexing/Quartile	Percentile	Impact Factor	SDG	
<b>SCOPUS/NA</b>	<b>NA</b>	<b>NA</b>		

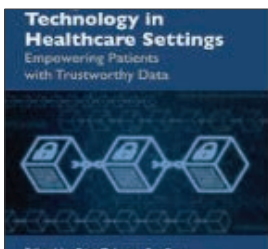
**PATIENT EMPOWERMENT THROUGH SECURE DATA MANAGEMENT**

Reddy A.; **Ghantasala G.S.P.**; Kurra M.; Ayyappa R.M.K.

*Using Blockchain Technology in Healthcare Settings: Empowering Patients with Trustworthy Data* Pages 153 - 174 | January 2025



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 Professor  
 Alliance School of Advanced  
 Computing



# Patient Empowerment Through Secure Data Management

By Anuradha Reddy, G S Pradeep Ghantasala, Mamatha

**Abstract**

The protected data management enables continuous interoperability among incongruent healthcare schemes, promoting complete care coordination and plummeting the likelihood of medical mistakes. The merging of enduring authorization and protected data management characterizes a transformative force in fitness attention. By permitting patients through admittance to their health info through strong information management practices, the healthcare business can advance towards a more patient-centric archetypal, eventually refining health results and nurturing concerted partnerships between patients and healthcare workers. This chapter explores the intersection of these critical topics through the lens of

blockchain technology. Empowering patients delves into the potential of blockchain to revolutionize healthcare data management, offering a comprehensive examination of its applications, benefits, challenges, and future directions. This chapter sets the stage by elucidating the significance of patient empowerment in health care and the pressing need for secure data management. It highlights the limitations of traditional data storage systems and the transformative potential of blockchain technology in addressing these shortcomings. © 2025 selection and editorial matter, Ben Othman Soufiene, Saurav Mallik and Abdulatif Alabdulatif.

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



## EMERGING ENVIRONMENTAL CONTAMINANTS: SOURCES, CONSEQUENCES AND FUTURE CHALLENGES

Talreja N.; Hegde C.; Kumar E.M.; Chavali M.

*Green Technologies for Industrial Contaminants Pages 119 - 1491 January 2025*



**Dr. Neetu Talreja**

Associate Professor  
Department of Sciences



### Abstract

Emerging environmental contaminants (ECs) are present in many different forms through air, water and land and their detection is becoming a humongous task for several researchers. The chemistry of natural water has been a topic of interest for centuries, which many researchers have discovered in their long period of investigation and have forgotten as well. The emerging contaminants are the natural or synthetic molecules or compounds which enter into the environment that are not monitored generally but harm the environment and can influence the ecology and health of the public. The various contaminants include antibiotics, hormones, pesticides and various pharmaceutical products, and due to this the drinking water is also getting contaminated as there are traces of the

molecules left over during the treatment of these contaminated waters. These ECs have the potential to contaminate by entering into the environment depending on their release into the environment and degradation of the compounds and their pattern of use. In the current scenario, there are various detection techniques available but due to continuous development in the detection and analysis of trace pollutants, a technique needs to be identified which can detect even the minute-to-minute quantity of the element and should be able to detect the biosensors which are being used to detect these micropollutants. In this chapter, we try to identify the various techniques available to detect the various micropollutants across a wide variety of sources. © 2025 Scrivener Publishing LLC.

**Author keywords-** biodegradation; Contaminants; sensors; synthetic molecules

Indexing/Quartile	Percentile	Impact Factor	SDG
SCOPUS/Q4	10 <sup>th</sup>	NA	



## BORON COMBUSTION ENHANCEMENT USING TITANIUM AND ZIRCONIUM NANOPARTICLES FOR FUEL IN DUCTED ROCKET APPLICATIONS

Hashim S.A.; Mishra D.; Batabyal P.; Afra Arah A.; Parashotambhai A.P .

AIP Conference Proceedings Volume 3259, Issue 123 April 2025 Article number 0900012024 Global Conference on Aeronautical, Aerospace and Mechanical Sciences, GCAAMS 2024 Bangalore 3 May 2024 through 4 May 2024 Code 208393



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### Boron combustion enhancement using titanium and zirconium nanoparticles for fuel in ducted rocket applications

Debadatta Mishra; Pritam Batabyal; A. Afra Arah; Anghan Prit Parashotambhai; Syed Alay Hashim 

#### Abstract

Boron's exceptional energy density makes it a prime choice as a component of fuel and propellant in ramjet variants of ramjet like solid fuel ramjets (SFRJ) and solid fuel ducted rockets (SFDR). Experimental observations reveal that boron (B) combustion is hindered by a boron oxide (B<sub>2</sub>O<sub>3</sub>) shell on active boron particles. Researchers have proposed various strategies to enhance boron particle combustion, with the primary approach involving the addition of metal additives to potentially improve combustion efficiency. A ducted rocket (DR) is considered appropriate for the current study due to its provision of two combustion chambers, facilitating the two-stage combustion of boron particles. In the current study, paraffin wax with boron particles serves as the baseline fuel, while titanium (Ti) and zirconium (Zr) particles are burned alongside boron to assess their effects on boron particle combustion. The elevated combustion heats of Ti and Zr are expected to

hasten the removal of B<sub>2</sub>O<sub>3</sub>. The addition of Ti and Zr also reduces the ignition time delay. The current study utilizes a hybrid fuel ducted rocket (HFDR) that relies on gaseous oxygen as its oxidizer. Three boron-based solid fuel grains are experimentally tested for their ducted rocket motor performance in a lab facility, and their combustion performance is assessed. These samples comprised paraffin wax containing B particles, paraffin wax incorporating B and Ti particles, and paraffin wax incorporating B and Zr particles. Thermal gravimetric analysis (TGA) was employed to determine the combustion efficiency by studying the active boron content in the condensed combustion product (CCP). It is expected that the addition of metal particles will elevate combustion efficiency as it will noticeably decrease the active boron content in the CCP compared with the fuel containing only boron. © 2025 American Institute of Physics Inc.. All rights reserved.

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/NA</b>	<b>NA</b>	<b>NA</b>	



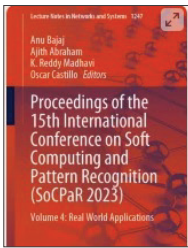
## COST OPTIMIZATION APPROACHES FOR TASK AND WORKFLOW SCHEDULING IN THE CLOUD ENVIRONMENT

Senthamarai Kannan S.; **Pradeep Ghantasala G.S.**; Mahendar A.; Anantha Sivaprakasam S.; Santhosh Kumar P.N.; Kallam S.

*Lecture Notes in Networks and Systems Volume 1247 LNNS, Pages 344 - 350* 2025 15th International Conference on Soft Computing and Pattern Recognition, SoCPaR 2023 and 14th World Congress on Nature and Biologically Inspired Computing, NaBIC 2023 Olten 13 December 2023 through 15 December 2023 Code 331019



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### Proceedings of the 15th International Conference on Soft Computing and Pattern Recognition (SoCPaR 2023)

Volume 4: Real World Applications

Conference proceedings | © 2025

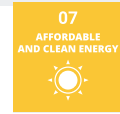
### Abstract

The use of information technology by companies and individuals in cloud computing revolutionizes. Cloud computing offers virtualized tools over the Internet for dynamic services. This ensures that end-users with resources-virtualization maintained and controlled can create, deploy and manage applications “on the cloud.” The preparation of tasks in cloud computing systems is one of the most challenging issues in fulfilling user-defined service quality while minimizing the cost of executing tasks. Several cost optimization approaches have been proposed to improve the economic aspect of task

scheduling in cloud computing. A full analysis of approaches to promoting cost optimization in connection with task planning in cloud computing has not yet been published in the literature. This paper is intended to examine the problems of cost optimization in task scheduling through a detailed analysis of current task scheduling methods in cloud computing and to identify aspects and parameters of cost optimization. © The Author(s), under exclusive license to Springer Nature Switzerland AG 2025.

**Author keywords-** Cloud Computing; Cost optimization; Cost-benefit analysis; Scheduling; Tasks

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



## ENHANCING ECONOMIC POWER DELIVERY: A SQUIRREL SEARCH ALGORITHM APPROACH ADDRESSING REALISTIC POWER SYSTEM CONSTRAINTS

**Sit K.**; Mukharjee D.; Hazra A.; Maity T.

2025 IEEE 1<sup>st</sup> International Conference on Smart and Sustainable Developments in Electrical Engineering, SSDEE 2025  
2025 1st IEEE International Conference on Smart and Sustainable Developments in Electrical Engineering, SSDEE 2025  
Dhanbad 28 February 2025 through 2 March 2025 Code 208482



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### Enhancing Economic Power Delivery: A Squirrel Search Algorithm Approach Addressing Realistic Power System Constraints

Publisher: IEEE

[Cite This](#)

[PDF](#)

[Debabrata Mukharjee](#); [Kaushik Sit](#) ; [Abhik Hazra](#) ; [Tanmoy Maity](#) [All Authors](#)

### Abstract

On complex economic dispatch (ED) issues with valve position impact, restricted practicable region, ramp borders, and manifold fuels with valve position impact, the effectiveness of the Squirrel Search Algorithm (SQSA) approach has been demonstrated. The simulation results obtained with the

suggested method are comparable to those obtained with other acknowledged evolutionary methods. Based on the comparison, it appears that the advocated SQSA strategy may yield a more satisfactory response. © 2025 IEEE.

**Author keywords-** Economic Dispatch; Manifold Fuels; Ramp Borders; Restricted Practicable Region; Valve Position Impact

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/NA</b>	<b>NA</b>	<b>NA</b>	



## EARLY DIABETES PREDICTION THROUGH MULTIPLE MACHINE LEARNING MODELS: A COMPARATIVE ANALYSIS

**Sungheetha A.,; Rajesh Sharma R.; Pradeep Ghantasala G.S.;** Sharma A.; Devi L.B.; Sarangi P.K.;

*Proceedings of 2025 AI-Driven Smart Healthcare for Society 5.0, AdSoc5.0 2025 Pages 79 - 84* 2025 AI-Driven Smart Healthcare for Society 5.0, AdSoc5.0 2025 Kolkata 14 February 2025 through 15 February 2025 Code 208344



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### Early Diabetes Prediction Through Multiple Machine Learning Models: A Comparative Analysis

Publisher: [IEEE](#) [Cite This](#) [PDF](#)

Anuja Sharma : G S Pradeep Ghantasala : Laishram Biliiluxmi Devi : Pradeep Kumar Sarangi : Raiesh Sharma R : Akev Sungheetha **All Authors**

#### Abstract

People of every stage of life are affected by diabetes, which has emerged as a significant health issue in modern society. A total of 463 million individuals between the ages of 20 and 79 were estimated to have diabetes in 2019, and projections suggest that figure might rise to 700 million by 2045. Healthcare systems face serious difficulties as a result of this spike, which raises the need for medical treatment, increases disability rates, and causes more early deaths. Diabetes is

linked to a number of health problems, including cardiovascular disorders, renal problems, and eyesight loss. Early identification and treatment, however, can lessen or delay these issues. Four ML models are used in this work to categorize and forecast diabetes: DT, XGBoost, LR, and RF. The results indicate that the XGBoost model outperforms the others, achieving an accuracy rate of 96.04%. © 2025 IEEE.

**Author keywords-** Decision Tree; Diabetes Mellitus; LR; Machine Learning; RF; XGBoost

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



## IOT-ENABLED SMART IRRIGATION SYSTEM WITH ABILSTM FOR OPTIMIZED WATER MANAGEMENT AND CROP YIELDS

**Prabagar S.**; Chaturvedi A.; Rao P.; Venkata Maruti Prasad S.; Malini T.; Bharathi K.

3<sup>rd</sup> International Conference on Integrated Circuits and Communication Systems, ICICACS 2025/2025 3<sup>rd</sup> International Conference on Integrated Circuits and Communication Systems, ICICACS 2025 Hybrid, Raichur 21 February 2025 through 22 February 2025 Code 208480



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### IoT-Enabled Smart Irrigation System with ABiLSTM for Optimized Water Management and Crop Yields

Publisher: IEEE

[Cite This](#)



[Abhay Chaturvedi](#); [Praveena Rao](#); [Venkata Maruti Prasad S](#); [Malini T](#); [S. Prabagar](#); [K. Bharathi](#) [All Authors](#)

### Abstract

An efficient management of water resources in agriculture is now crucial in light of the growing global population and increased demand for water. Innovative solutions are needed to improve water efficiency since conventional irrigation methods are not sustainable anymore. Through the use of precision agriculture and the Internet of Things (IoT), smart irrigation has revolutionised water management, leading to increased crop yields. In order to improve the efficiency of decision-making, this research presents an Internet of Things (IoT) smart irrigation system that uses SA-BiLSTM (Self-Attention Bidirectional Long Short-Term Memory). Using Min-Max and Z-score normalisation approaches for feature scaling, the methodology includes

data preparation, feature selection, and model training. Methods based on ranking, such as the Chi-Square Test, Pearson Correlation Coefficient (PCC), and Mutual Information (MI), were used to prioritise feature selection. Classification and prediction testing showed that the proposed SA-BiLSTM model outperformed state-of-the-art models like HGAT and Linear SVM, with an astounding 95.63% accuracy. Improved resource allocation and irrigation effectiveness, leading to increased agricultural output, are highlighted by the results, which highlight the effectiveness of advanced machine learning approaches in precision agriculture. © 2025 IEEE.

**Author keywords-** bidirectional long short-term memory (LSTM); self-attention mechanism; smart irrigation system

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/NA</b>	<b>NA</b>	<b>NA</b>	



## ENHANCING BUILDING SAFETY THROUGH MACHINE LEARNING-BASED SMOKE DETECTION

**Mohamed S.S.; Pragya; Mir M.H.;** Judeson Antony Kovilpillai J.; Golda Brunet R.; Mir T.A.  
 2025 5th International Conference on Advances in Electrical, Computing, Communication and Sustainable Technologies, ICAECT 2025 2025 5th IEEE International Conference on Advances in Electrical, Computing, Communication and Sustainable Technologies, ICAECT 2025 Bhilai 9 January 2025 through 10 January 2025 Code 208361



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### Enhancing Building Safety Through Machine Learning-Based Smoke Detection

Publisher: **IEEE** [Cite This](#) [PDF](#)

[Sulaiman Syed Mohamed](#) ; [Judeson Antony Kovilpillai J](#) ; [Pragya](#) ; [Mahmood Hussain Mir](#) ; [Golda Brunet R](#) ; [Tawseef Ahmad Mir](#) **All Authors**

#### Abstract

Smoke detection in surveillance systems plays a crucial role in ensuring the safety and security of various environments, including buildings, forests, and industrial sites. In this paper, a comprehensive analysis of machine learning algorithms applied to smoke detection is presented. The proposed technique is validated using the Smoke Detection Dataset from Kaggle. The dataset comprises a diverse collection of images captured in different scenarios, including both smoke and non-smoke instances. The performance of various machine learning classifiers was evaluated. This included ensemble methods

Random Forest (RF), Gradient Boosting (GB), AdaBoost (AB), linear models Logistic Regression (LR), kernel methods Support Vector Machine (SVM), decision-based methods Decision Tree (DT), and nearest neighbor methods K-Nearest Neighbors (KNN). Their precision, recall, AUC-ROC score, and Intersection over Union (IoU) are measured to assess their effectiveness in smoke detection. The results highlight that classifiers such as RF, DT, KNN, GB and AdaBoost achieve outstanding performance, with perfect scores in multiple metrics. © 2025 IEEE.

**Author keywords-** Building Safety; Classification; Machine Learning; Smoke Detection

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



## IOT DEVICE FOR FOOD STORAGE

**Mandal L.;** Vardhan G.R.V.; Bharani G.S.; Ahmed J.; Kavin K.; Reddy N.S.

2025 8th International Conference on Electronics, Materials Engineering and Nano-Technology, IEMENTech 20252025 8th International Conference on Electronics, Materials Engineering and Nano-Technology, IEMENTech 2025 Kolkata31 January 2025 through 2 February 2025 Code 208316



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### IoT Device for Food Storage

Publisher: **IEEE**

[Cite This](#)

[PDF](#)

[Lopa Mandal](#) ; [Guttapalem Reddy Vishnu Vardhan](#) ; [Bharani G S](#) ; [Jawad Ahmed](#) ; [Kavin K](#) ; [Nandi Sasidhar Reddy](#) **All Authors**

### Abstract

The integration of IoT technology provides realtime, data-driven monitoring that reduces waste and maintains the quality of the food, changing the way food is preserved and managed. This research focuses on the development and implementation of an Arduino-based IoT device for monitoring freshness, temperature, and humidity in storage food environments. Equipped with an MQ-4 methane sensor and DHT11 sensor, the system detects spoilage indicators and environmental

conditions and opens an exhaust fan if the moisture has been in excess. The BLYNK IoT app provides instant information to the user about storage conditions, thus ensuring efficient and proactive food management. This product finds answers to some of the main food-related storage challenges by offering scalable and effective solutions for enhanced freshness and reduced spoilage. © 2025 IEEE.

**Author keywords-** Arduino; automated systems; BLYNK IoT app; DHT11; environmental monitoring; food freshness; food spoilage; food storage; food waste reduction; humidity sensor; intelligent food management; IoT; IoT sensors; methane sensor; MQ-4; realtime monitoring; smart storage; temperature monitoring

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/NA</b>	<b>NA</b>	<b>NA</b>	



## ADVANCES IN SMART FOOD PACKAGING FOR A SUSTAINABLE FUTURE

Sundaresan J.; **Gupta A**; Suadamara R.

*IOP Conference Series: Earth and Environmental Science Open Access Volume 1488, Issue 12025 Article number 0121178th International Conference on Eco Engineering Development, ICEED 2024 Semarang 6 November 2024 through 7 November 2024 Code 208567*



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### Advances in Smart Food Packaging for a Sustainable Future

Jithin Sundaresan, Abhay Gupta and Rein Suadamara

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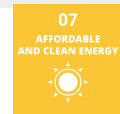
#### Abstract

Smart food packaging technologies are driving sustainable transformations in the food processing and packaging industries by enhancing food safety, improved supply chain efficiency and traceability, increased shelf life, and reducing food wastage. This review aims to highlight recent advances in smart food packaging, including active, intelligent, and biodegradable packaging technologies, its role in enhancing sustainability, the challenges and barriers to its adoption, and future research opportunities in the field. This work also addresses how these innovations contribute to the United Nations’ Sustainable Development Goals (SDGs), particularly SDGs 2, 3, 12, 13, 14, and 15. This work identifies and brings out the key smart food packaging technologies, their advantages and disadvantages, most viable applications, and

suitable geographical regions. For instance, time-temperature indicators (TTIs) and gas sensors are particularly effective for packaging perishable goods, especially in tropical climates. The impact of smart food packaging is further illustrated through real-world case studies, such as RipeSense® and FreshChain. The work identifies the major challenges in smart food packaging technology adoption as technological limitations, high costs, current food safety regulations, and hesitance in customer acceptance. The work also identifies future research avenues, including integration of artificial intelligence (AI), sustainable innovations, and cross-industry collaborations, in this domain.

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



## WIRELESS POWER TRANSMISSION USING ADDITIVELY MANUFACTURED FERRITE PAD

**Itapu S.**; Bhnadari S.; Khanal S.; Akter T.; Li F.X.; Yelamanchi B.; Borra V.

2025 IEEE 1st International Conference on Smart and Sustainable Developments in Electrical Engineering, SSDEE

20252025 1st IEEE International Conference on Smart and Sustainable Developments in Electrical Engineering, SSDEE

2025 Dhanbad 28 February 2025 through 2 March 2025 Code 208482



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## Wireless Power Transmission Using Additively Manufactured Ferrite Pad

Publisher: IEEE

[Cite This](#)

[PDF](#)

[Shreejan Bhnadari](#) ; [Samip Khanal](#) ; [Taslina Akter](#) ; [Frank X Li](#) ; [Bharat Yelamanchi](#) ; [Srikanth Itapu](#) **All Authors**

### Abstract

Wireless power transfer (WPT) is a promising technology for various purposes, but efficiency remains a key challenge. This research investigates using additively manufactured ferrite pads to enhance wireless power transmission efficiency. By utilizing manganese-zinc ferrite cores with precise 3D-printed geometries, the study aims to improve magnetic flux coupling and reduce energy losses. Using ANSYS Maxwell simulations and experimental setups with AWG 40 Litz wire coils, the research explored how ferrite materials impact power transfer

performance. The findings demonstrate the significant improvements: simulations achieved a transfer efficiency of 89% while the experimental data showed output results increasing from 26.27 mV to 40.46 mV when using a ferrite pad. The study addresses critical WPT challenges such as coil misalignment, distance variations, and power density, offering insights into developing more efficient wireless charging solutions and other applications.

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**Author keywords-** 3D printing; AC; charging; EVs; Wireless

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/NA</b>	<b>NA</b>	<b>NA</b>	

**07**  
AFFORDABLE AND CLEAN ENERGY

**09**  
INDUSTRY, INNOVATION AND INFRASTRUCTURE

## SMART PLAYGROUND FOR ELECTRICITY GENERATION USING SWING

**Mandal L.; Duddukuri S.;** Devang P.; Fathima H.; Ahmed S.F.;

2025 8<sup>th</sup> International Conference on Electronics, Materials Engineering and Nano-Technology, IEMENTech 2025/2025

8<sup>th</sup> International Conference on Electronics, Materials Engineering and Nano-Technology, IEMEN Tech 2025 Kolkata/31

January 2025 through 2 February 2025 Code 208316



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### Smart Playground for Electricity Generation Using Swing

**Publisher: IEEE**

[Cite This](#)

[PDF](#)

[Lopa Mandal](#) ; [Prathiksha Devang](#) ; [Hafiza Fathima](#) ; [Syed Faraz Ahmed](#) ; [Sridhar Duddukuri](#) **All Authors**

### Abstract

The world's energy demand is rapidly increasing due to rise in population. Energy generation is mainly dependent on fossil fuels, nuclear energy and renewable energy resources. Therefore, there is a need for a cleaner method to generate electricity which can act as a substitute for the existing methods. This paper proposes an innovative method of generating electricity using play equipment like swings. The motion of the

swing has been used in the present work to move the shaft back and forth which will drive the sprockets and transfer the momentum to the spur gear arrangement. This runs the dynamo and generates electricity, and it can then be stored in batteries or kinetic energy storing equipment and then used later. The proposed method minimizes environmental impact, reduces energy consumption and promotes sustainability. © 2025 IEEE.

**Author keywords-** Electricity generation; green energy; smart playground; sustainability

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

## A FRAMEWORK FOR DEVELOPMENT OF A VIRTUAL REALITY ENVIRONMENT FOR BUILDING EMPATHY IN INDIAN NURSING PROFESSIONALS

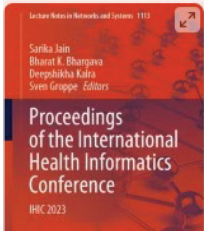
**Chowdhury A.**; Mohan M.; Mohan L.; Sandhya; Sharma R.; Agarwal A.; Kumar N.

*Lecture Notes in Networks and Systems Volume 1113, Pages 477 - 491 2025 International Health Informatics Conference, IHIC 2023 Delhi 16 October 2023 through 18 October 2023 Code 328399*



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## Proceedings of the International Health Informatics Conference

IHIC 2023

Conference proceedings | © 2025

### Abstract

Empathy or the ability to interpret and communicate another individual's emotions and condition could be considered the cornerstone of the healthcare professionals' relationship with patients. It is important for healthcare professionals to practice empathy while connecting with patients to ensure their well-being and motivation. Nurses especially need to interact with patients and their families more frequently, and therefore need to constantly demonstrate empathetic behavior and compassion. While the Indian Nursing curriculum includes training in communication skills, there is a need to practice these behaviors in real contexts and be able to observe measurable improvements. There are also several factors such as upbringing, the education system, shortage of manpower and resources, and a skewed nurse to patient ratio which lead to higher stress factors and lack of empathy in Indian Nurses. There is a need for training and mentorship for nurses and an environment that helps them practice empathetic behavior,

without impacting their daily work or the wellbeing of patients. If this training is available online or technology enabled, it can also free up time for senior nurses who may otherwise be providing mentorship to younger nurses. Virtual Reality (VR) provides the opportunity of creating an environment where nurses can experience a real hospital setting, with realistic scenarios and interactions with patients built in to practice empathetic behavior. This study, based on a review of existing literature and conversations with nurses, explores the role of a nurse and identifies areas where empathetic behavior can be practiced. It also researches existing segments where VR has been successfully implemented in the healthcare context. It arrives at a framework for creating VR-based training for Indian Nurses on empathy. This framework can also be extended to building other VR-based soft skill training for healthcare professionals. © The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2025.

**Author keywords-** Empathy; Empathy Scale First Section; Healthcare systems; Nursing professional; Soft skills; Virtual reality

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



## AN EFFICIENT RESOURCE ALLOCATION TECHNIQUE FOR EFFICIENT VIRTUAL MACHINE PLACEMENT USING LOCAL NEIGHBOR SEARCH AND STOCHASTIC RANDOM PROCESS

Jotheeswaran J.; Khan F.; Kalota F .

IEEE Green Technologies Conference Pages 6 - 10 2025 2025 IEEE Green Technologies Conference, GreenTech 2025 Wichita 26 March 2025 through 28 March 2025 Code 208622



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### An Efficient Resource Allocation Technique for Efficient Virtual Machine Placement Using Local Neighbor Search and Stochastic Random Process

Publisher: [IEEE](#) [Cite This](#) [PDF](#)

#### Abstract

Cloud computing environments efficiently utilize resources by managing diverse cloud users through virtualization techniques. Virtualization enhances resource utilization in Physical Machines (PMs). This paper introduces an efficient virtual machine placement algorithm based on an Improved Genetic Algorithm, which minimizes the Average Resource Idle Time of active PMs, thereby improving overall resource utilization in cloud data centers. Genetic Algorithms are effective optimization methods for achieving high accuracy with fewer iterations. However, they often encounter local optimum problems and quick convergence. The proposed algorithm addresses these issues and is implemented using the CloudSim Plus simulator in a standard cloud environment. Results indicate the algorithm reduces resource waiting time in PMs by approximately 52% compared to other algorithms. Additionally, it minimizes the Average Waiting Time and Average Turnaround Time for Virtual Machine placement. Performance analysis confirms its effectiveness, regardless of the number of Virtual Machine requests or available Physical Machines.

© 2025 IEEE.

**Author keywords-** Cloud Data Center; Genetic Algorithm; Linear Regression; Local Nearest Neighbor Searching; Random Forest; Stochastic Random Process; Virtual Machine Placement

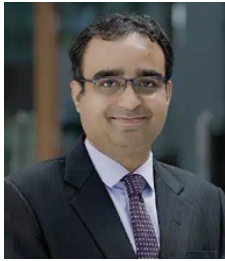
Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/Q3</b>	<b>38<sup>th</sup></b>	<b>NA</b>	



## TRANSFORMATIVE INFLUENCE: AI'S APPLICATION IN IMPROVING RISK PREVENTION AND MANAGEMENT IN BANKING INSTITUTIONS

**Shukla A.**; Kashni T.; Dadwal N.; Dadhich M.

*Communications in Computer and Information Science Volume 2425 CCIS, Pages 262 - 279* 2025 3rd International Conference on Advancements in Smart Computing and Information Security, ASCIS 2024 Rajkot 16 October 2024 through 18 October 2024 Code 330179



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### Artificial Intelligence Based Smart and Secured Applications

Third International Conference, ASCIS 2024, Rajkot, India, October 16–18, 2024, Revised Selected Papers, Part II

Conference proceedings | © 2025

### Abstract

This paper examines deeper and profound implications of artificial intelligence on risk management practices for the banking and financial services industry. As AI technology continues to penetrate nearly every facet of finance, more banks embrace AI algorithms, including decision trees, random forests, and neural networks, with some related machine learning techniques aimed at improving their risk assessment processes and decision-making processes and mitigation strategies. In this context, the research study orients itself towards the application of AI in risk management and proceeds further to evaluate the efficacy and accuracy of AI

models against conventional methods, using statistical tests and confidence intervals in order to justify such differences. Ethical considerations, such as algorithmic bias and data privacy, will be also discussed in depth, including strategies for mitigating such risks. The study of the present article outlines the transformative capacity of AI in banking risk management and its implications for the industry through an inclusive review of current literature and case studies, particularly in cybersecurity and risk assessment.

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**Author keywords-** AI; Banking; Cybersecurity; Finance; Risk Management

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/NA</b>	<b>NA</b>	<b>NA</b>	



## TEXT SUMMARIZATION FOR LIGHT WEIGHT DEVICES

**Revathi T.**; Akshatha K.; Praveen M.; Taleki S.; Rakshith; Yadav K.V.N .

2025 IEEE International Students' Conference on Electrical, Electronics and Computer Science, SCEECS 2025 Bhopal 18 January 2025 through 19 January 2025 Code 208007



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### Text Summarization for Light Weight Devices

**Publisher: IEEE**

[Cite This](#)



Electrical and Electronics Engineers

[Akshatha K](#) ; [Praveen M](#) ; [Shravan Taleki](#) ; [Rakshith](#) ; [K V Nataraj Yadav](#) ; [Revathi. T](#) **All Authors**

### Abstract

In this paper, we propose a text summarization method for low-compute devices with limited hardware capabilities like smartphones, tablets and IOT devices. Traditional methods for text summarization face significant challenges in the settings where these devices are used, given their limited computational power and memory. We present optimization algorithms that target reducing computation and memory effort whilst retaining quality in the summarization. Our solution focuses on lightweight, efficient methods to runtime-compress the summaries generated by a powerful but heavy model -in order

to allow them to be computed with high mobility and little energy consumption by small devices- for example through techniques of model compression, quantization or similarity detection in datasets- thus achieving tractable abstraction of useful information from digital content [2], enhancing their accessibility experience while taking advantage of relevant mobile behaviors. Our approach enables efficient summarization with high performance and minimal resource costs, as shown by the corresponding experimental results.

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**Author keywords-** Edge Computing; Lightweight Devices; Model Compression; Natural Language Processing; Quantization; Text Summarization

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



## REVOLUTIONIZING ROAD SAFETY: AN INNOVATIVE APPROACH TO POTHOLE DETECTION AND PREVENTION USING XAI AND DEEP LEARNING

**Mahapatra S.; Senbagavalli M.;** Afrah Fathima M.K.; Ruchita L.

4th International Conference on Sentiment Analysis and Deep Learning, ICSADL 2025 - Proceedings Pages 878 - 884 2025

4th International Conference on Sentiment Analysis and Deep Learning, ICSADL 2025 Bhimdatta 18 February 2025 through 20 February 2025 Code 207922



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### Revolutionizing Road Safety: An Innovative Approach to Pothole Detection and Prevention Using XAI and Deep Learning

Publisher: **IEEE**

[Cite This](#)

[PDF](#)

[Senbagavalli M](#) ; [Sheila Mahapatra](#) ; [Afrah Fathima M. K](#) ; [Ruchita L](#) [All Authors](#)

### Abstract

This paper presents an automated pothole detection system using deep learning, and Explainable AI (XAI), which improves model transparency and decision-making. High-quality images and videos undergo image processing, including edge detection, feature extraction, and deep learning, enabling precise identification and classification of potholes, even in

challenging environments. Evaluating potholes is crucial for road maintenance, safety, and reducing costs related to vehicle damage and road repairs. Traditional methods, such as manual inspections and sensors, are costly and time-consuming. The proposed real-time system can spot problem areas before they become severe potholes. © 2025 IEEE.

**Author keywords-** Accuracy; Pothole Detection; Road Safety; XAI. Deep Learning

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



## NEURAL NETWORK INNOVATIONS IN NEXT-GENERATION OPTICAL FIBER AND WDM NETWORKS: TACKLING SIGNAL DEGRADATION AND RESOURCE OPTIMIZATION

Mishra V.; Gajjar S.B .

2025 International Conference on Pervasive Computational Technologies, ICPCT 2025Pages 46 - 502025 2025

International Conference on Pervasive Computational Technologies, ICPCT 2025Greater Noida8 February 2025through 9 February 2025Code 208025



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### Neural Network Innovations in Next-Generation Optical Fiber and WDM Networks: Tackling Signal Degradation and Resource Optimization

Publisher: IEEE

[Cite This](#)

[PDF](#)

#### Abstract

Neural networks have been included in optical fiber communication along with WDM networks, which have demonstrated new paths for increasing such systems' performance, availability, and effectiveness. Optical fiber communication used for high data rates suffers from signal attenuation, noises and nonlinearities, especially at longer transmission distances. Neural networks provide solutions through identifying/recognizing complicated signal patterns and at the same time correcting the existing distortions on a real-time basis. They can be used for such applications as signal equalization, nonlinearity correction, and noise removal, and can enhance data transfer quality by many times. When several data channels are carried out simultaneously using different wavelengths, it is found that neural networks are very effective in controlling the WDM networks. They are capable

of predicting the traffic pattern, doing dynamic resource allocation efficiently, and providing an optimized routing and wavelength assignment (RWA) model compared to conventional techniques. In addition, with the development of neural networks, OPM functions are brought to a higher level in terms of speed and accuracy of the assessment of other important optical metrics, including OSNR and chromatic dispersion. Furthermore, such networks can also recognize possible faults, thus providing stable and reliable communication. A continued increase in the requirement of data transmission rate makes the use of neural networks in optical fiber communication and WDM systems crucial in handling the main issue, providing innovative and optimized solutions for future-generation communication systems.

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**Author keywords-** LSTM; Optical Fiber; WDM network

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



## MACHINE LEARNING-BASED SYSTEMS FOR DIAGNOSING MULTIPLE DISEASES AND PROVIDING DIETARY RECOMMENDATIONS

**Senbagavalli M.; Rajagopal R.; Debnath S.;** Sontakke J.

*Communications in Computer and Information Science* Volume 2072 CCIS, Pages 231 - 242 2025 6th International Conference on Advanced Informatics for Computing Research, ICAICR 2023 Rohtak 16 December 2023 through 17 December 2023 Code 329429



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### Advanced Informatics for Computing Research

6th International Conference, ICAICR 2023, Rohtak, Haryana, India, December 16–17, 2023, Revised Selected Papers, Part I

Conference proceedings | © 2025

## Abstract

In today's fast-paced society, where demanding schedules often lead to the neglect of personal health, a growing number of individuals find it challenging to prioritize well-being. The adoption of regular exercise and yoga, crucial for maintaining a healthy body, remains a practice embraced by only a small fraction of the population. Although health-oriented mobile applications such as Home Workout without any equipment and Google Fit have gained recognition, their consistent utilization remains limited. Existing applications primarily focus on tracking parameters such as heart rate, daily steps, and calories burned, yet they fall short in predicting potential diseases based on these indicators. The proposed model introduces a novel approach to disease prediction by autonomously calculating specific health parameters and determining whether an individual is healthy or may have an underlying disease. In our research, we conducted a comparative analysis of various machine learning algorithms to enhance predictive accuracy.

The Random Forest algorithm demonstrated remarkable effectiveness in disease prediction, achieving an impressive accuracy rate of 95%. This suggests that the model, built on an ensemble of decision trees, performed exceptionally well on the evaluated dataset. Nonetheless, it's crucial to consider factors such as dataset size, representativeness, feature selection, and potential biases when interpreting these results. Beyond disease prediction, our innovative application extends its functionality to provide personalized diet recommendations tailored to individual health conditions. This proposed model functions as a virtual health guide, offering early diagnosis comparable to a doctor's role. By alleviating the workload on healthcare professionals, ensuring timely treatment, and potentially saving lives, our application aims to make a substantial contribution to public health.

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**Author keywords-** Disease Prediction; Machine Learning; Random Forest; Support Vector Machine; Symptoms

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



## MACHINE LEARNING-DRIVEN RATE ADAPTATION STRATEGIES FOR CROSS-LAYER ROUTING IN MANETS

**Rajesh Sharma R.; Sungheetha A.;** Sathish K.; Chitra D.; Rajavimalanaathan L.; Ellappan V.

3rd International Conference on Intelligent Data Communication Technologies and Internet of Things, IDCIoT 2025 Pages 2263 - 2268 2025 3rd International Conference on Intelligent Data Communication Technologies and Internet of Things, IDCIoT 2025 Bengaluru 5 February 2025 through 7 February 2025 Code 207642



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### Machine Learning-Driven Rate Adaptation Strategies for Cross-Layer Routing in MANETs

Publisher: [IEEE](#) [Cite This](#) [PDF](#)

[Sathish K](#); [Chitra. D](#); [Rajesh Sharma R](#); [Akey Sungheetha](#); [L. Rajavimalanaathan](#); [Ellappan. V](#) **All Authors**

### Abstract

A Machine Learning-Driven Rate Adaptation Strategy for Cross-Layer Routing in Mobile Ad-Hoc Networks (MANET) represents the main contribution of the research which solves QoS challenges in real-time applications. The protocol uses machine learning algorithms to detect dynamic changes in network conditions which include link quality assessment and queue status monitoring and congestion monitoring. This network design unites data from physical along with MAC and network layer components to reach optimal resources utilization. Real-time traffic patterns together with node mobility data get processed by machine learning models which lead to adaptive

congestion control and rate adaptation decisions. Through its approach the protocol identifies several node-disjoint paths which boost network resistance to link failures. Computer simulation results prove that the protocol delivers superior packet delivery performance and lower end-to-end delay and enhanced adaptability under changing traffic conditions and mobile node environments. The new methodology surpasses conventional methods by offering strong backing for applications that require delayed tolerance and vast bandwidth needs while handling modern MANETs so well through a complete performance solution. © 2025 IEEE.

**Author keywords-** Cross-Layer Routing; Machine Learning; Mobile Ad Hoc Networks (MANETs); Quality of Service (QoS); Rate Adaptation

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



## EMPLOYEE RETENTION ANALYSIS: INSIGHTS AND PREDICTIVE MODELING WITH MACHINE LEARNING TECHNIQUES

**Vetrivendan L.**; Prajapati J.; Mishra K.N.; Radhakrishnan R.; Ranjith M.

1st International Conference on Advances in Computer Science, Electrical, Electronics, and Communication Technologies, CE2CT 2025 Pages 1088 - 1093 2025 1st International Conference on Advances in Computer Science, Electrical, Electronics, and Communication Technologies, CE2CT 2025 Nainital 21 February 2025 through 22 February 2025 Code 208006



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### Employee Retention Analysis: Insights and Predictive Modeling With Machine Learning Techniques

Publisher: **IEEE**

[Cite This](#)

[PDF](#)

[Jyoti Prajapati](#) ; [L. Vetrivendan](#) ; [Kanderp Narayan Mishra](#) ; [R. Radhakrishnan](#) ; [M. Ranjith](#) **All Authors**

### Abstract

Brain tumors are one of the most serious and potentially fatal diseases in the world, to have any hope of being successfully treated it is imperative that they be discovered early. Conventional diagnostic methods such as MRI and CT images often rely on manual interpretation; this can take a long time and is prone to human error. To address this situation, we present a deep learning-based approach which uses a Deep Convolutional Neural Network for automatic detection of brain tumors. The resultant model takes advantage of the powerful feature extraction abilities of CNNs in order to divide brain images into tumor and non-tumor categories with high

precision. The dataset consists of MRI scans and has been preprocessed to enhance image quality while removing noise. Employing advanced techniques such as data augmentation, transfer learning and hyperparameter tuning, the structure of this CNN network for brain tumor detection is optimized. Experimental results prove that the combination is superior to traditional machine learning methods. In medical imaging, this research shows that the potential for deep learning is enormous and will help pave the way for easier, accurate brain tumor detection systems.

© 2025 IEEE.

**Author keywords-** Brain Tumour; Deep Learning; Medical Imaging and Convolutional Neural Network

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



## NAVIGATING MULTILINGUAL AND CODE-MIXED CHALLENGES IN WEB MINING

Rangasamy R.; Mahipal S.; Shafi S.M.; Kumar P.S .

3rd International Conference on Electronics and Renewable Systems, ICEARS 2025 - ProceedingsPages 1063 - 10712025  
 3rd International Conference on Electronics and Renewable Systems, ICEARS 2025Tuticorin11 February 2025through 13  
 February 2025Code 208040



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### Navigating Multilingual and Code-Mixed Challenges in Web Mining

Publisher: IEEE

[Cite This](#)

[PDF](#)

S Mahipal ; S Md Shafi ; P Sai Kumar ; Rajashekar Rangasamy **All Authors**

### Abstract

The rapid growth of multilingual and code-mixed content on the web, particularly in social media, presents both challenges and opportunities for web mining. Traditional text processing techniques often fall short in handling the complexity of mixed-language data, where multiple languages, informal expressions, and transliterated text coexist within the same corpus. This paper explores the challenges posed by multilingual and code-mixed data in web mining, including language detection, lexical and syntactic variations, and limited resources for low-resource languages. It discusses state-of-the-art techniques such as pre-trained multilingual models (e.g., XLM-RoBERTa), transliteration handling, and context-aware embeddings tailored

for code-mixed scenarios. Additionally, the paper highlights key applications, such as sentiment analysis, opinion mining, and fake news detection, that benefit from efficient handling of multilingual and code-mixed data. By addressing these challenges through innovative methods, this research provides a roadmap for developing robust web mining systems capable of navigating the complexities of multilingual and code-mixed content. Future directions include self-supervised learning for low-resource languages, dynamic adaptation to evolving language usage, and integrating multimodal data for enhanced insights.

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**Author keywords-** Code-Mixed Text; Language Detection; Multilingual Data; Web Mining

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



## INNOVATIVE OBJECT DETECTION WITH YOLOv4 AND ADAPTIVE BOUNDING BOXES

**Senbagavalli M.; Mahapatra S.;** Jhansi S.

4th International Conference on Sentiment Analysis and Deep Learning, ICSADL 2025 - ProceedingsPages 885-8912025 4th International Conference on Sentiment Analysis and Deep Learning, ICSADL 2025Bhimdatta18 February 2025through 20 February 2025Code 207922



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### Innovative Object Detection with YOLOv4 and Adaptive Bounding Boxes

Publisher: **IEEE**

[Cite This](#)



[Senbagavalli M](#) ; [Sheila Mahapatra](#) ; [Sane Jhansi](#) [All Authors](#)

### Abstract

This research work proposes a computer vision-based object detection system. It can recognize each and every object visible in the picture. Horizontal boundary boxes were used to detect different objects available in the detectors. However, buildings and cars in the aerial imagery are occasionally very close to form continuous objects that may suggest a direction. Therefore, some approaches such as extending the horizontal bounding box to oriented box are proposed for a better object extraction; usually via directly regressing the angle or corners. Here we propose an orientation object detector which is simple but more accurate, and it is based on YOLOv4. Here yolov4 is used to detect objects yolo can able to find more than one object in a single image. The paper will contain specific implementation methodology for yolov4 with OpenCV, which includes model configuration settings, preprocessing steps and evaluation matrices such as mean average precision (map), recall and the precision. The object detection problem has transformed into a key problem in computer vision and has enabled improvements in areas including self-driving cars, medical systems, and even

surveillance systems. In this paper, we present a new object detection system based on YOLOv4 which stands for 'You Only Look Once' version four and uses adaptive bounding boxes. The CSPDarknet-53 and spatial pyramid pooling (SPP) are the main reasons for YOLOv4's immense popularity, as is discussed in the literature. But with the constant changes of the bounding boxes, performance accuracy suffers greatly as they have a difficult time identifying the objects bounding boxes are placed within. To counter this problem, we present an explainable adaptive bounding box technique which relies heavily on the size shape and features of the context of the object being captured. The learnable bounding box adjustment layer which serves to refine the localized bounding boxes is integrated into the head of YOLOv4, where putting the primitive guesses goes through our specialized deep neural network so filters are set and only the most accurate localization guesses are retained. This method proves useful in more complicated scenarios with the presence of occlusions, multiple objects and changes in scale. © 2025 IEEE.

**Author keywords-** Object detection; OpentCV; State-of-art; yolov4

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



## THE DEEFAKE DILEMMA: ENHANCING DEEFAKE DETECTION WITH VISION TRANSFORMERS

**Sumathi D.**; Singh A.; Sinha A.; Aditya D.; Mohammed Riyaan K.F.

Proceedings of the 3rd International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics, IITCEE 20252025 3rd International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics, IITCEE 2025Bengaluru16 January 2025through 17 January 2025Code 207644



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### The Deepfake Dilemma: Enhancing Deepfake Detection with Vision Transformers

Publisher: **IEEE**

[Cite This](#)

[PDF](#)

[D. Sumathi](#) ; [Ashu Singh](#) ; [Arpita Sinha](#) ; [D Aditya](#) ; [Mohammed Riyaan K F](#) [All Authors](#)

### Abstract

The emergence of deepfake videos at an alarming pace has compromised the integrity of digital multimedia and mandates progressive research into detection strategies. A new forensic method for subjecting face tampering detection in videos using the FaceForensics++ dataset is introduced in this work. A Convolutional Neural Network (CNN) based architecture is enhanced with Vision Transformer encoders for identifying facial manipulations introduced at microscopic precision. The hybrid model integrates CNNs and ViTs, allowing for the capturing of both local and global features that help in detecting subtle manipulations. ViTs have a built-in self-attention

mechanism, which allows the model to concentrate on essential facial characteristics, thereby enhancing precision even if the manipulations are confirmed in less than optimal situations. Additionally, the pre-trained Gemini 1.5 Pro model is fine-tuned for optimal performance. The classification of faces into authentic or fake is accurately done using the key points by 90%accuracy as shown through experimentation. Moreover, the Haar cascade method is used for human face detection technique as part of integrated design which augments its complete application in real-world functionalities.

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**Author keywords-** CNN; Data augmentation; Deepfake Detection; Haar cascade Face Forensics++; Vision Transformere

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



## MACHINE LEARNING APPROACHES FOR DETECTING AGE-RELATED MACULAR DEGENERATION

**Rajesh Sharma R.; Sungheetha A.;** Abebe M.

*Lecture Notes in Networks and Systems* Volume 1241, Pages 101 - 113 2025 7th International Conference on Intelligent Computing and Communication, ICICC 2024 Hyderabad 30 August 2024 through 31 August 2024 Code 329469



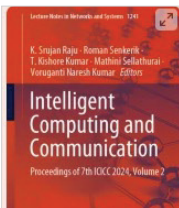
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### Intelligent Computing and Communication

Proceedings of 7th ICICC 2024, Volume 2

Conference proceedings | © 2025

### Abstract

Age-related macular degeneration (AMD) is a main reason for imaginative and prescient loss among older adults worldwide. Early detection and intervention are essential for coping with this modern eye disease. This has a look at explores the software of gadgets getting to know strategies for the automatic detection of AMD from retinal fundus images. We evaluate the overall performance of three algorithms: Support Vector Machines (SVM), Convolutional Neural Networks (CNNs), and Random Forests (RF). A dataset of 5,000 high-decision retinal images, similarly, dispensed among AMD and non-AMD cases, turned into used for schooling and evaluation. Preprocessing strategies, together with photo resizing, evaluation enhancement, and statistics augmentation, have been carried out to enhance version overall performance.

The CNN version established advanced overall performance, accomplishing an accuracy of 96.8%, sensitivity of 95.7%, and specificity of 97.9%. The SVM and RF fashions additionally confirmed promising outcomes with accuracies of 92.3% and 94.1%, respectively. We similarly analyzed the fashions' overall performance throughout distinct AMD levels and investigated the interpretability of the CNN version the usage of Gradient-weighted Class Activation Mapping (Grad-CAM). Our findings propose that gadgets getting to know, especially deep getting to know strategies, can notably resource withinside the early detection of AMD, doubtlessly enhancing affected person results via well-timed intervention and management.

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**Author keywords-** Age-related macular degeneration; Computer-aided diagnosis; Convolutional neural networks; Machine learning; Random forests; Retinal imaging; Support vector machines

Indexing/Quartile	Percentile	Impact Factor	SDG	
<b>SCOPUS/ Q4</b>	<b>23<sup>rd</sup></b>	<b>NA</b>		

## PREDICTION OF STUDENT PERFORMANCE IN ONLINE CLASSES DURING COVID-19 PANDEMIC

**Sumathi D.**; Sudharshana N.; Naren J .

*Lecture Notes in Electrical Engineering* Volume 1221 LNEE, Pages 685 - 699 2025 5th International Conference on Computing and Network Communications, CoCoNet 2023 Bengaluru 18 December 2023 through 20 December 2023 Code 326799



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### Fifth International Conference on Computing and Network Communications

Proceedings of CoCoNet 2023, Volume 2  
Conference proceedings | © 2025

### Abstract

Despite global disruptions caused by the COVID-19 pandemic, education sector adapted and continued to function online. Undergraduate courses happened online. Variations in students’ performance emerged due to differing approaches in incorporating online education into routine life amidst challenging conditions at home and in society during the pandemic. It was necessary to find out whether online education aided academics. A solution based on a machine learning is proposed and implemented in the paper to forecast an individual’s performance using data gathered from a user survey among university students regarding their perceptions of

online education. The user survey comprised questions about factors that could affect academic performance. A diverse range of algorithms are meticulously evaluated to identify one that delivers precise predictions of student performance, leading to an effective restructure of educational landscapes to replicate the immersive and engaging experience of in-person classes, fostering a conducive environment for students to wholeheartedly focus on academic pursuits.

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**Author keywords-** Data mining; Online education; Pandemic; Social media; Student academic performance prediction

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

02  
ZERO HUNGER

## SMART PLANT IRRIGATION SYSTEM WITH ARDUINO UNO AND SOIL MOISTURE SENSOR

**Patni J.C.**; Surya Prakash V.; Vardhan Reddy G.S.; Snehith Santhosh A.; Reddy Y.C.; Bhaskarrao Bahadure N.; Srivastava A.K.

2025 2nd International Conference on Computational Intelligence, Communication Technology and Networking, CICTN 2025 Pages 438 - 444 2025 2nd International Conference on Computational Intelligence, Communication Technology and Networking, CICTN 2025 Ghaziabad 6 February 2025 through 7 February 2025 Code 207865



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### Smart Plant Irrigation System with Arduino Uno and Soil Moisture Sensor

Publisher: IEEE

Cite This

PDF

Jagdish Chandra Patni; Vuppu Surya Prakash; Gajjala Sri Vardhan Reddy; Anjana Snehith Santhosh; Yammanuru Chaitanya Reddy; Nilesh Bhaskarrao Bahadure

### Abstract

Automatic Smart Plant Watering System is a smarter solution that works on Arduino Uno, which can automatically operate for plant watering at optimal moisture conditions of soil. It checks the moisture with the help of a soil moisture sensor and, once the level of moisture goes down below a threshold, initiates a water pump. This user-friendly system is also energy efficient, making it suitable for busy or travel users, further contributing

to sustainability plant care, thereby making it ideal for residential and nursery settings while emphasizing the promising use of smart agriculture and IoT technologies. This paper focuses on developing a smart water framework designed to efficiently manage water distribution based on real-time soil and environmental conditions.

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**Author keywords-** AWS; Internet of things; Irrigation System; Microcontrollers; Web of things; WSN

Indexing/Quartile	Percentile	Impact Factor	SDG
<b>SCOPUS/NA</b>	<b>NA</b>	<b>NA</b>	



## ADVANCED MEDICAL QUESTION AND ANSWERING CHATBOT POWERED BY LLAMA-2 FOR PRECIS HEALTH ANSWER

**Patni J.C.**; Anup S.B.; Swetha; Chitra K.S.; Poornima B.M.; Raviprakash B.P.; Kant Verma K.  
 2025 2nd International Conference on Computational Intelligence, Communication Technology and Networking, CICTN 2025Pages 445 - 4492025 2nd International Conference on Computational Intelligence, Communication Technology and Networking, CICTN 2025Ghaziabad6 February 2025through 7 February 2025Code 207865



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### Advanced Medical Question and Answering Chatbot Powered by Llama-2 For Preci Health Answer

Publisher: **IEEE** [Cite This](#) [PDF](#)

Jagdish Chandra Patni ; Anup S B ; Swetha ; Chitra K S ; Poornima B M ; Raviprakash B P [All Authors](#)

### Abstract

LLaMA-2 model, which is known for having the best capabilities in natural language processing at the core of our system. With respect to symptom diagnosis, it ranked among the most accurate in being able to give the chances of as many conditions possible as per the information that it receives from the user. Creating custom responses to unique user queries all the time, which may potentially increase user satisfaction and engagement. We have tested and perfected our chatbot to ensure that the capabilities stood out at a level of accuracy as high as 85 percent-showing outstanding care in the matters of healthcare assistance issues under numerous medical topics. Our work adds advanced features with the improvement techniques to the conventional medical Q and A chatbot. The new deep learning chatbot is not only great for symptom diagnosis but also uses its capabilities to provide context-aware responses based on user health history, lifestyles, and preferences with adjustment of its advice for a more personal healthcare experience. © 2025 IEEE.

**Author keywords-** Chatbot; LLaMA-2 model; medical Question and Answers; Natural language processing (NLP); symptom identification

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



## COMPARATIVE STUDY OF MACHINE LEARNING AND DEEP LEARNING MODELS FOR FOOD WASTE DETECTION USING IMAGE PROCESSING

**Rajagopal R.;** Chaithanya K.; Sonth A.; Kallappagoudar P.B.; Mohammadshaq Nadaf M.; Ananda Theertha H.  
 2025 IEEE International Students' Conference on Electrical, Electronics and Computer Science, SCEECS 2025  
 IEEE International Students' Conference on Electrical, Electronics and Computer Science, SCEECS 2025  
 Bhopal 18 January 2025 through 19 January 2025 Code 208007



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### Comparative Study of Machine Learning and Deep Learning Models for Food Waste Detection Using Image Processing

Publisher: IEEE [Cite This](#) [PDF](#)

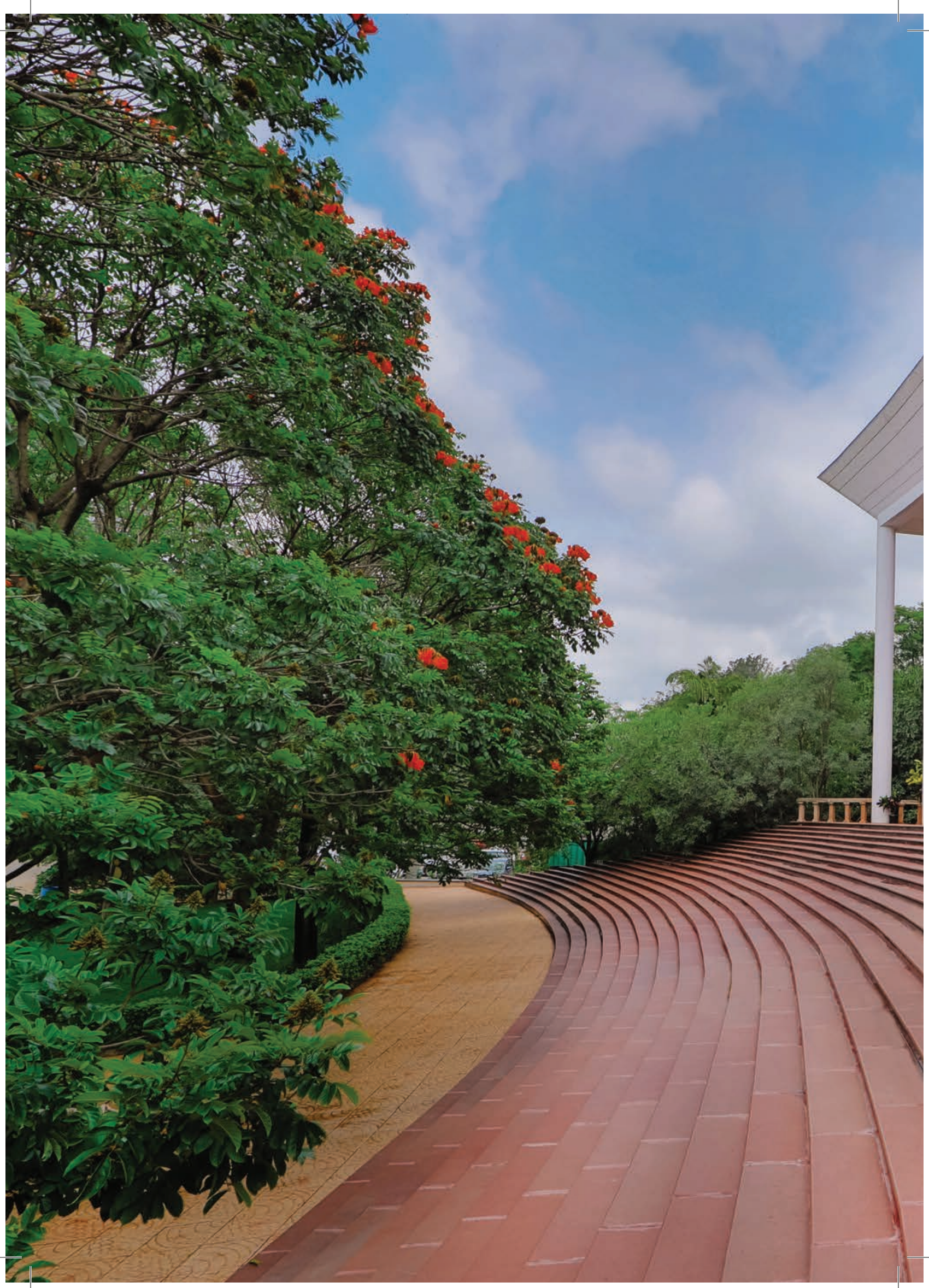
R. Rajagopal ; Chaithanya. k ; Ankita Sonth ; Prasanna Basanagouda Kallappagoudar ; Mohammadzaid Mohammadshaq Nadaf ; Ananda

#### Abstract

For the purpose of reducing financial losses and environmental impacts, food waste detection is essential. In order to detect food waste using image processing, this study investigates the efficiency of several machine learning algorithms, including Convolutional Neural Network (CNN), K-Nearest Neighbors (KNN), Random Forest, and Inception Model (IV3). A set of images of food are then processed. Before each algorithm is used for classification, pre-processing methods like segmentation and feature extraction are used.

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**Author keywords-** CNN (Convolution Neural Network); Food Classification; IV3 (Inception Models); KNN (k-nearest-neighbor); RF (Random Forest)





**Intellectual Property Rights (AU IPR Cell)**

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# **PATENTS**

Application No	202511037493	Title of the invention	AI POWERED CYBERSECURITY SYSTEM
		Name of Inventor	Mr. Rahul Pal, Mr. Mukul Machhindra Barwant, Ms. Isani Dutta, Dr. Binita Ghosh, Dr. E. Komala, Dr. Bandi Sandhya Rani, Dr. Atibur Rahaman, Ms. Manju Koli, Dr. Navnath Gangadhar Kashid, Dr. Thirunahari Ugandhar, Mr. Raj Kumar Mandal, and <b>Dr. Swastika Banerjee</b>

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### Abstract

The present invention relates to a novel method for the formulation of niosomal drug delivery systems via the thin film hydration technique, specifically designed for the treatment of tuberculosis. The method involves the dissolution of non-ionic surfactants and cholesterol in an organic solvent, followed by solvent evaporation to form a thin lipid film. This film is then hydrated with an aqueous solution containing one or more anti-tubercular agents to produce multilamellar vesicles, which are subsequently reduced in size to form uniform, stable niosomes. These vesicles exhibit high drug encapsulation efficiency, enhanced bioavailability, and sustained release characteristics, offering improved therapeutic outcomes with reduced dosing frequency and systemic toxicity. The invention provides a scalable and efficient platform for the targeted delivery of anti-TB drugs, representing a significant advancement in tuberculosis therapy. Accompanied Drawing [FIGS. 1-2]

Application No	202511013246	Title of the invention	AI-BASED ANOMALY DETECTION SYSTEM FOR FRAUD PREVENTION IN FINANCIAL TRANSACTIONS
		Name of Inventor	Dr. Gauri Dwivedi, Dr. Pramod Kumar Pandey, Ms. Anshu Gaur, Dr. Jayeeta Majumder, Dr. Sourav Gangopadhyay, Ms. Priya, <b>Dr. Amar Choudhary</b> , and Dr. Ruchi Agarwal

**Dr. Amar Choudhary**  
Assistant Professor  
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### Abstract

The present invention provides an AI-based anomaly detection system for fraud prevention in financial transactions. The system employs machine learning models to analyze transaction patterns, detect anomalies, and flag suspicious activities. The system integrates supervised and unsupervised learning techniques to enhance detection accuracy and reduce false positives. In one embodiment, the system consists of a data collection module, a feature extraction module, an AI-based anomaly detection engine, and a response mechanism. The data collection module gathers transaction data, including user behavior, transaction history, and device information. The feature extraction module processes and structures the data for analysis. The AI-based anomaly detection engine employs deep learning and statistical models to identify deviations from normal transaction patterns. Finally, the response mechanism triggers alerts and takes corrective action, such as blocking transactions or requesting additional authentication.

Application No	<b>202541036167</b>	Title of the invention	<b>REGULATIONS FOR AI IN HUMAN CAPITAL MANAGEMENT</b>
Name of Inventor	Dr. G. Bright Jowerts, Dr. Priti Dubey, Dr. Syed Mohammad Faisal, and <b>Dr. Chetan Shelke</b>		

**Dr. Chetan J. Shelke**

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## Abstract

Regulations for AI in Human Capital Management ABSTRACT As a result of the increasing incorporation of artificial intelligence (AI) into Human Capital Management (HCM), a number of HR processes have begun to undergo modifications. The growing incorporation of artificial intelligence has been the driving force behind these developments. Recruitment, employee performance reviews, and strategies for maximizing the workforce are all examples of processes that are included in this category of procedures. On the other hand, it is of the utmost importance to keep in mind that the broad use of artificial intelligence creates significant difficulties with regard to questions of responsibility, fairness, openness, and the security of personal information. This innovation aims to establish a comprehensive regulatory framework for the deployment of artificial intelligence in human capital management in a manner that is both ethical and responsible. This is the goal of this innovation. It is anticipated that the implementation of this framework will lead to a reduction in the dangers connected with algorithmic bias, the preservation of the privacy of employees,

and the accomplishment of compliance with labor legislation. There are a number of distinct elements that are included in this piece of law. These provisions include principles for openness in artificial intelligence decision-making, human oversight of automated processes, and data protection protocols to secure sensitive employee information with the intention of assuring its safety. As an additional provision, it stipulates that all artificial intelligence systems must be subjected to consistent monitoring and auditing in order to guarantee that they always behave in a manner that is consistent with ethical standards. A fair, inclusive, and transparent approach to the implementation of artificial intelligence in the workplace is the goal of this innovation, which aims to foster such an approach. The implementation of regulations that are not only clear but also workable will be the means by which this objective will be achieved. This will ensure that artificial intelligence is beneficial to both consumers and organizations, while also lowering the likelihood of discrimination and privacy violations occurring as a result of technological advancements.

Application No	202541036470	Title of the invention	IOT-INTEGRATED SMART CLASSROOM ENVIRONMENT MONITORING AND MANAGEMENT SYSTEM USING AI
Name of Inventor	Dr. N.B. Mahesh Kumar, Dr. P. Mekala, <b>Dr. Aparna Pavani. S</b> , Mr. Sumit Singha, Murali Nattala, Dr. Prasanta Kumar Parida, Namitha A R, R. Sasikala, Mrs. Subasri N, and S Shanthini		



**Dr. Aparna Pavani S**  
Associate Professor  
Alliance School of Business

### Abstract

The Internet of Things (IoT) constitutes a network of tangible entities integrated with software and sensors, enabling remote control via a network infrastructure. The Internet of Things (IoT) is gaining significance in education, particularly through the emergence of smart classrooms. The incorporation of IoT in classroom instruction facilitates automation, allowing comprehensive control over electrical devices. Control can be obtained via gesture-based approaches or voice-activated commands. The Internet of Things (IoT) can facilitate the creation of intelligent systems capable of comprehending and operating in accordance with our requirements autonomously. This project introduces an IoT-enabled classroom monitoring system utilising artificial intelligence (AI) for attendance tracking and classroom automation. In this age of advanced classroom

technology, students increasingly want unique university campus experiences and are eager to adopt novel learning methodologies. IoT and cloud computing technologies can offer solutions for a smart and sustainable campus, enhancing student learning techniques and increasing the efficiency of daily activities within the institution. This article examines the IoT paradigm in the educational process with the integration of Cloud technology for the education system. The Internet of Things (IoT) in education enables students to acquire new technologies that assist them in generating innovative ideas and logical solutions for societal issues. IoT-based cloud computing technology offers intelligent systems, integrated campus portal services, and security and maintenance solutions. The digitally connected campuses augment student learning and promote environmental sustainability.

Application No	202541037561	Title of the invention	SMARTWATCH-BASED EYE SAFETY MONITORING AND ALERT SYSTEM
Name of Inventor	Dr. Kavitha R Gowda		



**Dr. Kavitha R Gowda**  
Associate Professor  
Alliance School of Business

### Abstract

The invention relates to a smartwatch-based system designed to detect and manage eye health 110 through real-time monitoring of ambient lighting, screen exposure, and blink behavior. The system comprises integrated sensors for light intensity, proximity, and blink rate, combined with an AI-

driven analytics engine to provide real-time alerts, periodic health summaries, and actionable insights. The present invention ensures preventive eye care through intelligent alerts and screen usage 115 analytics, enhancing user awareness and reducing long-term digital eye strain.

Application No	<b>202541037562</b>	Title of the invention	<b>AI-ENABLED IOT SYSTEM FOR PERSONALIZED MARKETING AND BUSINESS INTELLIGENCE</b>
Name of Inventor	<b>Dr. Kavitha R Gowda</b>		



**Dr. Kavitha R Gowda**  
Associate Professor  
Alliance School of Business

### Abstract

The present invention relates to an AI-driven IoT system that enables businesses to leverage 210 real-time consumer data for personalized marketing and business intelligence. The system comprises IoT-enabled data collection devices, an edge computing unit, an AI analytics engine, a cloud-based business intelligence dashboard,

and an automated marketing module. The invention ensures real-time insights, customer engagement optimization, and dynamic marketing adjustments based on AI-driven predictions, significantly enhancing business 215 decision-making processes.

Application No	<b>202541037563</b>	Title of the invention	<b>AI AND IOT-ENABLED CUSTOMER EXPERIENCE ENHANCEMENT FOR MBA PROFESSIONALS</b>
Name of Inventor	<b>Dr. Kavitha R Gowda</b>		



**Dr. Kavitha R Gowda**  
Associate Professor  
Alliance School of Business

### Abstract

AI and IoT-Enabled Customer Experience Enhancement for MBA Professionals 165 The invention relates to an AI and IoT-integrated system designed to enhance customer experience for MBA professionals. The system comprises AI-driven analytics, IoT-based real-time tracking, and

personalized chatbot interactions. The present invention ensures data-driven insights, improved decision-making, and optimized customer engagement strategies, providing a competitive edge in business management and customer relations.

Application No	202541037463	Title of the invention	INTELLIGENT TEACHING ASSISTANT FOR REAL-TIME CLASSROOM INTERACTION MANAGEMENT
Name of Inventor		Prof. Dr. G. Ramana Murthy, and Prof Dr. Jaya Ganesan	



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



**Dr. Jaya Ganesan**  
 Professor  
 Alliance School of Business

### Abstract

According to the present invention, an Intelligent Teaching Assistant is designed to improve real classroom interaction management. It continuously monitors students' engagement, participation, comprehension and emotional responses using multimodal input such as audio, video, text and digital submission. The collected data is analyzed using advanced machine learning and natural language processing techniques by the integrated artificial intelligence engine that combines the intelligence to detect patterns and evaluate individual and collective learning need. The system recommends, prompts, or intervenes dynamically to each individual or group based on real time analysis. It further has predictive analytics to anticipate learning challenges and make preemptive strategies recommendations to educators. The Intelligent Teaching Assistant seamlessly integrates with numerous classroom technologies including smartboards, tablets, and learning management systems in order to fundamentally transform the instruction in the classroom including its responsiveness, adaptiveness and inclusiveness, and consequently generate students' higher level of engagement and academic outcomes.

Application No	202541045244	Title of the invention	A FEDERATED LEARNING-BASED FRAMEWORK FOR SECURED MEDICAL IMAGE ANALYSIS IN HEALTHCARE
Name of Inventor		Abhishek Thakur, Ajith K, <b>Dr. Amar Choudhary</b> , Dr. A P Bhuvaneshwari, and REVA University	



**Dr. Amar Choudhary**  
 Assistant Professor  
 Alliance School of Applied Engineering

### Abstract

The invention discloses a federated learning-based framework for secured medical image analysis in healthcare systems. It enables collaborative training of machine learning models without centralized data sharing, thereby preserving patient privacy. The framework uses secure aggregation, differential privacy, and personalized model updates to handle heterogeneous image data from distributed medical institutions. It supports real-time deployment and ensures compliance with data protection regulations. This invention facilitates accurate and secure diagnosis in healthcare environments through a privacy-preserving AI framework.

Application  
No

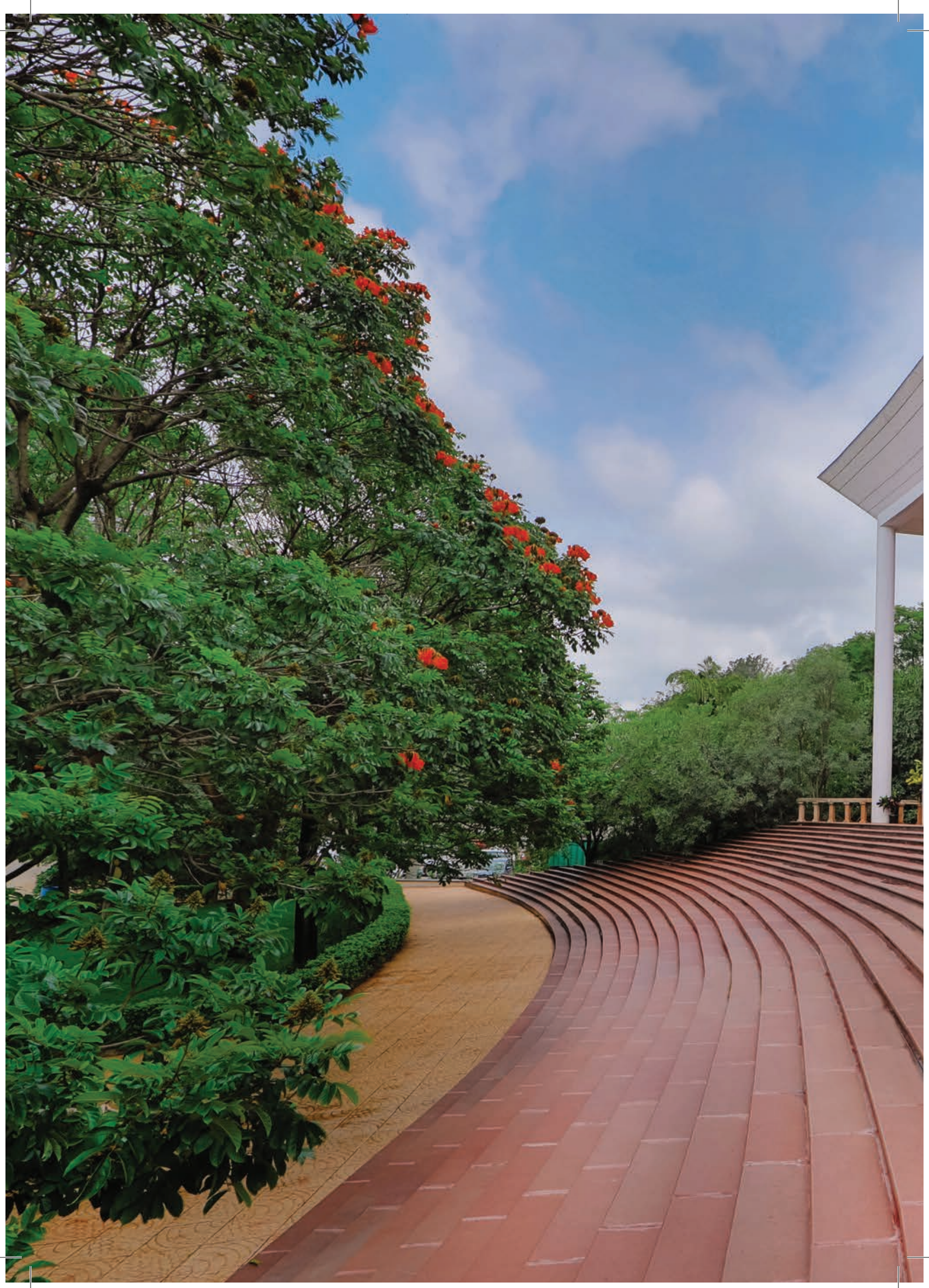
202541046721

Title of the  
invention**AN ML-POWERED DECISION SUPPORT SYSTEM FOR  
OPTIMIZING RADIATION THERAPY IN CANCER TREATMENT**Name of  
InventorV Mallesi, Dr. Chatrapathy K, Dr. Arun G, V. Archana Reddy, and **Dr. Amar Choudhary****Dr. Amar Choudhary**Assistant Professor  
Alliance School of Applied  
Engineering**Abstract**

The invention discloses a Machine Learning-powered Decision Support System for optimizing radiation therapy in cancer treatment. By integrating clinical data, medical imaging, and genomic profiles, the system predicts tumor response and personalizes radiation dosage. It incorporates explainable AI for transparency and continuous

learning through clinician feedback. The system enhances radiation therapy planning accuracy, reduces adverse effects, and streamlines oncology workflows. It is designed for clinical-grade deployment with full compliance to healthcare data standards.







**Intellectual Property Rights (AU IPR Cell)**

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# **DESIGNS**

Design No: **444093-001**

Title of the Design:

**AI BASED ORGANIC WASTE COMPOSTER**

Name of Applicant:

Alliance University, Bengaluru, **Dr. Saliha Bathool**, M.A.H. Farquad, Dr. Jayanta Banerjee, B Priyalakshmi, and Oyebanre Olufemi David



**Dr. Saliha Bathool**

Associate Professor  
Alliance School of Advanced  
Computing

**Description**

An AI-powered composting platform featuring integrated waste analysis capabilities and programmable monitoring interfaces for comprehensive organic decomposition optimization, enhancing processing efficiency and promoting rapid, intelligent sustainable waste management workflows.



Design No: **434654-001**

Title of the Design:

## **SOLAR BATTERY CHARGER**

Name of Applicant:

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



**Dr. Tina Babu**

Assistant Professor  
Alliance School of Advanced  
Computing



**Dr. Rekha R Nair**

Assistant Professor  
Alliance School of Advanced  
Computing



**Mr. Manjunath S**

Lab Instructor  
Alliance School of Applied  
Engineering

### **Description**

A solar battery charger featuring smart energy harvesting algorithms, dual-panel photovoltaic optimization, and wireless charging capabilities, delivering intelligent energy storage management, real-time performance analytics, and sustainable off-grid power solutions for next-generation portable electronics.



Design No: **434644-001**

Title of the Design:

**BLINK DETECTION SMART GLASSES**

Name of Applicant:

Alliance University, Bengaluru, **Dr. Harinath Aireddy**, Teja Sreya A, Fathima Rena, Pavan Kumar J, Kiran E P, Namitha Papishetty, and Sheshadri K



**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 blink detection smart glass system designed for continuous monitoring of ICU patients, featuring integrated eye-movement sensors and real-time alert mechanisms to detect signs of consciousness, distress, or fatigue, enabling proactive clinical interventions and enhancing patient care in critical healthcare environments.



Design No: **6445715**

Title of the Design:

## **AUTONOMOUS DATA MIGRATION DEVICE FOR MULTI- CLOUD INFRASTRUCTURE MANAGEMENT**

Name of Applicant:

Alliance University, Bengaluru, Dr. Pavithra Kanakaraj, **Swetha Chittezhath Brahmapiyan**, Dr. Prabagar Subbain, **Dr. Asha Kurian**, Dr. Rashmi Mothkur



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



**Dr. Asha Kurian**  
Assistant Professor  
Alliance School of Advanced  
Computing

### **Description**

This advanced computing terminal features a cyan-bordered display and integrated camera/sensor for monitoring and managing automated data migrations across multiple cloud platforms. The device's autonomous processing algorithms intelligently orchestrate seamless transfers between AWS, Azure, Google Cloud, and other services without human intervention, while providing real-time analytics, biometric security, and enterprise-grade reliability for mission-critical cloud infrastructure operations.



Design No: **448395-001**

Title of the Design:

**MACHINE LEARNING BASED DIGITAL MOBILE MALFUNCTION DETECTION DEVICE**

Name of Applicant:

Alliance University, Bengaluru, Prof. Dr. Shaveta Bhatia, Dr. Mridula Batra, Dr. Anupma Pankaj, Mr. Tafeem Bashir, Ms. Amrisha Manocha, and **Rahul Goel**



**Mr. Rahul Goel**  
Assistant Professor  
Alliance School of Business

**Description**

This industrial-grade green diagnostic terminal combines a digital display interface with an intuitive button grid for detecting and analyzing mobile device malfunctions using advanced machine learning algorithms. The multiple circular connectors at the base enable simultaneous testing of various mobile devices and components, while the embedded AI system automatically identifies hardware failures, software anomalies, and performance issues across different smartphone and tablet models. Designed for field technicians and repair centers, this durable device provides real-time diagnostic results, predictive failure analysis, and comprehensive malfunction reporting to streamline mobile device troubleshooting and repair processes.











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