

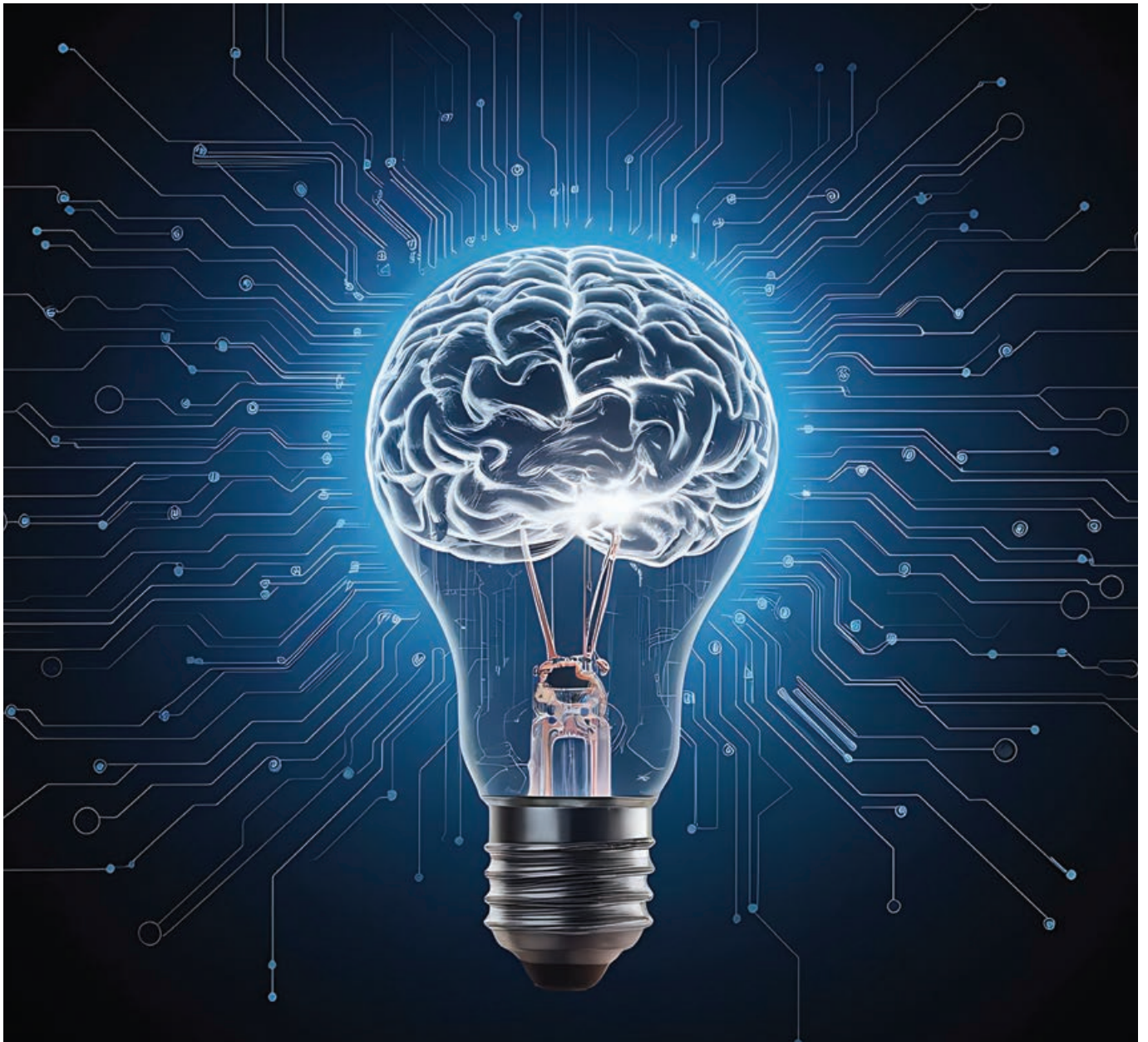
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**RESEARCH**

OCTOBER 2024

**PUBLICATIONS**

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# RESEARCH

OCTOBER 2024

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# PUBLICATIONS

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“ Research is creating new knowledge. ”

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**Neil Armstrong**

“ If we knew what we were doing, it wouldn't be called research, would it? ”

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**Albert Einstein**

“ Research is formalized curiosity. It is poking and prying with a purpose. ”

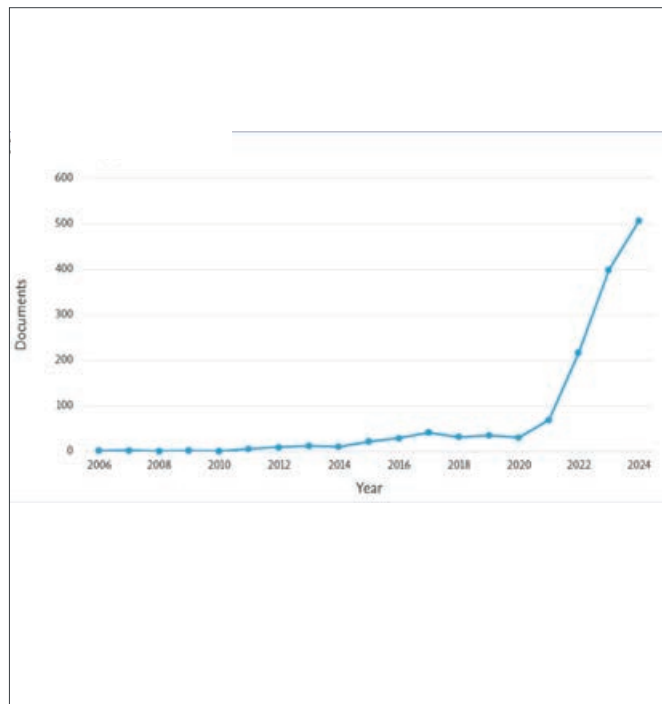
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**Zora Neale Hurston**

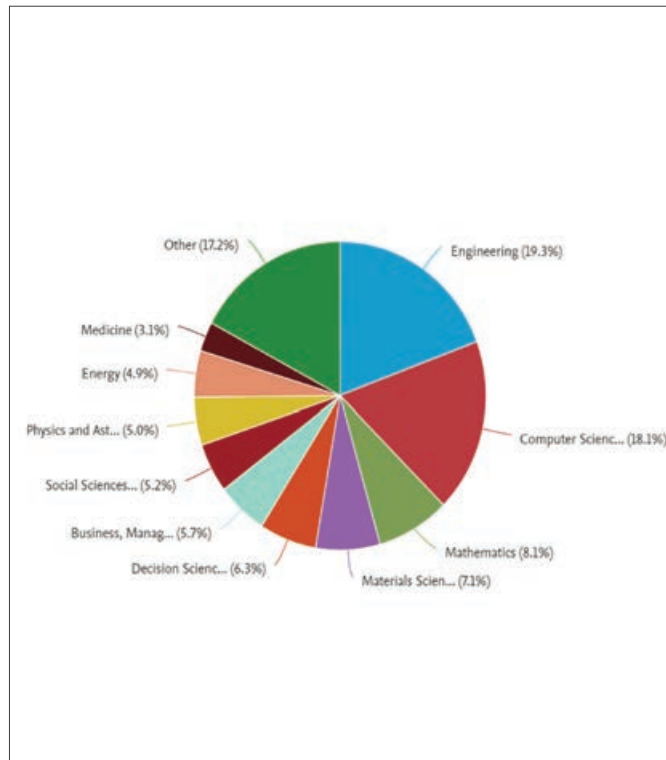
1,421  
Documents

468  
Authors

### Documents by Year



### Documents by Subject Area



### Summary

**1243**

Scholarly Output

**21.2%**

All Open Access

**509**

Authors

**4563**

Citation Count

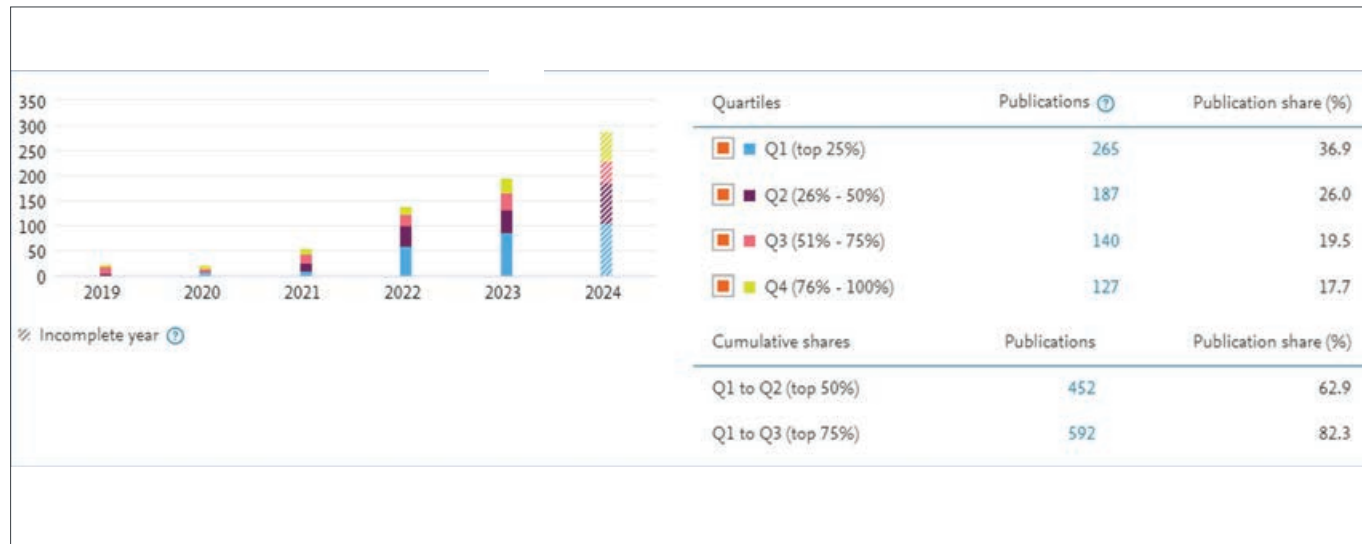
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Citations per Publication

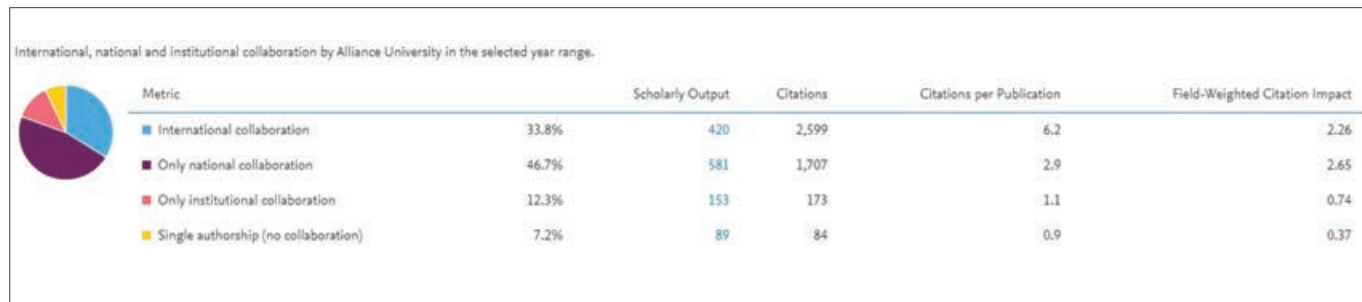
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Field-Weighted Citation Impact

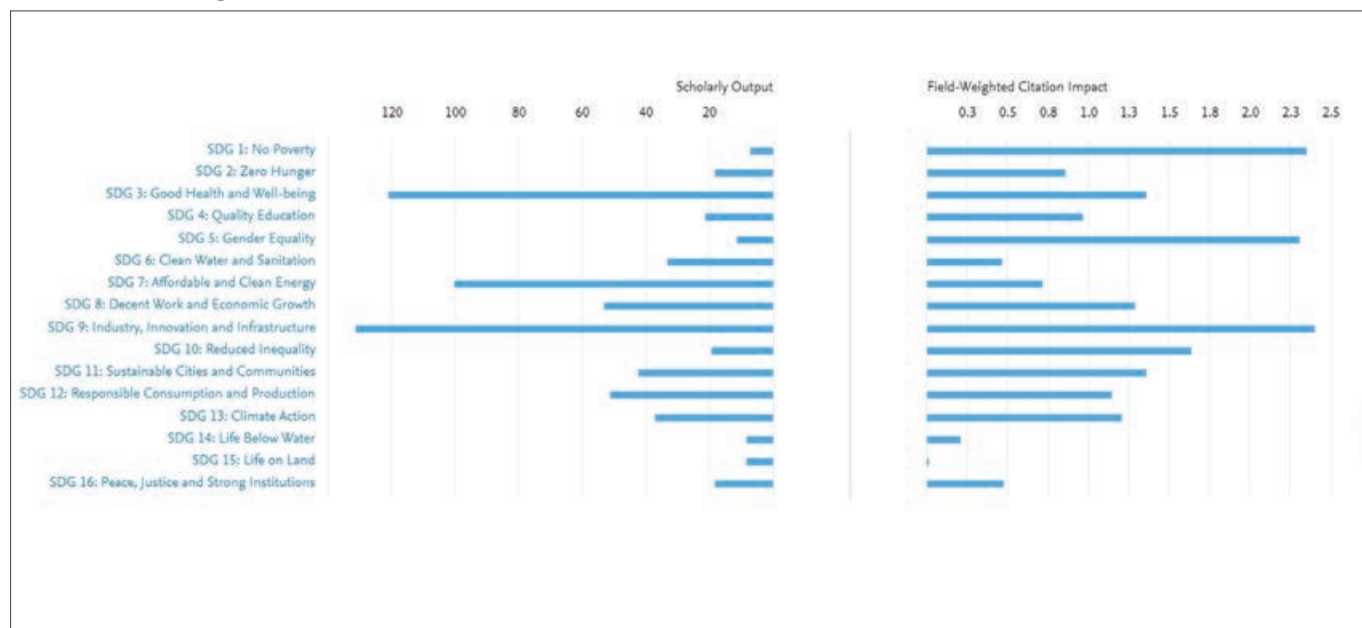
### Publication by Journal Quartile



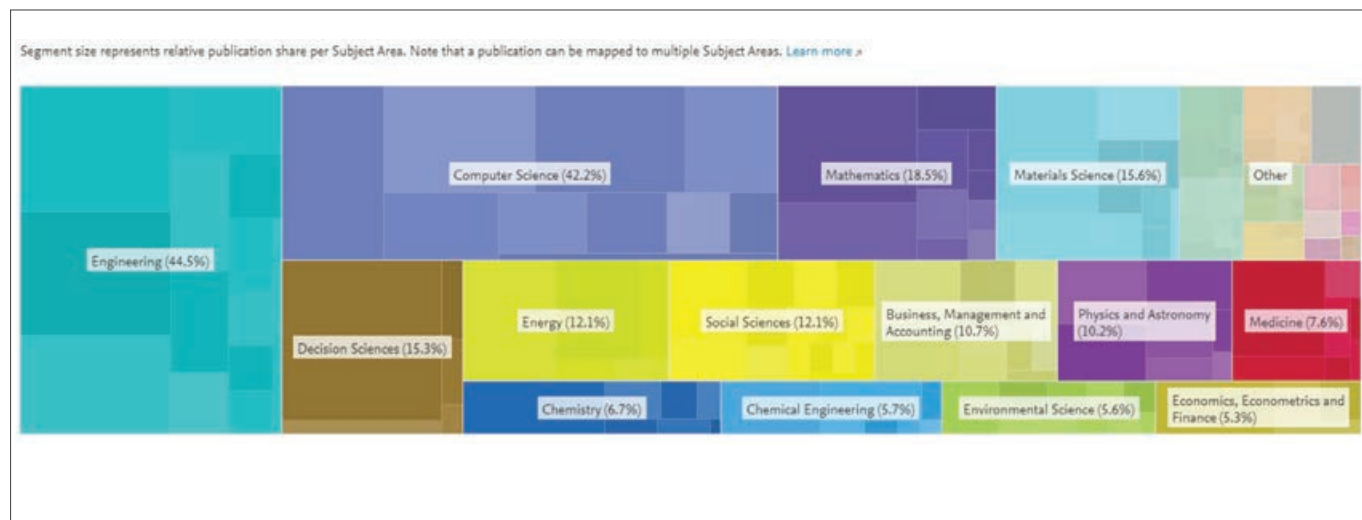
## Geographical Collaboration Overall



## Publication by SDG



## Subject Areas



# ABOUT ALLIANCE UNIVERSITY

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Alliance University is a leader in global education, with world-class infrastructure, state of the art laboratories, international visiting faculty, exchange programmes with leading universities in the US, UK, and European Union, and linkages with Research Labs across the world. Education at Alliance University is designed to inspire our students to become critical thinkers and to lead and change the world.





## STUDENT SUICIDE IN INDIA: UNINTENDED CONSEQUENCES OF SOCIO-ECOLOGICAL FACTORS

Kumar S.; Patel A.B.

*Omega (United States) Volume 90, Issue 2, Pages 746 – 761 December 2024*

### Dr. Sumant Kumar

Associate Professor,  
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Alliance University, Bangalore, INDIA

## OMEGA – Journal of Death and Dying

### Abstract

The expectation of family members and society towards students has increased in recent years to perform well or achieve success in their life. But lack of job opportunities and increased competition among students has depressed the student community. The expectation without support has negatively impacted students which has catalysed suicide among the students in India. Students are committing suicide in Indian society due to failure in achieving families' expectations which is a matter of grave concern for

social scientists. The current study has applied content analysis as a method to evaluate the cases of student suicide. The cases of student suicide have been collected from different newspapers, magazines, and news portals from July 2020 and April 2021. The study finds that most students are committed suicide due to depression. The study points out that students committed suicide due to failure to fulfil the expectations of a family member.

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**Author keywords-** content analysis; India; socio-ecological paradigm; student; suicide



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

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

*Materials Today Energy* Volume 46 December 2024 Article number 101703

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Department of Sciences,  
Alliance University, Bangalore, INDIA



materialstoday  
ENERGY

15.1

CiteScore

9.0

Impact Factor

### Abstract

Coordination polymers and their subgroup metal–organic frameworks are renowned as the esteemed categories of materials with multifarious properties and possess extensive advantageous applications in the domain of sensing and energy-mimetic applications on account of their expanded surface area, higher charge transfer ability, tunable porous framework, and flexible functionality. This review ruminates on a comprehensive analysis of contemporary outcomes regarding optimized synthetic protocols and structural modulations for various classes of coordination polymers, highlighting their deliberate implications as photoluminescent sensor materials and as energy-mimetic and organoconversion catalysts, along with outlining the significant applicative shortcomings. The additional coordination polymer–assisted exclusive

applications have also been discussed, such as the development of ratiometric fluorescent-based probes for specific biological sensing, metal–organic complexes for efficient energy catalysis, and incorporation of bio-inspired photoactive linkers for maximum light harvesting, where the premeditatedly executed frameworks demonstrated augmented results in specialized scientific fields. Finally, a brief overview has been addressed on the effectually applied strategies for assessing electronic mobility, product scalability, and light stability–derived challenges in practical implementations, alongside reviewing the green approaches that expedite sustainable and industrially scalable synthetic pathways consisting potentialities for large-scale outcomes.

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**Author keywords-** CO<sub>2</sub> reduction reaction; Hydrogen evolution reaction; Luminescence sensing; Organocatalysis; Synthesis protocols of coordination polymers



## AN EMPIRICAL ANALYSIS OF THE EFFECTIVENESS OF GOVERNMENT FISCAL POLICIES IN PROMOTING SUSTAINABLE ECONOMIC GROWTH IN INDIA

**Kashni T.**

*Journal of Environmental Informatics Letters Open Access Volume 12, Issue 1, Pages 1 – 8 September 2024*

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Vol 12, Issue 1 (September 2024)

[Open Access](#) [Subscription Access](#)

[An Empirical Analysis of the Effectiveness of Government Fiscal Policies in Promoting Sustainable Economic Growth in India](#)

### Abstract

This research scrutinizes the effectiveness of government fiscal policies in cultivating sustainable economic growth in India. Drawing on an extensive dataset spanning over a decade, the study meticulously examines crucial fiscal variables, encompassing Gross Domestic Product (GDP) growth, inflation rates (Consumer Price Index and GDP deflator), and real interest rates. Through rigorous statistical analysis, elucidate the intricate relationships between these variables, casting light on the nuanced impact of fiscal measures on the Indian economy. Findings underscore the pivotal role of fiscal policies in shaping economic trajectories. Notably, a substantial negative correlation between real interest rates and economic growth underscores the critical importance of interest

rate management. Furthermore, positive correlations between GDP growth and inflation rates signify the delicate balance required for optimal economic stability. This research delves deep into the contextual nuances, considering historical events and policy changes that have influenced these relationships. This research not only contributes empirical insights to the field of finance but also furnishes actionable recommendations for policymakers. By comprehending the intricate interplay of fiscal variables, policymakers can craft more targeted and effective strategies, fostering sustainable economic growth and ensuring the long-term prosperity of the Indian economy.

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**Author keywords-** economic impact; environmental sustainability; green economy; Indian economic growth; public health; sustainable development goals (SDGs)



## FRACTIONAL-ORDER CONTROL ALGORITHM FOR TELLO EDU QUADROTOR DRONE SAFE LANDING DURING DISTURBANCE ON PROPELLER

Rosmadi N.H.B.; Bingi K.; Devan P.A.M.; **Korah R.**; Kumar G.; Prusty B.R.; Omar M.  
*Drones Open Access Volume 8, Issue 10 October 2024 Article number 566*

### Dr. Reeba Korah

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Alliance University- Bangalore- INDIA



Impact Factor 4.4  
CiteScore 5.6

ISSN 2504-446X

### Abstract

Quadcopter drones have become increasingly popular because of their versatility and usefulness in various applications, such as surveillance, delivery, and search and rescue operations. Weather conditions and obstacles can undoubtedly pose challenges for drone flights, sometimes causing the loss of one or two propellers. This is a significant challenge as the loss of one or more propellers leads to a sudden loss of control, potentially resulting in a crash, which must be addressed through advanced control strategies. Therefore, this article develops and implements a fractional-order control algorithm to enhance quadrotor drones' safety and resilience during propeller failure scenarios. The research encompasses the complexities of quadrotor dynamics, fractional-order control theory,

and existing methodologies for ensuring safe drone landings. The study emphasizes case validation on experimental results, where four distinct cases were tested using PID and Fractional-order PID (FOPID) controllers. These cases involve various simulated failure conditions to assess the performance and adaptability of the developed control algorithms. The results show the proposed FOPID control's superior robustness and adaptability compared to traditional PID controllers. These offer significant advancements in navigating dynamic environments and managing disruptive elements introduced during propeller failure simulations in drone control technology.

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**Author keywords-** control algorithms; controller; drone safety; fractional-order; PID; propeller failure; quadrotor drones



## NANOFERRITES GAS SENSORS: A CRITICAL REVIEW

**Rathore D.**; Kurchania R.; **Pandey R.K.**

*Sensors and Actuators A: Physical* Volume 3791 December 2024 Article number 115968

### Dr. Deepshikha Rathore

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Alliance School of Sciences,  
Alliance University, Bangalore, INDIA



### Abstract

Gas sensing characteristics of nanoferrites have been critically and comprehensively reviewed along with a discussion on their unique spinel structural and defect characteristics. A special focus on pure as well as doped  $\text{CoFe}_2\text{O}_4$ ,  $\text{NiFe}_2\text{O}_4$ ,  $\text{ZnFe}_2\text{O}_4$ ,  $\text{CuFe}_2\text{O}_4$ ,  $\text{MnFe}_2\text{O}_4$ . has been given due to their technological potential. The dependence of gas sensing properties on the gas sensing parameters such as gas concentration, operating temperature, relaxation, and recovery time as

well as sensitivity, limit of detection and response etc. The influence of crystallite size, adsorption, chemical surface state, and area of sensor on sensitivity has also been analyzed. A critical review of various reported results on nanoferrites gas sensors towards variety of gases has also been included. Finally, a discussion on future developments in designing integrated nanoferrites gas sensors has been presented.

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**Author keywords-** Activation energy; Limit of detection; Nanoferrites; Optimum temperature; Response; Sensitivity



## ENHANCED OVARIAN CANCER SURVIVAL PREDICTION USING TEMPORAL ANALYSIS AND GRAPH NEURAL NETWORKS

**Ghantasala G.S.P.**; Dilip K.; Vidyullatha P.; Allabun S.; Alqahtani M.S.; Othman M.; Abbas M.; Soufiene B.O.

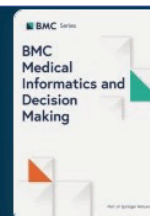
*BMC Medical Informatics and Decision-Making Open Access Volume 24, Issue 1 December 2024 Article number 299*

### Dr. GGS Pradeep

Professor,  
Alliance College of Engineering and Design,  
Alliance University, Bangalore, INDIA

[Home](#) > [BMC Medical Informatics and Decision Making](#) > [Article](#)

## Enhanced ovarian cancer survival prediction using temporal analysis and graph neural networks



### Abstract

Ovarian cancer is a formidable health challenge that demands accurate and timely survival predictions to guide clinical interventions. Existing methods, while commendable, suffer from limitations in harnessing the temporal evolution of patient data and capturing intricate interdependencies among different data elements. In this paper, we present a novel methodology which combines Temporal Analysis and Graph Neural Networks (GNNs) to significantly enhance ovarian cancer survival rate predictions. The shortcomings of current processes originate from their disability to correctly seize the complex interactions amongst diverse scientific information units in addition to the dynamic modifications that arise in a affected person's nation over time. By combining temporal information evaluation and GNNs, our cautioned approach overcomes those drawbacks and, whilst as compared to preceding methods, yields a noteworthy 8.3% benefit in precision, 4.9% more accuracy,

5.5% more advantageous recall, and a considerable 2.9% reduction in prediction latency. Our method's Temporal Analysis factor uses longitudinal affected person information to perceive good-sized styles and tendencies that offer precious insights into the direction of ovarian cancer. Through the combination of GNNs, we offer a robust framework able to shoot complicated interactions among exclusive capabilities of scientific data, permitting the version to realize diffused dependencies that would affect survival results. Our paintings have tremendous implications for scientific practice. Prompt and correct estimation of the survival price of ovarian most cancers allows scientific experts to customize remedy regimens, manipulate assets efficiently, and provide individualized care to patients. Additionally, the interpretability of our version's predictions promotes a collaborative method for affected person care via way of means of strengthening agreement among scientific employees and the AI-

driven selection help system. The proposed approach not only outperforms existing methods but also has the possible to develop ovarian cancer treatment by providing clinicians through a reliable tool for informed decision-making. Through a fusion of Temporal

Analysis and Graph Neural Networks, we conduit the gap among data-driven insights and clinical practice, proposing a capable opportunity for refining patient outcomes in ovarian cancer management operations.  
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**Author keywords-** Deep learning, process; Graph neural networks; Ovarian cancer; Survival prediction; Temporal analysis



## A STUDY ON THE REVERSE EULER SOMBOR INDEX OF VARIOUS GRAPHS

Kirana B.; Shanmukha M.C.; **Usha A.**

*South East Asian Journal of Mathematics and Mathematical Sciences* Volume 20, Issue 2, Pages 39 - 52 Aug 2024

### Dr. Usha Arcot

Professor,  
Alliance School of Applied Mathematics

## A study on the reverse Euler Sombor index of various graphs

Kirana B., Shanmukha M.C., Usha A.

### Abstract

In this paper an attempt to define vertex degree-based topological index, reverse Euler Sombor index is made and its mathematical properties are established. Reverse Euler Sombor index  $REU(G) = \sum_{uv \in E(G)} \sqrt{(\Delta - d_u + 1)^2 + (\Delta - d_v + 1)^2} + (\Delta - d_u + 1)(\Delta - d_v + 1)$ , where  $d_u$  is the degree of the vertex  $u \in V(G)$  and  $\Delta$  is the maximum vertex degree of the graph  $G$ . REU index is computed for standard graphs like

path, cycle, complete, crown, star, wheel, friendship, ladder, butterfly, complete bipartite, helm and regular. The bounds of reverse Euler Sombor index are found using famous Cauchy-Schwarz inequality and Jensen inequality. This study is extended for computing reverse Euler Sombor index for the family of thorn graphs.  
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**Author keywords-** reverse Euler Sombor index; simple graphs; thorn graphs; Vertex degree-based topological indices



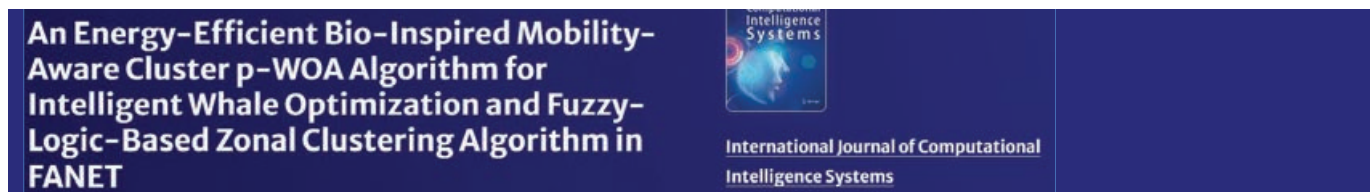
## AN ENERGY-EFFICIENT BIO-INSPIRED MOBILITY-AWARE CLUSTER P-WOA ALGORITHM FOR INTELLIGENT WHALE OPTIMIZATION AND FUZZY-LOGIC-BASED ZONAL CLUSTERING ALGORITHM IN FANET

Karpagalakshmi R.C.; Rani D.L.; Magendiran N.; Manikandan A.

*International Journal of Computational Intelligence Systems Open Access Volume 17, Issue 1 December 2024 Article number 258*

### Dr. R.C. Karpagalakshmi

Professor,  
Alliance College of Engineering and Design,  
Alliance University, Bangalore, INDIA



### Abstract

The newest research topic is flight ad hoc network (FANET). The primary obstacles faced by unmanned aerial vehicles (UAVs) are their limited flight duration and inefficient routes resulting from their great mobility and low battery power. Compared to MANETs or VANETs, FANETS routing is thought to be more difficult because of these topological restrictions. Artificial intelligence (AI)-based clustering techniques can be applied to resolve intricate routing issues in situations when both static and dynamic routing are ineffective. To overcome these path difficulties, clustering techniques based on evolutionary algorithms, including intelligent, probabilistic, bio-inspired whale optimization algorithms (p-WOAs), we suggest fuzzy-logic-based zonal clustering-based routing algorithms in this study to be used in FANET to build clusters. In addition to requiring fewer cluster heads (CHs) for routing, p-WOA offers good coverage and low energy consumption. The stochastic whale optimization technique, which draws inspiration from nature, is

utilized in this paper to build networks and deploy nodes. The next step is to choose cluster heads using a region clustering technique based on fuzzy logic. By selecting the right cluster head, you can decrease routing traffic and increase cluster longevity. Routing overhead is also decreased. The data are then sent to the best path using a reference point group mobility model. The proposed p-WOA was used to test fuzzy integral and fuzzy logic ant optimization, fuzzy integral and neural network interference system, fuzzy integral and whale optimization algorithm (ANFIS-WOA), and fuzzy integral and FL-ALO. An array of indicators, such as cluster count, longevity, cluster configuration time, cluster head consistency, and energy usage, are employed to assess the effectiveness of the suggested methodology. The suggested algorithm works better than the most advanced techniques available today, as demonstrated by the experimental findings presented in this paper.

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**Author keywords-** Bio-inspired; Clustering; FANET; Fuzzy logic; Routing



## TRANSSHIPMENT TROUBLES: INDIA'S QUEST FOR EFFICIENT PORT HUBS

**Dorathy M.B.C.**

*The Emerald Handbook of Tourism Economics and Sustainable Development Pages 81 - 9718 September 2024*

### Dr. M Bina Celine Dorathy

Professor,  
Alliance School of Business,  
Alliance University, Bangalore, INDIA

### Transshipment Troubles: India's Quest for Efficient Port Hubs

M. Bina Celine Dorathy  
The Emerald Handbook of Tourism Economics and Sustainable  
Development

ISBN: 978-1-83753-709-9, eISBN: 978-1-83753-708-2

### Abstract

India should hold a privileged position in maritime transportation due to its extensive coastline and advantageous location. However, the country heavily relies on other maritimations like Singapore and Colombo for transshipment due to insufficient infrastructure and policy framework, and this has created disadvantage to Indian goods in the international market. The government has launched a significant drive to promote three transshipment ports in southern India with top-notch amenities in response to this worrying circumstance. It is anticipated that these ports would compete with the existing transshipment ports, particularly with Colombo, and divert the transshipped goods back to India. The move is expected to make Indian exports more competitive besides making India less prone to geopolitical and

economic disturbances in the region. However, these initiatives have been met with many challenges. In fact, the first attempt of the Indian government to set up an International Container Transshipment Terminal (ICTT) at Vallarpadam in Cochin Port has met with failure despite its best infrastructure and connectivity. High-cost structure seems to deter the competitiveness of this port. Furthermore, the development of Vizhinjam into a transshipment hub in the same region has put additional pressure on Vallarpadam. This chapter draws attention to certain factors that might be considered to enhance the competitiveness of Cochin Port. Also, the study highlights the snags that could have well been avoided while implementing the project and might as well be avoided while implementing other projects in line.

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**Author keywords-** ANP model; Colombo port; DP world; Hub and spoke; Relay network; Vallarpadam ICTT



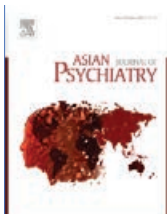
## INDICATORS OF PERINATAL MENTAL HEALTH OF THE INDIAN WOMEN, AND THE NATIONAL FAMILY HEALTH SURVEYS: TRAJECTORY OF OBSCURITY

**Behl R.**

*Asian Journal of Psychiatry* Volume 102 December 2024 Article number 104263

### Ms. Ritika Behl

Assistant Professor,  
Alliance School of Law,  
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Asian Journal of Psychiatry

Supports open access

12.7

CiteScore

3.8

Impact Factor

### Abstract

Perinatal mental health issues in women are a significant public health concern, particularly in low- and middle-income countries like India, where cultural, socioeconomic, and health system challenges can limit effective mental health support. This study explores the perinatal mental health indicators of Indian women, focusing on the data from the National Family Health Surveys (NFHS). Analyzing these surveys reveals a trajectory of obscurity in mental health data collection, as critical indicators of perinatal mental health remain underreported or inadequately assessed. The paper highlights the gaps in the NFHS data related to mental

health conditions like postpartum depression, anxiety, and stress, and discusses the implications of these gaps for healthcare policy, resource allocation, and intervention planning. Recommendations include targeted improvements in data collection and policy focus to better support perinatal mental health initiatives, particularly for vulnerable and marginalized groups in Indian society. This study underscores the need for a more nuanced and inclusive approach to perinatal mental health in India to improve outcomes for mothers and children alike.

**Author keywords-** India; Maternal Health; NFHS; Perinatal Mental Health; Policy making.



## GREEN HORIZON: ESTABLISHING A BIOMASS RECYCLING FACILITY IN THE TIRUPUR-TUTICORIN REGION FOR SUSTAINABLE BIOFUEL SUPPLY TO MARITIME SHIPPING

**Dorathy M.B.C.**

*The Emerald Handbook of Tourism Economics and Sustainable Development Pages 21 - 4018 September 2024*

### Dr. M Bina Celine Dorathy

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Green Horizon: Establishing a Biomass Recycling Facility in the Tirupur-Tuticorin Region for Sustainable Biofuel Supply to Maritime Shipping

M. Bina Celine Dorathy  
The Emerald Handbook of Tourism Economics and Sustainable  
Development  
ISBN: 978-1-83753-709-9, eISBN: 978-1-83753-708-2

### Abstract

Ocean transportation is not only the cheapest and the best mode of bulk transport but also the most polluting form of transportation. The International Maritime Organization (IMO) has set strict targets to cut down carbon dioxide (CO<sub>2</sub>) emissions, following which several initiatives have been taken by the shipping industry to embrace new technologies that can make the industry greener. Significant investments have been made into research and development (R&D) to develop alternative marine fuels. This chapter explores the feasibility of setting up a Biomass Recycling Facility (BRF) in the Tirupur-Tuticorin region in Tamil Nadu. The region was chosen because Tirupur being a textile valley generates tonnes of textile wastes every year. It can become good feedstock for biofuel generation, and it is also near Tuticorin Port, which is one of the

major ports in Tamil Nadu. On an average, every year 1,000 vessels of medium and large size call at this port. There is a high probability that a BRF established in the vicinity can generate and supply bioethanol for the ships calling at Tuticorin Port. It is apparent from the findings of the study that the feedstock generated by textile industry alone may not be sufficient to meet the huge volumes of biofuel requirements of vessels, more over considerable investments into infrastructure and technology are required. But the study points out that still it could become a viable option because of the government support and favourable Foreign Direct Investment (FDI) policies. The growing demand for biofuel and the increasing price in the world market can become an added advantage.

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**Author keywords-** Bioethanol; Biofuel; BRF; MARPOL; Textile wastes



## EXAMINING THE ROLE OF CYBER-SECURITY IN COMBATING ECONOMIC REPERCUSSIONS OF CYBER-CRIMES: STRATEGY FOR INDIA

Shukla S.; Kant R.; Srivastava C.; Gautam A.; **Yadav P.**

*Library Progress International* Volume 44, Issue 3, Pages 4618 – 4627 Jul-Dec 2024

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LIBRARY PROGRESS  
(INTERNATIONAL)



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December  
**Review Process:** Double Blind  
Review, Refereed Journal

### Abstract

The internet penetration level for India has taken a steep rise in the recent past. Not only metropolitan cities but also towns and villages are witnessing the ease of internet availability. Although cyberspace provides ease and convenience in many aspects, it also brings in certain drawbacks and concerns for the users.

These concerns are largely related to the protection of data on the internet. The research article begins with an introduction which summarizes the theme of the research, followed by a review of literature to explore different issues, and gaps in the area of research. The authors have used library-based doctrinal research methodology relying upon secondary data sources to

explore, describe, analyze, and discuss the economic repercussions of digital crimes. The research on each section of this article has been done in consonance with the development of policies in India. Our findings conclude that creating a cyber-resilient environment along with a collaborative legal framework to address cybercrimes would help the nations in securing their economy from cybercrimes. India must fast-track the implementation of its National Cyber Security Strategy and work on establishing exclusive courts for resolving cyber security matters.

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**Author keywords-** cyber-resilience; cyber-security; Cyberspace; digital crimes; economy



## AI GOVERNANCE IN THE BUSINESS WORLD: LEGAL STANDARDS AND MANAGEMENT PRACTICES

Tomer A.; Parmar A.; Rathore B.; Vijayvergia N.; **Goel R.**; Pundir D.S.; Bale A.S.; Savadatti M.B.

*Library Progress International* Volume 44, Issue 3, Pages 10640 – 10649 Jul-Dec 202

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LIBRARY PROGRESS  
(INTERNATIONAL)



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**Number of issues per year:** 2  
**Print frequency:** Half-Yearly  
**Month(s) of publication:** June  
December  
**Review Process:** Double Blind  
Review, Refereed Journal

### Abstract

Technological breakthroughs in artificial intelligence (AI) facilitate the creation of human-like computers capable of autonomous operation and the imitation of cognitive behaviour. The enthusiasm and advancement among managers, scholars, and the general populace have generated considerable excitement across various sectors, prompting several organisations to spend significantly in leveraging technologies via business model innovation (BIM). Managers get less help from academics while attempting to integrate AI into their firm's operations, resulting in a heightened chance of

unsuccessful projects and undesirable outcomes. This research seeks to elucidate AI's role as a driver for BIM. Technological improvements and developments in AI research have generated greater curiosity across many sectors and companies. Nonetheless, inadequate comprehension of the use of AI deployment results in restricted commercial benefits. This article aims to enhance comprehension of AI deployment by examining studies in AI, BMI, and digitisation.

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**Author keywords-** AI; Business; ethics; Legal; Management; regulation



## NURTURING TRUST IN HUMAN-ROBOT INTERACTION AND THE CRUCIAL ROLE OF DIALOGUE AND EXPLICIT AI

Vadivukarasi L.; Ganesh Babu L.; Hasan D.S.; **Rajesh Sharma R.**; Durga Devi N.; Karthick L.

*Trends and Applications in Mechanical Engineering, Composite Materials and Smart Manufacturing Pages 232 – 247 14 August 2024*

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Associate Professor,  
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Trends and applications in mechanical engineering, composite materials and smart manufacturing	
	<p>Responsibility: Surya Narayan Padhi, editor.</p> <p>Publication: Hershey, Pennsylvania (701 E. Chocolate Avenue, Hershey, Pennsylvania, 17033, USA) : IGI Global, 2024.</p> <p>Physical description: 34 PDFs (515 pages)</p> <p>Series: <a href="#">Advances in mechatronics and mechanical engineering (AMME) book series.</a></p>

### Abstract

Modern technology has improved to the level that robots are possible to interact like human beings. Therefore, human-robot interaction has gradually become a part of human society. At the same time, technology is still in the process of refinement for better interaction with humans. Therefore, AI for content detection and dialogue AI has developed as a device for improving human and robot interface. An increase in the online presence of people triggered a change of gratified and explicit AI helps to analyse and filter explicit content according to age set. Conversely, dialoguer AI aids in the process of responding in

accordance with the input given, making it important for human-robot interface. In order to analyse the importance of the role of explicit AI and voice AI for human interface, the succeeding study takes the working process and significance of the same. Furthermore, for a complete understanding, problems are mentioned in a table formation. Moreover, a complete discussion is done for describing the role of open and dialogue Artificial intelligence in human relations.

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## SYNTHESIS OF NOVEL FE-BIOCL BASED NANOSHEETS ASSEMBLED ROD (FBC-NSR)-BASED PHOTOACTIVE MATERIALS: AN EFFECTIVE PHOTODEGRADATION OF ANTIBIOTICS

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*Discover Sustainability Open Access Volume 5, Issue 1 December 2024 Article number 296*

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[Home](#) > [Discover Sustainability](#) > [Article](#)

## Synthesis of novel Fe-BiOCl based nanosheets assembled rod (FBC-NSR)-based photoactive materials: an effective photodegradation of antibiotics



Discover Sustainability

### Abstract

Fe-incorporated BiOCl-nanosheet assembled rods (FBC-NSR) based photoactive materials were synthesized using a simple sol-gel process to degrade tetracycline (TC) pharmaceuticals compound (PCs) under solar irradiation. The as-prepared FBC-NSR-based photoactive materials were characterized using various characterization techniques including scanning electron microscopy (SEM), energy dispersive X-ray spectroscopy (EDX), X-ray diffraction (XRD), diffuse reflectance spectroscopy (DRS), photoluminescent (PL) spectroscopic analysis, and Fourier transform infrared spectroscopy (FT-IR). The structural changes were observed upon doping of Fe metals within the FBC-NSR-based photoactive materials. Intriguingly, the band gap value decreased from  $\sim 1.81$  eV to  $\sim 1.29$  eV with increasing the amount of Fe metals (0.5 g, and

1.0 g) within the FBC-NSR named as FBC-NSR-2 and FBC-NSR-3-based photoactive materials, respectively. The lower band gap value favors the photodegradation of environmental pollution. The synthesized FBC-NSR-3 shows the highest degradation  $\sim 97\%$  and  $\sim 72.1\%$  at 1 mg/L and 10 mg/L TC antibiotic, respectively. The photodegradation was higher at pH 10, indicating  $\cdot\text{OH}$  radicals play a major role in the photodegradation of TC molecules. PL spectra confirm the higher oxygen vacancy, improved transfer of electrons, and separation efficiency of photo-induced electron hole-pairs, thereby high photodegradation efficiency. Therefore, the preparation of FBC-NSR-based photoactive materials is simple, cost-effective, and promising semiconductor materials for the removal of environmental pollution.

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**Author keywords-** Bismuth; Iron; Nanosheets; Photoactive materials; Pollution; Semiconductors; Tetracycline



## DROP-WEIGHT IMPACT RESPONSES OF KENAF FIBRE-REINFORCED COMPOSITE-METAL LAMINATES: EFFECT OF CHEMICAL TREATMENT AND FIBRE COMPOSITION

Ng L.F.; Yahya M.Y.; Muthukumar C.; **Parameswaranpillai J.**; Leong H.Y.; Hamzah S.M.S.A.S.

*Applied Science and Engineering Progress* Volume 17 October 2024 Article number 7082

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Applied Science and  
Engineering Progress

ISSN: 2672-9156 | E-ISSN: 2673-0421

### Abstract

Recently, fiber-metal laminates have gained high attention from material scientists and engineers, particularly when it comes to impact-critical applications. When compared to metallic alloys and composite materials, fiber-metal laminates offer several distinguishing advantages. This work intends to evaluate the low-velocity response of kenaf fiber-reinforced polypropylene metal-composite laminates with various fiber compositions, in line with the current trend of using natural fiber as possible reinforcement in composite materials. In addition, a comparison was made between the low-velocity impact response of non-treated and chemical-treated kenaf fiber-reinforced composite-metal laminates. A hot molding compression technique was employed to fabricate the laminates. Low-velocity impact tests were performed based on ASTM D7136 to determine the peak force,

maximum displacement, and energy absorption of the materials. The results confirmed that NaOH treatment and increased fiber content resulted in a higher peak force of NaOH-treated kenaf-based metal laminates. For NaOH-treated laminates, the peak force of laminates with 70 wt% was found to be 11.20% higher than laminates with 50 wt% at the impact energy of 60 J. At fiber content of 70 wt%, the peak force of NaOH-treated laminates is 2.14% greater than that of untreated laminates when subjected to low-velocity impact with an energy level of 60 J. However, laminates with low fiber content and without NaOH treatment manifested higher maximum displacement and energy absorption due to the ductile behavior of such materials.

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**Author keywords-** Chemical treatment; Energy absorption; Fiber-metal laminates; Fracture behaviors; Kenaf fiber; Low-velocity impact; Natural fiber(PVA) films



## EVALUATION OF PHYSICAL AND MECHANICAL PROPERTIES OF PINEAPPLE LEAF AND KENAF FABRICS AS POTENTIAL REINFORCEMENT IN BIO-COMPOSITES

Ng L.F.; Yahya M.Y.; Leong H.Y.; **Parameswaranpillai J.**; Dzulkifli M.H.

*Biomass Conversion and Biorefinery* Volume 14, Issue 20, Pages 25133 - 25142

October 2024

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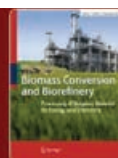
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[Home](#) > [Biomass Conversion and Biorefinery](#) > [Article](#)

## Evaluation of physical and mechanical properties of pineapple leaf and kenaf fabrics as potential reinforcement in bio-composites



Biomass Conversion and Biorefinery

### Abstract

The current focus has been shifted from artificial to natural fibers due to increasing environmental awareness and consciousness. In this regard, various types of natural fiber have been explored as potential reinforcement in composite materials. Pineapple leaf and kenaf fibers have been shown to have several outstanding characteristics over other natural fibers. This study examines the physical and mechanical properties of pineapple leaf and kenaf fabrics in plain weave architectures to determine their potential as reinforcement in composite laminates. A comprehensive characterization was performed on the two types of woven fabrics. Moreover, the tensile properties of both dry and wet woven fabrics were identified in two different orientations. The findings showed that the fabric density and weight of PALF were slightly higher than kenaf fabrics. However, the

yarn size, crimp level, and fabric thickness of PALF were smaller than kenaf. In terms of tensile properties, the tensile strength and modulus of fabrics in the warp direction were higher than in the weft direction, regardless of fiber type. Fabrics at an off-axis angle demonstrated the lowest tensile strength and modulus but exhibited the highest tensile strain. In addition, it was found that the moisture absorption of the fabrics deteriorated their tensile strength and modulus but increased the tensile strain. Overall, PALF fabrics with lower crimp levels and higher mechanical properties outperformed kenaf fabrics, and thus, PALF fabrics have a higher potential to be the reinforcement for biocomposites.

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**Author keywords-** Fabric orientations; Kenaf fabric; Moisture effects; Physical properties; Pineapple leaf fabric; Tensile properties



## STRUCTURAL STUDY AND GAS SENSING APPLICATION OF NANOCRYSTALLINE MIXED FERRITES SYNTHESIZED BY AUTO-COMBUSTION METHOD

Hathiya L.J.; **Rathore D.**; Khan M.; Joshi H.H.

*Journal of Materials Science: Materials in Electronics* Volume 35, Issue 27  
September 2024 Article number 1810

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Home > *Journal of Materials Science: Materials in Electronics* > Article

## Structural study and gas sensing application of nanocrystalline mixed ferrites synthesized by auto-combustion method

Published: 27 September 2024

Volume 35, article number 1810, (2024) [Cite this article](#)



*Journal of Materials Science: Materials in  
Electronics*

### Abstract

The present research work reports the synthesis of nanocrystalline nickel ferrite and its composition with manganese ferrite by employing the citrate-gel auto-combustion route to study the structural properties and gas sensing application. The gas sensing devices were successfully synthesized in the form of pellets to study their response toward the target gases. The stoichiometry of ferrite powders is confirmed by EDAX analysis. The crystallite size, porosity, and other structural parameters were deduced by XRD analysis. The average particle size obtained by TEM measurement was compared with

crystallite size. The basic characteristics of spinel ferrites were studied by FTIR analysis. The optical bandgap energy value of samples was found by UV–Vis. DRS analysis. The gas sensing experiment was performed successfully to study the gas response (%) at different gas concentrations (ppm) and temperatures ( ). The maximum sensitivity ( $S_{max}$ ) of around 99% was exhibited by  $Mn_{0.8}Ni_{0.2}Fe_2O_4$  at different temperatures.

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## PREDICTION OF TRANSIENT TEMPERATURE AT BIT-ROCK INTERFACE USING NUMERICAL MODELLING APPROACH AND OPTIMIZATION

Shankar V.K.; Lakshmikanthan A.; Selvan C.P.; **Girish B.M.**; Kunar B.M.; de Jesus Agustin Flores Cuautle J.; Ramakrishna V.K.; Malik V.

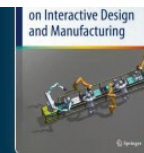
*International Journal on Interactive Design and Manufacturing Volume 18, Issue 8, Pages 6109 - 6121 October 2024*

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## Prediction of transient temperature at bit-rock interface using numerical modelling approach and optimization

Original Paper | Published: 12 October 2023



International Journal on Interactive

### Abstract

One of the major factors impacting on drill bit performance during rock drilling is interface temperature. The performance of the drill bit during drilling operations not only depends on operations parameters but also the properties of rock during drilling in laboratory and field investigations. Hence the present study focused on interface of bit-rock, the temperature had been determined by developing a specially grounded thermocouple. Over 500 different test conditions were performed in each rock sample's case during experimental drilling on a cylindrical block of UCS of 17.83 MPa (fine-grained sandstone grey-FG), 13.70 MPa (medium-grained sandstone-MG), and 51.67 MPa (fine-grained sandstone pink-FGP). The results revealed that the average increase in interface temperature for MG is about 53.74%, FG is about

93.26%, and FGP is about 165.22%. The significant parameters such as uniaxial compressive strength (26%), depth (33%), rate of penetration (15.2%), diameter of the bit (5.26%), and thrust (5.04%) are the most influenced parameters on temperature, followed by spindle speed (1.04%), and torque (0.23%) respectively. The proposed regression models successfully predict the temperature with an R2 value of 91.74%, 90.30%, and 90.95% for MG, FG, and FGP, respectively. Finally overall regression model is developed by considered operational parameters with rock properties to predict temperature and R2 value of 80.8% for all three types of rock samples considered. © The Author(s), under exclusive licence to Springer-Verlag France SAS, part of Springer Nature 2023.

**Author keywords-** Bit-rock interface temperature; Drilling; Grounded thermocouple; Sandstone; Statistical analysis



## EMOTION RECOGNITION WITH A HYBRID VGG-RESNET DEEP LEARNING MODEL: A NOVEL APPROACH FOR ROBUST EMOTION CLASSIFICATION

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*Salud, Ciencia y Tecnología - Serie de Conferencias* Volume 36 March 2024 Article number 960

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#### Vol. 3 (2024): Salud, Ciencia y Tecnología - Serie de Conferencias



Published: 2024-01-01

### Abstract

The recognition and interpretation of human emotions are crucial for various applications such as education, healthcare, and human-computer interactions. Effective emotion recognition can significantly enhance user experience and response accuracy in these fields. This research aims to develop a robust emotion recognition system by integrating VGG and ResNet architectures to improve the identification of subtle variations in facial expressions. This paper proposes a hybrid deep learning approach using a combination of VGG and ResNet models. This system incorporates multiple convolutional and pooling layers along with residual blocks to capture intricate patterns in facial expressions. The FER2013 dataset was employed to train and evaluate the model's performance.

Comparative analysis was conducted against other models, including VGG16, DenseNet, and MobileNet. The hybrid model demonstrated superior performance, achieving a training accuracy of 99,80 % and a validation accuracy of 66,17 %. In contrast, the VGG16, DenseNet, and MobileNet models recorded training accuracies of 54,27 %, 68,51 %, and 84,68 %, and validation accuracies of 46,58 %, 56,11 %, and 60,35 %, respectively. The proposed hybrid approach effectively enhances emotion recognition capabilities by leveraging the strengths of VGG and ResNet architectures. This method outperforms existing models, offering a significant improvement in both training and validation accuracies for emotion recognition systems.  
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**Author keywords-** CNN; Deep Learning; Densenet; Emotion Detection; Hybrid Model; Image Classification; Mobilenet; Resnet; VGG16



## BLENDING OF KNOWLEDGE MANAGEMENT WITH INDUSTRY 4.0: A NEW FORMULA FOR SUCCESS!

Gowda K.R.; Jaswant S.V.; Kureethara J.V.; Banerjee J.

*Knowledge Management and Industry Revolution 4.0* Pages 183 – 195 1 January 2024

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Chapter 7

### Blending of Knowledge Management with Industry 4.0

A New Formula for Success!

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Book Editor(s): Rajendra Kumar, Vishal Jain, Venus C. Ibarra, Corrienna Abdul Talib, Vinay Kukreja



Knowledge Management and Industry Revolution 4.0

### Abstract

The convergence of Industry 4.0 and knowledge management presents a transformative opportunity for organizations seeking enhanced efficiency and sustainable growth. In the context of organizational processes, the amalgamation of technological advancements and effective knowledge management practices can lead to a reduction in costs and an overall improvement in operational efficiency. Understanding the intricacies of knowledge management procedures is crucial, encompassing the production, transfer, acquisition, storage, and utilization of knowledge resources across the organizational spectrum. The advent of the fourth industrial revolution, commonly referred to as Industry 4.0, has significantly reshaped traditional knowledge management systems. Industry 4.0 introduces the interconnectivity of machines and their autonomous capacity to learn and share data. While both knowledge management and Industry 4.0 offer distinct benefits individually, a strategic approach that combines the strengths of both can unlock new

opportunities for efficient business growth and success in the external environment. This article delves into the symbiotic relationship between Industry 4.0 and knowledge management, emphasizing their combined potential. Industry 4.0 generates vast volumes of data, and by leveraging knowledge management, organizations can derive valuable insights to inform decision-making processes. Historical data and best practices, accessible through knowledge management, contribute to process optimization. Integration with Industry 4.0 technologies, such as automation and the Internet of Things, further enhances process efficiency. The marriage of knowledge management and Industry 4.0 extends beyond process optimization to workforce development. Recognizing employees as the building blocks of an organization, this integration enables better management by upgrading knowledge and skills. Consequently, it enhances the overall productivity of the workforce, contributing to organizational success. In the dynamic landscape of globalization, technology,

and competition, this chapter serves as a guide for organizations aiming to harness the collective power of knowledge management and Industry 4.0. By exploring their complementary benefits, it seeks to facilitate the

informed utilization of these tools for the betterment and sustainability of businesses in the contemporary world.

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**Author keywords-** industry 4.0; knowledge management; knowledge sharing; Technology



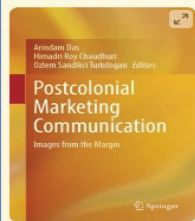
## POSTCOLONIAL MARKETING COMMUNICATION: IMAGES FROM THE MARGIN

**Das A.**; Chaudhuri H.R.; Turkdogan O.S.

*Postcolonial Marketing Communication: Images from the Margin* Pages 1 – 178 20  
April 2024

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## Postcolonial Marketing Communication

Images from the Margin

Book | © 2024

### Abstract

This volume approaches marcomm (marketing communication) from the phenomenology of markets in the context of the Global South and its postcolonial experiences. It provides a fresh perspective to the current paradigm and offers a fresh discourse on the current theories of marketing communication. The book demonstrates how marketing communication, an essentially Global North discourse reinforcing hegemony, can be critiqued and deconstructed when subjected to postcolonial critical analysis. Recognizing as commonplace, the Global South has either willingly embraced or been ideologically coerced into adopting a Western marketing communication system. This system is evident in its theories and practices, mirroring Western themes, symbols, stories, and knowledge frameworks, consequently fostering subjectivities that lack critical self-reflection and are dependent on Western influences. But what remains more interesting is how such an ideological system, mediated through

a quintessential Global South modernity, generates a new habitation of modernity at the margin. Essentially a reaction from the Global South perspective, the book thoroughly examines the realities around marketing communication discourses. The book even engenders alternatives to hegemonic marketing communication discourses and a set of “other” epistemologies of alternate modernities of equity and justice. From African to Turkish, from Indian to Canadian first nations, Australian Aborigines to Polynesian-American, postcolonial subjectivities through marcomm across the globe get a voice in the volume. The collection in this volume is a decolonizing attempt that thwarts cultural globalization, examines colonial discourses, cuts across essentialized identities, mobilizes resistance, interrogates power structures and mechanisms of knowledge production, dissemination, and legitimization, and celebrates the new-formed cultural identity of the Third/Fourth World. The book is essential

read for researchers, students and practitioners of  
Marketing who wish to gain a deeper understanding of  
an oft ignored aspect of marcomm.

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**Author keywords-** Colonialism; Consumer culture; Consumer research; Global south; Identity; Marketing communication; Neocolonialism; Postcolonial; Resistance; Subversion



## EVALUATION OF THE ENVIRONMENTAL EFFECTS OF MEDICAL WASTE AND ITS INCREASE AFTER COVID-19 PANDEMIC

Sharma B.; Sailaja M.; Bansal R.; Soujanya K.; Nerlekar T.; Acharjee P.B.;

**Rajagopal R.**

*Journal of Environmental Protection and Ecology* Volume 25, Issue 6, Pages 1833 – 18452024

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## EVALUATION OF THE ENVIRONMENTAL EFFECTS OF MEDICAL WASTE AND ITS INCREASE AFTER COVID-19 PANDEMIC

### Abstract

Medical waste is a special course of harmful contaminants. Improper treatment would cause tributary environmental pollution, expressly when countering to communal health tragedies. However, there are quite few explores on the peer group of medical waste, and there is a deficiency of basic considerate of its spatial-temporal heterogeneity. The purpose of this study is to conduct a systematic estimation of the effectiveness of these incongruous discarding procedures in expressions of water eminence and wellbeing. The research is centred on municipal areas characterised by vital medical waste production, which has the probable to taint groundwater and water sources. A complex approach is exploited in the procedure, which comprises of water sample collection, laboratory analysis, field surveys, and GIS-based spatial mapping. Medical waste disposal hotspots, such as healthcare facilities, waste collection points, and disposal sites, will be acknowledged through field surveys. Inspects will be showed on water samples poised from a variability

of sources, including lakes, rivers, and groundwater wells, to find pathogens, medical residues, heavy metals, and organic pollutants, which are all gauges of medical waste contamination. The test centre analysis will utilise chic policies to portion the deliberation of pollutants in water samples, thereby gauging the likely hazards they pose to marine ecosystems and human health. Longitudinal visualisation of uncleanness distribution through GIS-based mapping facilitates the credentials of vulnerable areas and potential pathways for pollutant transport. The findings of this research will offer significant helps to our understanding of the extent of environmental deterioration resulting from the inadequate disposal of medical refuse into urban water sources. The results of this study will provide valuable insights for the creation of alertness campaigns, regulatory frameworks, and mitigation strategies that are operative in talking this urgent environmental concern and shielding the truthfulness of water in municipal regions. © 2024, Scibulcom Ltd.. All rights reserved.

**Author keywords-** environmental impact; groundwater pollution; hazardous waste; heavy metals and mitigation strategies; improper disposal; medical waste; public health



## E-AUTHENTICATION SYSTEM USING EYE-BLINKING AND DEEP LEARNING

**Achary R.; Shelke C.J.**

2<sup>nd</sup> IEEE International Conference on Networks, Multimedia and Information Technology, NMITCON 2024  
2024 2<sup>nd</sup> IEEE International Conference on Networks, Multimedia and Information Technology, NMITCON 2024 Hybrid, Bengaluru 9 August 2024 through 10 August 2024 Code 203166

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## E-Authentication System using Eye-Blinking and Deep Learning

Publisher: IEEE

Cite This

PDF

Rathnakar Achary ; Chetan J Shelke [All Authors](#)

### Abstract

The Personal Identification Number (PIN) are commonly employed as a security measure for authentication purposes. When utilizing a PIN for verification of authentication, the users are required to input a physical PIN. However, this method may be susceptible to security vulnerabilities through methods such as observing someone's shoulder or tracking thermal signatures. In this research, we adopted Eye-Blinking for authentication of the system, with the advantage that it leaves no bodily footprints in the system and provides a more robust alternative for advanced security. The eye-blinking pattern is a highly secured and unique

biometric identifier that cannot be easily replicated, making it difficult to hack or bypass. An E-Authentication System using Eye-Blinking and its analysis using deep learning explains an individual's eye-blinking patterns as a unique identifier to verify their identities. The systems capture their eye-blinking patterns and compare them to the stored patterns in its databases. If the patterns match, the systems grant access to the user. The systems aim at achieving high accuracy, reliability, and integration with existing security infrastructure and authentication protocols.

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**Author keywords-** Authentication; Eye Localization; Eye-blink; HAAR Cascade Face Detection



## MACHINE LEARNING CLASSIFIERS AND HYPERPARAMETER TUNING TO ENHANCE PREDICTION OF ASD: AN AUTOMATED DJANGO APPLICATION

Habib M.; Rajah P.; Ravikumar R.N.; **Nadarajan S.**; Betgeri S.S.; Itagi M.

2024 2<sup>nd</sup> World Conference on Communication and Computing, WCONF 2024 2024

2nd World Conference on Communication and Computing, WCONF 2024 Raipur12

June 2024 through 14 June 2024 Code 203116

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## Machine Learning Classifiers and Hyperparameter Tuning to Enhance Prediction of ASD: An Automated Django Application

Publisher: IEEE

[Cite This](#)

[PDF](#)

Masruk Habib ; Puvanenthira Rajah ; Ravikumar R N ; Sivakumar Nadarajan ; Santushti Santosh Betgeri ; Mahi Itagi [All Authors](#)

### Abstract

Autism Spectrum Disorder (ASD) impacts social interaction, communication, and behavior as a result of variations in brain development of children. Typically, symptoms manifest around the age of 2 and encompass a decrease in eye contact during early infancy, a lack of response to one's name, indifference towards caregivers, a decline in developmental progress, loss of language abilities, and distinct behavioral patterns. The objective of this study is to assess the predictive accuracy of different machine learning algorithms, such as Logistic Regression (LR), Decision Tree (DT), Support Vector Machine (SVM), Naive Bayes (NB), and Extra Trees (ET), by utilizing the UCI Repository dataset. We prioritize the target variable "Class/ASD" along with twenty other attributes, such as age, gender, and AQ-

10 (Child version) outcomes. Prior to hyperparameter tuning, the SVM classifier achieved the highest accuracy of 0.949. The LR and ET classifiers both achieved perfect precision and recall scores, resulting in an accuracy of 0.991. After fine-tuning, the KNN, NB, SVM, LR, ET, and DT classifiers demonstrated noteworthy enhancements, with SVM, LR, ET, and DT achieved 100% classification metrics. This demonstrates the significant influence of hyperparameter tuning on improving the performance of the model. Finally, using Django Framework a web application is developed which allows the user to enter input data, DT model will process and predict the disorder.

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**Author keywords-** Autism Spectrum Disorder; Django; Hyperparameter Tuning; Machine Learning; Predictive Modeling



## ENHANCING DEEP LEARNING FOR AUTISM SPECTRUM DISORDER DETECTION WITH DUAL-ENCODER GAN-BASED AUGMENTATION OF ELECTROENCEPHALOGRAPH DATA

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*Salud, Ciencia y Tecnologia - Serie de Conferencias Volume 3 6 March 2024 Article number 958*

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Published: 2024-01-01



### Abstract

Autism Spectrum Disorder (ASD) is a general neurodevelopmental condition that requires early and accurate diagnosis. Electroencephalography (EEG) signals are reliable biomarkers for ASD detection and diagnosis. A recent Deep Learning (DL) model called Resting-state EEG-based Hybrid Graph Convolutional Network (Rest-HGCN) has been developed for this purpose. However, a challenge in ASD diagnosis is the limited availability of EEG data, leading to imbalanced classes and ineffective model training. To address this issue, a new approach is proposed in this paper, which involves a generative model for EEG data augmentation. A novel Dual Encoder-Balanced Conditional Wasserstein Generative Adversarial Network (DEBCWGAN) is designed to produce fine synthetic minority-class EEG examples and augment the original training dataset. This model integrates the Variational Auto-Encoder (VAE) and balanced conditional Wasserstein GAN. Initially, EEG signals

for ASD in the training dataset are pre-processed as Differential Entropy (DE) features and split into different segments. Each feature segment is processed in the temporal and the spatial domain depending on the electrode place. Then, twin encoders are trained to capture both spatial and temporal information from these features, concatenate them as Latent Variables (LVs), and provide them to the decoder to produce synthetic EEG examples. Additionally, gradient penalty and L2 regularization are used to speed up convergence and prevent overfitting effectively. Further, the augmented dataset is used to train the Rest-HGCN for ASD detection, enhancing its robustness and generalizability. Finally, test outcomes demonstrate that the DEBCWGAN-GP-Rest-HGCN on the EEG Dataset for ASD and ABC-CT dataset achieves 91,6 % and 88,1 % accuracy, respectively compared to the Rest-HGCN, AlexNet, K-Nearest Neighbor (KNN) and Support Vector Machine (SVM). © 2024; Los autores.

**Author keywords-** Autism Spectrum Disorder; Class Imbalance; Data Augmentation; Differential Entropy; Dual-Encoder; EEG; Rest-HGCN; Wasserstein GAN



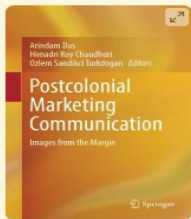
## SUBALTERN AGENCIES, MARKETING COMMUNICATIONS, AND COUNTER DISCOURSES IN THE POSTCOLONY

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*Postcolonial Marketing Communication: Images from the Margin* Pages 83 - 9620 April 2024

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## Postcolonial Marketing Communication

Images from the Margin

Book | © 2024

### Abstract

Global orders of marketization, across the world and the borders, had been adequately promoted through neoliberal channels, both being closely linked together

and effective in imagining markets and commodifying products and services where none existed before.



## PROTECTING VULNERABLE ROAD USERS USING IOT-CNN FOR SAFETY MEASURES

**Karpagalakshmi R.C.**; Sampooram M.M.; Vinya V.L.; Monikapreethi S.K.; Yuvaraj S.; Srinivasan C.

*5<sup>th</sup> International Conference on Electronics and Sustainable Communication Systems, ICESC 2024 – Proceedings Pages 363 – 369 2024 5<sup>th</sup> International Conference on Electronics and Sustainable Communication Systems, ICESC 2024 Coimbatore 7 August 2024 through 9 August 2024 Code 203021*

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## Protecting Vulnerable Road users using IoT-CNN for Safety Measures

Publisher: **IEEE**

[Cite This](#)

[PDF](#)

[R C Karpagalakshmi](#) ; [M Maria Sampooram](#) ; [Viyayapu Lokeshwari Vinya](#) ; [Monikapreethi S K](#) ; [Yuvaraj S](#) ; [C. Srinivasan](#) **All Authors**

### Abstract

The increasing number of road accidents involving Vulnerable Road Users (VRUs) highlights the urgent need for innovative safety solutions. This study proposes a novel approach that leverages IoT and Convolutional Neural Network (CNN) technologies to enhance VRU safety. By deploying IoT sensors on vehicles and infrastructure, the proposed model can accurately track VRU locations and environmental conditions in real-time. A CNN-based model is developed to robustly detect and classify VRUs under

various traffic scenarios, with continuous improvement through learning. The integration of IoT and CNN enables real-time communication and timely warnings, facilitating proactive interventions to prevent accidents. Experimental evaluations demonstrate the effectiveness of the proposed system in improving VRU safety. This research offers a promising solution for reducing road accidents and creating safer urban environments.

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**Author keywords-** Object detection; Proactive interventions; Real-time monitoring; Road accidents; Traffic safety



## MITIGATING ECONOMIC LOSSES IN POTATO FARMING: ACCURATE IDENTIFICATION OF POTATO LEAVES DISEASES

Biju J.P.; **Ramalakshmi K.**; Venkatesan R.; Sundar G.N.; Nancy G.; Manoshika Catherine J.  
*2024 Asia Pacific Conference on Innovation in Technology, APCIT 2024 2024 2024 Asia Pacific Conference on Innovation in Technology, APCIT 2024 Mysore 26 July 2024 through 27 July 2024 Code 202724*

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### Mitigating Economic losses in Potato farming: Accurate identification of Potato leaves diseases

Publisher: IEEE

[Cite This](#)

[PDF](#)

Jeffrey Phillip Biju ; K Ramalakshmi ; R Venkatesan ; G Naveen Sundar ; Golden Nancy ; Manoshika Catherine J **All Authors**

### Abstract

Potatoes, a globally recognized vegetable, are integral to agriculture worldwide. However, potato leaf diseases pose significant threats to potato yields. In this paper, we propose a methodology utilizing image processing techniques to identify and classify these diseases promptly, minimizing financial losses for farmers. Leveraging machine learning, particularly Convolutional Neural Networks (CNN), our model accurately detects potato leaf diseases from images. We meticulously engineer each step, from data preprocessing to model

evaluation, utilizing TensorFlow and Keras. Through dataset visualization, partitioning, and augmentation, we prepare our model for robust training. The CNN architecture, chosen for its superior image classification capabilities, demonstrates remarkable accuracy in distinguishing between healthy and diseased potato leaves. Our methodology showcases the potential of technology to revolutionize agriculture by enabling early disease detection and efficient crop management.

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**Author keywords-** CNN; Potato



## ENHANCING CONNECTIVITY IN RURAL AREAS: SECURE SPECTRUM ACCESS IN 6G NETWORKS USING ADVANCED ENCRYPTION AND SPECTRUM SENSING TECHNIQUES

Deepanramkumar P.; Sharmila A.H.; **Radhakrishnan N.**; Sudheer D.; Devasia J.V.; Reddy C.P.; Yenduri G.; Jaisankar N.

*IT Professional Volume 26, Issue 4, Pages 22 – 282024*

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### Enhancing Connectivity in Rural Areas: Secure Spectrum Access in 6G Networks Using Advanced Encryption and Spectrum Sensing Techniques

Publisher: **IEEE**

[Cite This](#)

[PDF](#)

P Deepanramkumar : A Helen Sharmila : Niranchana Radhakrishnan : Devulapalli Sudheer : Jeethu V. Devasia : Ch. Pradeep Reddy

### Abstract

The advancement of 6G cognitive radio networks aims to reduce latency in rural and remote areas. Very few studies have been conducted on this technology. Therefore, this study utilizes massive multiple-input, multiple-output (MIMO) technology for secure data transmission at 6G base stations. Blockchain technology authenticates IDs and maintains secure records for network users, with decentralization achieved through the chimp optimization algorithm. The availability of the spectrum is monitored using the Q-learning hidden sparse variate logistic regression model,

and the channel-state information is predicted using the quasi-Newton iterative unscented Kalman filter algorithm. Additionally, beamforming is enhanced through cooperative strategies. Secure routing is facilitated by the golden eagle optimization-hyper elliptic curve cryptography algorithm, where data are routed according to paths determined by the Dijkstra algorithm. The MIMO-6G-cognitive radio-based Internet-of-Things framework performs better compared to existing methods.

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## THE SYNERGY OF MPJSA: A NOVEL META-HEURISTIC APPROACH FOR OPTIMIZING DISTRIBUTION SYSTEMS WITH DGS

Guru P.; Malik N.; **Mahapatra S.**

*Facta Universitatis, Series: Electronics and Energetics* Volume 37, Issue 3, Pages 541 – 560 2024

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## Facta Universitatis. Series: Electronics and Energetics

☎ 0353-3670 (PRINT) / 2217-5997 (ONLINE)

### Abstract

This article uses an innovative approach to illustrate optimal distribution systems planning, incorporating DG systems. It intends to decrease energy losses while enhancing voltage profiles and the net profit, crucially influenced by reactive and active power injections. The recommended approach combines the Marine Predator Algorithm (MPa) and Jellyfish Search Algorithm (JSA) into a hybrid meta-heuristic optimization technique named MPJSA. The hybrid MPa and JSA draws inspiration from the efficient hunting behavior of marine predators like sharks and the collective movement patterns of jellyfish. By combining these strategies, it aims to enhance optimization algorithms exploration, exploitation, adaptability, and robustness in solving

complex problems. Motivated by the societal conduct of marine predators and jellyfish, this hybrid algorithm is employed to assess the consequences of installing DG in radial distribution systems, considering techno-economic benefits. Multiple DGs are evaluated to achieve optimization goals. The MPJSA effectiveness is illustrated using the IEEE 33-bus system, showing significant reductions in energy and power losses and upgraded voltage profiles with total net profit. Comparative analysis with other nature-inspired approaches highlights the excellence of the proposed method.

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**Author keywords-** Distributed Generation; Hybrid Optimization; Jellyfish Search; Marine Predator Algorithm; Radial Distribution System



## ADVANCEMENTS IN MEDICAL IMAGING BASED ON IMAGE DENOISING, DATA AUGMENTATION, AND CLASSIFICATION WITH COMPUTATIONAL TECHNIQUES

**Muthulakshmi V.; Ramalakshmi K.**

*5<sup>th</sup> International Conference on Electronics and Sustainable Communication Systems, ICESC 2024 – Proceedings Pages 119 – 125 2024 5<sup>th</sup> International Conference on Electronics and Sustainable Communication Systems, ICESC 2024 Coimbatore 7 August 2024 through 9 August 2024 Code 203021*

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## Advancements in Medical Imaging Based on Image Denoising, Data Augmentation, and Classification with Computational Techniques

Publisher: IEEE

Cite This

PDF

V. Muthulakshmi ; K. Ramalakshmi **All Authors**

### Abstract

Nowadays, medical imaging techniques are often not directly suitable for disease classification due to various noise factors and limited image availability. Innovative approaches to image denoising, data augmentation, and classification have been made possible by the fast development of computer technologies, which have had a significant influence on medical imaging. The use of Generative Adversarial Networks (GANs) for image denoising and the creation of synthetic data to supplement training datasets are the primary focus of this review, which analyzes the development and incorporation of state-of-the-art computational methods. This survey also highlights the critical function of GANs in separating important anatomical features from

background noise, greatly improving the accuracy of medical picture analysis. Exploring data augmentation by synthetic picture synthesis also reveals how it helps overcome dataset restrictions to train deep learning models. In addition, the developments in classification approaches, this survey highlights how Convolutional Neural Networks (CNNs) and ensemble learning have revolutionized diagnostic capacities and detection accuracies in security applications. This survey lays out the complex effects of these technology developments on the accuracy and trustworthiness of medical imaging procedures by synthesizing all the latest research findings.

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**Author keywords-** Classification Techniques; Convolutional Neural Networks (CNNs); Data Augmentation; Generative Adversarial Networks (GANs); Image Denoising; Medical Imaging



## LIFE CYCLE ASSESSMENT OF MINERAL FIBERS AND THEIR COMPOSITES

**Rajeshkumar L.**, Ajithkumar S.; Arulmurugan B.; Bhuvaneshwari V.

*Synthetic and Mineral Fibers, their Composites and Applications* Pages 631 - 6551

January 2024

### Dr. Rajeshkumar Lakshminarasimhan

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### Abstract

Mineral fiber composites have garnered widespread use in diverse industries due to their exceptional properties compared with other fibers. These composites find applications in electronics, aviation, medical, maritime, automotive, and concrete structures, boasting advantages such as strength, durability, and lightweight properties. However, their production and disposal pose significant environmental challenges. The energy-intensive manufacturing processes involving fiber extraction, processing, and composite fabrication, contribute to environmental impacts. Furthermore, the nonbiodegradable nature of these composites raises concerns during disposal. To address these environmental issues, life cycle assessment (LCA) studies are conducted, thoroughly analyzing all life

cycle stages, from raw material extraction to end-of-life disposal, to assess the environmental footprint of mineral fiber composites. This chapter explores the comprehensive LCA and environmental impact assessment studies on mineral fibers and their composite manufacturing processes. It provides invaluable insights into the environmental performance of mineral fiber composites, enabling the formulation of strategies to minimize their negative effects and foster more sustainable practices in their production and utilization.

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**Author keywords-** carbon footprint; Composite materials; environmental impact assessment; glass fiber; life cycle assessment; mineral fiber composite

Indexing/Quartile - Scopus/Q2 | Percentile - 56<sup>th</sup> | Impact Factor - 1.2 | SDG

## MODELLING THE GROWTH AND CYCLICAL EFFECTS OF INTERNATIONAL REMITTANCES IN FIJI

Kumar N.N.; **Kumar S.**; **Sharma M.**; Sisodia G.S.






*Applied Economics Letters* 2024

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Research Letter

## Modelling the growth and cyclical effects of international remittances in Fiji

Nikeel Nishkar Kumar , Sunil Kumar , Manu Sharma  & Gyanendra Singh Sisodia  

Published online: 12 Oct 2024

### Abstract

We model the trend/permanent and cyclical associations between international remittances and GDP using annual data from Fiji from 1979 to 2020. An extended co-feature methodology which incorporates asymmetric effects in the cyclical models is used. The findings indicate a significant and positive association between the permanent components of remittances and GDP. The cyclical associations suggest that an increase in remittances is negatively associated with negative GDP shocks in recessions providing some support for

its function as an insurance mechanism. Positive shocks to remittances are not associated with positive GDP shocks suggesting that remittances may not contribute to an overheating economy. The findings stress the importance of cyclical in the association between remittances and GDP. Policymakers benefit with information on how remittances influence economic activity in different phases of the business cycle.

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**Author keywords-** asymmetric effects; co-feature analysis; cyclical; Remittances led growth hypothesis



## STUDENT'S PERFORMANCE PREDICTION USING MACHINE LEARNING ALGORITHMS- A COMPARATIVE STUDY

Kadu V.; Mishra P.K.; Dandhare S.; **Patni J.C.**; Chandel P.; Pathak S.; Bahadure N.  
*2024 OPJU International Technology Conference on Smart Computing for Innovation and Advancement in Industry 4.0, OTCON 2024 2024 OPJU International Technology Conference on Smart Computing for Innovation and Advancement in Industry 4.0, OTCON 2024 Raigarh 5 June 2024 through 7 June 2024 Code 203017*

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### Student's Performance Prediction Using Machine Learning Algorithms- A Comparative Study

Publisher: IEEE

Cite This

PDF

Varun Kadu ; Pawan Kumar Mishra ; Sarthak Dandhare ; Jagdish Chandra Patni ; Palash Chandel ; Soham Pathak **All Authors**

### Abstract

Predicting and enhancing student performance has been a crucial topic of concentration in education amid the quick development of technology and the increasing need for higher-quality instruction. The use of machine learning technology to forecast pupils' academic success is covered in detail in this study report. This research project examined several

prediction models that reliably predict students' performance according to a range of extracurricular and academic attributes. An overview of machine learning methods is given in this paper to automate the process of predicting students' academic performance and extracting outcomes.

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**Author keywords-** Decision tree; Decision tree method; entropy; K-nearest neighbour; KNN; regression model; Support vector machine; tree classifier



## DON'T TELL ME TO HAVE, BUT TO DO IT! THE ROLE OF LUXURY DESIRABILITY MOTIVES IN REDUCING COUNTERFEITING SCHADENFREUDE

Khan S.; Fazili A.I.; Bashir I.

*Review of Marketing Science 2024*

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### Don't Tell Me to Have, but to Do It! The Role of Luxury Desirability Motives in Reducing Counterfeiting Schadenfreude

Sameeullah Khan  , Asif Iqbal Fazili and Irfan Bashir

From the journal *Review of Marketing Science*

<https://doi.org/10.1515/roms-2024-0001>

### Abstract

This paper postulates that consumers' desire for doing-luxury - pursuing luxury with the intention of acquiring a life experience (vs. having-luxury) - pursuing luxury with the intention of acquiring a material good reduces counterfeiting schadenfreude - consumers' feelings of pleasure from the losses of luxury brands due to counterfeiting. Two experiments employed various methods of invoking doing-luxury (vs. having-luxury) - actual product exposure and brand positioning to test the predicted framework. The results demonstrate that doing-luxury (vs. having-luxury) leads to a lower counterfeiting schadenfreude; an effect explained by the lower perceived similarity. This research makes an important contribution to the counterfeiting and

experiential marketing literature by demonstrating the role of brand positioning in reducing a critical counterfeit-related social emotion. The results also validate the relevance of the intentions-based distinction of experiential versus material purchases in predicting counterfeiting schadenfreude. To reduce counterfeiting schadenfreude, luxury brands must signal an ephemeral image focusing on moments of luxury rather than functions of luxury. In addition, ad appeals must invoke sensory elements, feelings, emotions, imagination, and mental stimulation rather than the hard facts about the products per se.

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2024.

**Author keywords**- counterfeit luxury brands; experiential luxury; luxury brands; perceived similarity; schadenfreude

Indexing/Quartile - Scopus/Q2 | Percentile - 56<sup>th</sup> | Impact Factor - 1.2 | SDG

## AI GOVERNANCE IN THE BUSINESS WORLD: LEGAL STANDARDS AND MANAGEMENT PRACTICES

Tomer A.; Parmar A.; Rathore B.; Vijayvergia N.; **Goel R.**; Pundir D.S.; Bale A.S.; Savadatti M.B.






*Library Progress International* Volume 44, Issue 3, Pages 10640 – 10649 Jul-Dec 202

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Research Letter

## Modelling the growth and cyclical effects of international remittances in Fiji

Nikeel Nishkar Kumar , Sunil Kumar , Manu Sharma  & Gyanendra Singh Sisodia  

Published online: 12 Oct 2024

### Abstract

We model the trend/permanent and cyclical associations between international remittances and GDP using annual data from Fiji from 1979 to 2020. An extended co-feature methodology which incorporates asymmetric effects in the cyclical models is used. The findings indicate a significant and positive association between the permanent components of remittances and GDP. The cyclical associations suggest that an increase in remittances is negatively associated with negative GDP shocks in recessions providing some support for

its function as an insurance mechanism. Positive shocks to remittances are not associated with positive GDP shocks suggesting that remittances may not contribute to an overheating economy. The findings stress the importance of cyclical in the association between remittances and GDP. Policymakers benefit with information on how remittances influence economic activity in different phases of the business cycle.

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**Author keywords-** asymmetric effects; co-feature analysis; cyclical; Remittances led growth hypothesis



## HOLOGRAM AUTHENTICATION AND CLASSIFICATION VIA A CONVOLUTIONAL NEURAL NETWORK

**Ganiga P.; Priyadarshini;** Dodda V.C.; Kumar R.; **Muniraj I.**

*Imaging Systems and Applications, ISA 2024 in Proceedings Optica Imaging Congress 2024, 3D, AOMS, COSI, ISA, pcAOP - Part of Optica Imaging Congress 2024 2024 Imaging Systems and Applications, ISA 2024 - Part of Optica Imaging Congress Toulouse 15 July 2024 through 19 July 2024 Code 202487*

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## Hologram authentication and classification via a Convolutional Neural Network

### Abstract

Authentication techniques can be used to overcome the hologram counterfeiting problems. Here, we demonstrate an authentication scheme for digital

holograms in a raw-complex form that is stored either in the cloud or on the metasurface using a CNN.

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## NUMERICAL INVESTIGATION OF HEAT AND MASS TRANSFER OF SWCNT/MWCNT-WATER SUSPENSION OVER A POROUS STRETCHING SHEET USING SISO FLUID MODEL

Kumar C M.; **Benazir A.J.**; Ramesh C.S.

ZAMM Zeitschrift für Angewandte Mathematik und Mechanik Open Access 2024

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ORIGINAL PAPER

### Numerical investigation of heat and mass transfer of SWCNT/MWCNT-water suspension over a porous stretching sheet using Sisko fluid model

### Abstract

This study presents a comprehensive numerical computation of heat-mass transfer characteristics of single-walled carbon nanotube (SWCNT)/multi-walled carbon nanotube (MWCNT)-water suspension flow over a porous stretching sheet with an inclined magnetic field. The governing equations for fluid flow characteristics are formulated using the Sisko fluid model to capture the Newtonian and non-Newtonian behavior of the nanotube-water mixture. The nonlinear coupled partial differential equations are converted into nonlinear dimensionless coupled ordinary differential equations using suitable similarity transformations. These equations are solved using MATLAB by implementing the four-stage Lobatto IIIa formula. The comprehensive set of computations is performed to explore the influence of pertinent parameters, including Sisko fluid parameters, concentration of nanotubes, stretching sheet velocity, and porous medium characteristics on the flow, heat, and mass transfer profiles. From the graphs and statistical analysis, it is

clear that the volume fraction of SWCNT and MWCNTs are strongly correlated. The investigation reveals that increasing the inclination angle affects the fluid velocity. The variation in all flow features is negligible for volume fractions of CNTs between 0% and 10% but a significant effect is observed only beyond 10%. Higher volume fractions of CNTs result in enhanced local heat transfer coefficient. This can be attributed due to the outstanding heat transfer capabilities of CNTs owing to their high thermal conductivity. However, Shear thickening fluids exhibit high heat transfer phenomena when compared to shear-thinning and Newtonian fluids. This research provides valuable insights into the optimization of CNT-based nanofluids for efficient heat and mass transfer applications in electronics cooling, heat exchangers, and solar energy systems, offering opportunities to enhance energy efficiency and device performance.

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## DATA WARFARE AND CREATING A GLOBAL LEGAL AND REGULATORY LANDSCAPE: CHALLENGES AND SOLUTIONS

**Mone V.**; Abdulajonovich S.M.; Younas A.; Petikam S.

*International Journal of Legal Information 2024*

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## Data Warfare and Creating a Global Legal and Regulatory Landscape: Challenges and Solutions

Published online by Cambridge University Press: 04 October 2024

### Abstract

The world is witnessing an increase in cross-border data transfers and breaches orchestrated by State and non-State actors. Cross-border data transfers may lead to friction among States to localize or globalize data and to provide regulatory frameworks. "Data warfare" or information-war operations are often not covered under conventional rules; however, they are categorized as acts of espionage and subject to domestic regulations. As such, the operations are used to achieve a variety of objectives, including stealing sensitive information, spreading propaganda, and causing economic damage. Notable instances of the theft of sensitive information include the recent Bangladesh government website breach, exposing 50 million records, and the Unique Identification Authority of India (UIDAI) website hack. Regulating the "data war" under the existing principles of international law may be unsuccessful in creating robust international legal frameworks to address the associated challenges. These developments further accentuate the global divide between data-

rich regions in the Global North, with strong data protection mechanisms (such as the GDPR and the California Privacy Rights Act), and regions in the Global South, where there is a lack of comprehensive data protection laws and regulatory regimes. This disparity underscores the urgent need for global cooperation for substantial international regulatory mechanisms. This article examines the complexities surrounding data warfare; it highlights the imperative need for establishing a robust global legal framework for data protection, delving into the concept of data war. It also acknowledges the growing influence of advanced technologies like data computing and mining and their ongoing threats to the fundamental rights of individuals associated with exposed personal data. The authors address the deficiencies in international legal provisions and advocate for a global regulatory approach to data protection as a critical means of safeguarding personal freedoms and countering the escalating threats in the digital age. © The Author(s), 2024.

**Author keywords-** Data Breaches; Data Protection; Data Warfare; Global Cooperation; International Legal Frameworks; Privacy



## MACHINABILITY PERFORMANCE OF BIO-DEGRADABLE HYBRID NANO-CUTTING FLUID FOR SUSTAINABLE MANUFACTURING: ANALYTICAL AND SOFT COMPUTING MODELLING

Chenrayan V.; Shahapurkar K.; Manivannan C.; Nadarajan S.; Sungeetha A.; Murthy H.C.A.

*International Journal of Advanced Manufacturing Technology 2024*

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## Machinability performance of bio-degradable hybrid nano-cutting fluid for sustainable manufacturing: analytical and soft computing modelling

ORIGINAL ARTICLE | Published: 21 October 2024



The International Journal of Advanced  
Manufacturing Technology

### Abstract

The growing interest in sustaining the ecological system to drive out pollutants caused by product development is also a modern agenda in the manufacturing sector. This research focused on developing sustainable vegetable-based oil enriched with nano additives and experimented with its performance over the key machining objectives. Two different nanomaterials, such as molybdenum disulfide (MoS<sub>2</sub>), and copper (Cu), are infused in coconut oil in three different proportions. The zeta potential and FTIR results confirm the uniform dispersion and existence of the aforementioned particles in the coconut oil. The machining trials are executed to examine the functional effectiveness of the nano-cutting fluid against machining temperature, machining forces, surface roughness, and wear loss of the tool. The statistical and machine learning hybrid approach is employed to predict the set of optimal parameters along with the ideal cutting fluid and the significance of each parameter on the

selected machining objectives. The experimental results announce that the nano-cutting fluid with a higher level of additives inclusion registers a better performance in enhancing the machining attributes than the lower level of additives inclusion, leaving severe disturbances to the machining attributes by the neat coconut oil. The results acknowledge the substantial depletion of machining tool tip temperature, machining force, surface roughness, and wear loss of the tool to the scale of 1.83, 2.03, 2.2, and 22.01 times that of results by neat coconut oil. The algorithm-based modelling subsequently manifests the cutting fluid as the key significant parameter followed by the cutting speed to decide the performance characteristics of responses. There is a good agreement between the hybrid analytical and soft computing modelling in predicting the ideal levels of machining parameters and cutting fluid. Experiment No. 16 executed with 80 m/min of machining speed, 10 m/min of feed rate, 1 mm

of depth of cut, and in the presence of the coconut oil infused with Cu and MoS<sub>2</sub> particles (both 0.375 vol.%) is found to be an ideal experiment in deciding the best

performance of machining objectives.

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**Author keywords-** Bio-degradable oil; Machining forces; Machining temperature; Nano-additives; Surface roughness; Sustainability; Tool wear



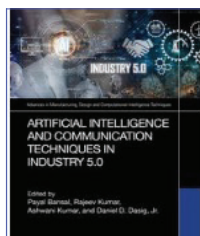
## MACHINERY TO MIND NAVIGATING THE TRANSFORMATION FROM INDUSTRY 1.0 TO INDUSTRY 5.0

Shanmukha M.C.; Shilpa K.C.; **Usha A.**

*Artificial Intelligence and Communication Techniques in Industry 5.0* Pages 116 – 127 1 January 2024

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Chapter

### Machinery to Mind

Navigating the Transformation from Industry 1.0 to Industry 5.0

By *M. C. Shanmukha, K. C. Shilpa, A. Usha*

### Abstract

This chapter embarks on a comprehensive exploration of the transformative journey that industries have undertaken, tracing their evolution through the epochs of Industry 1.0 to the current frontier of Industry 5.0. The adventure starts with Industry 1.0, a time when water and steam power were used to bring about mechanization. Viewed through a historical perspective, readers are invited to observe the technological turning

points that have characterized each industrial revolution, providing a deep insight into the ongoing evolution driving industries toward an era of unparalleled cooperation, connectivity, and invention. © 2025 selection and editorial matter, Payal Bansal, Rajeev Kumar, Ashwani Kumar and Daniel D. Dasig, Jr.; individual chapters, the contributors.



## EDITORIAL: ADVANCES IN DIGITAL HOLOGRAPHIC MICROSCOPY AND APPLICATIONS

Muniraj I.; Falldorf C.; Agour M.

*Frontiers in Photonics Open Access Volume 5 2024 Article number 1502043*

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## Editorial: Advances in digital holographic microscopy and applications

 Inbarasan Muniraj<sup>1\*</sup>  Claas Falldorf<sup>2\*</sup>  Mostafa Agour<sup>2,3\*</sup>

**Author keywords-** cell counting and analyzing; digital holographic microscopy; lipid accumulation; non-destructive testing; semiconductor manufacturing; white light interferometry (WLI)



## EFFECT OF MG ON THE MICROSTRUCTURE, MECHANICAL PROPERTIES, AND SURFACE ROUGHNESS OF FUNCTIONALLY GRADED A413 COMPOSITE: MACHINE LEARNING APPROACH AT WIRE-CUT ELECTRIC DISCHARGE MACHINING ZONE

Natarajan M.; Ramanathan S.; **Chenrayan V.**; Ananda Murthy H.C.

*Advanced Engineering Materials* 2024

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## ADVANCED ENGINEERING MATERIALS

Research Article

### Effect of Mg on the Microstructure, Mechanical Properties, and Surface Roughness of Functionally Graded A413 Composite: Machine Learning Approach at Wire-Cut Electric Discharge Machining Zone

### Abstract

The present study assists the industrial sectors by implementing low-weight high-strength aluminium composite. The pristine magnesium as a reinforcement in three different weight percentages (3.5, 7, and 10.5) is utilized to fabricate the A 413 composite using centrifugal casting. The density analysis concludes a higher level of Mg inclusion prompts the material to save 3.9% of weight. Microstructural study of centrifugal casting specimens reveal a rich existence of hard phase Mg<sub>2</sub>Si in the outer zone, with its richness decreasing toward the inner zone. The tensile test result affirms the functionally graded nature of the material with the increasing trend of tensile strength from the

inner to the outer. Fractured surface analysis concludes the existence of cracks and their propagation for the inner region specimen. The influence of magnesium on the surface finish of functionally graded composite at the wire cut electric discharge machining (WEDM) zone is predicted using a machine learning-based random forest regressor (RFR) algorithm. The supervised learning algorithm declares that 10.5 wt% of Mg facilitates the minimal surface roughness of 0.229  $\mu\text{m}$  with the optimal combination of parameters 6 A of current, 115  $\mu\text{s}$  of pulse-on time, 60  $\mu\text{s}$  of pulse-off time, and 8 N of wire tension.

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**Author keywords-** centrifugal casting; machine learning; magnesium; surface roughness; tensile strength



## ADVANCING WATER QUALITY MONITORING IN SMART CITIES USING MACHINE LEARNING TECHNIQUES

Judeson Antony Kovilpillai J.; Sulaiman S.M.; Mir M.H.; Jayanthi S.; Pragya; Rajkumar N.

2024 Asia Pacific Conference on Innovation in Technology, APCIT 2024  
2024 Asia Pacific Conference on Innovation in Technology, APCIT 2024 Mysore 26 July 2024 through 27 July 2024 Code 202724

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### Advancing Water Quality Monitoring in Smart Cities using Machine learning Techniques

Publisher: IEEE

Cite This

PDF

Judeson Antony Kovilpillai J ; Sulaiman S M ; Mahmood Hussain Mir ; Jayanthi S ; Pragya Pragya ; Rajkumar N All Authors

### Abstract

In smart cities and urban environment, monitoring of water quality is very essential for environmental sustainability, resource optimization, cost management and streamlining the treatment process. In this research, an extensive dataset containing various contaminants such as aluminum, ammonia, arsenic, and others is utilized to effectively classify the safety level of water. Different machine learning and ensemble learning classifiers including LightGBM, XGBoost, CatBoost, Bagging, Gradient Boosting, Random Forest, Decision Tree, AdaBoost, MLP, and Extra Trees were implemented to conduct an empirical experimentation. Various performance metrics like Accuracy, Precision,

Recall, F-1 Score, F-2 Score, Sensitivity, Specificity and AUC-ROC were used to evaluate the machine learning techniques utilized in this research. Experimental results indicate that the LightGBM ensemble technique outperformed other models with the accuracy of 97.13% and AUC-ROC of 98.99%, due to its optimized gradient boosting and effective processing of categorical features. This research contributes to the algorithmic approach for developing decision support tools for improving sustainable smart city water management techniques.

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**Author keywords-** Ensemble Learning; Machine Learning; Smart Cities; Water Quality



## A SMART EYEWEAR USING IOT AND CNNs FOR VISUAL ASSISTANCE

Ranganathan C.S.; Kannagi V.; **Karpagalakshmi R.C.**; Shibu N.V.; Ishwarya M.V.; Murugan S.

*2<sup>nd</sup> International Conference on Intelligent Cyber Physical Systems and Internet of Things, ICoCI 2024 – Proceedings Pages 461 – 466 2024 2nd International Conference on Intelligent Cyber Physical Systems and Internet of Things, ICoCI 2024 Coimbatore 28 August 2024 through 30 August 2024 Code 203161*

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## A Smart Eyewear using IoT and CNNs for Visual Assistance

Publisher: IEEE

Cite This

PDF

Chitra Sabapathy Ranganathan ; V. Kannagi ; R C Karpagalakshmi ; N V Shibu ; Ishwarya M. V ; S. Murugan **All Authors**

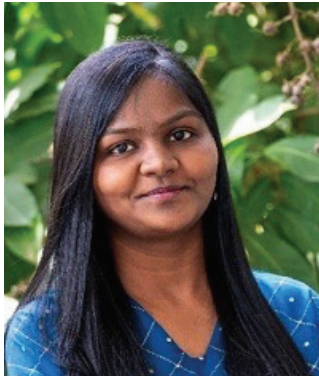
### Abstract

The development of Convolutional Neural Networks (CNNs) and the growth of the Internet of Things (IoT) have made smart eyewear a potentially revolutionary platform for visual assistance. This research introduces a new method for real-time object detection and navigation assistance using IoT connection and CNNs algorithms. The proposed solution improves users' ability to see and understand their environments by combining a small camera with smart glasses. The smart glasses assist the user by identifying items in their range of vision using CNN-based object recognition algorithms and giving contextual information. Using

IoT connection, the system allows easy integration with navigation services, providing users with real-time assistance and direction in new areas. It presents the planned smart eyewear system, including its design, implementation, and assessment. It emphasizes the system's uses in helping people with vision impairments or navigating complicated situations more independently. The experimental findings show that the system is efficient and effective, with reliable visual and navigational help, proving it can be used in the real world.

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**Author keywords-** Assistive technology; Autonomous navigation; Environmental perception; Real-time guidance; User interface; Visual impairment; Wearable technology



## PREDICTIVE MODELLING FOR EFFECTIVE ENERGY CONSUMPTION IN INDUSTRY 4.0 USING MACHINE LEARNING TECHNIQUES

**Pragya; Judeson Antony Kovilpillai J.;** Hussain Mir M.; Mir T.A.; Goutham E.; Mohamed S.S.

2024 Asia Pacific Conference on Innovation in Technology, APCIT 2024 2024 2024  
Asia Pacific Conference on Innovation in Technology, APCIT 2024 Mysore 26 July 2024 through 27 July 2024 Code 202724

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## Predictive Modelling for Effective Energy Consumption in Industry 4.0 using machine learning techniques

Publisher: IEEE

[Cite This](#)

[PDF](#)

### Abstract

Optimizing energy consumption has become an important challenge for the steel industry as it moves towards Industry 4.0. This paper develops a predictive modelling framework that employs machine learning methods to improve the energy efficiency of steel manufacturing processes. Our focus is on energy consumption patterns in relation to industry 4.0, and this highlights the need for accurate prediction models to guide decision making processes. Therefore, our research presents the following steps; data pre-processing, feature engineering and appropriate model selection for steel-specific purposes only. Comprising of regression and classification algorithms such as support vector machines, random forests and neural networks we prove that our method can

be used to make accurate predictions on different operational scenarios for the energy needs of users. The integrated approach consisting of real-time data streams with sensor networks supporting adaptive modelling is investigated here in relation to dynamic production environments. Finally, we outline how forecasting models such as those developed can be used as foundation blocks in achieving sustainable energy practices in Industry 4.0 transition by employing machine learning facilitated proactive energy management strategies by stakeholders with a view to optimize resource utilization, minimize environmental impact, and enhance competitiveness in the evolving industrial landscape.

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**Author keywords-** Energy Efficiency; Industry 4.0; machine learning; sustainability



## NAVIGATING THE INTERPLAY OF PRIVACY, SECURITY AND ETHICS ON SOCIAL MEDIA

Rajagopal R.; Senbagavalli M.; Raj D.D.M.; Kumari R.; Gupta D.; Gupta A.

2024 2<sup>nd</sup> World Conference on Communication and Computing, WCONF 2024 2024

2<sup>nd</sup> World Conference on Communication and Computing, WCONF 2024 Raipur12

June 2024 through 14 June 2024 Code 203116

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## Navigating the Interplay of Privacy, Security and Ethics on Social Media

Publisher: IEEE

Cite This

PDF

R Rajagopal ; M Senbagavalli ; Deepak Raj D.M ; Riya Kumari ; Deepanshu Gupta ; Anusha Gupta All Authors

### Abstract

Social media has changed the way people interact with the digital world, communicate, and exchange information. It has also brought privacy, security, and ethics into sharper relief. A fundamental concern is privacy, which includes people's rights to manage their personal data. Social networking sites are repositories of user data, which gives rise to worries about illegal access and privacy violations. Furthermore, complex algorithms make it more difficult to maintain privacy by obfuscating the distinction between invasive surveillance and individualized experiences. To protect user data and retain confidence, security is important. Social media users are vulnerable to online risks like phishing and identity theft, though, because of their

interconnectedness. It's always difficult to strike a balance between security precautions and consumer comfort. The ethical implications of data monetization, algorithmic biases, and disinformation are particularly significant. Platforms face societal challenges such as digital harassment and political manipulation in addition to problems with data ownership, transparency, and responsibility. To overcome all of these, we have come forward with a solution that has 3 features. With the help of machine learning algorithms and python libraries, we made a solution that helps the users with these three concerns of social media.

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**Author keywords-** ethics; machine learning; privacy; python libraries; security; social media



## SYNTHETIC FIBERS AND THEIR COMPOSITES FOR BIOMEDICAL APPLICATIONS

Arulmozhivarman J.C.; **Rajeshkumar L.**; Dinesh Kumar M.; Rangappa S.M.;  
Suyambulingam I.; Siengchin S.

*Synthetic and Mineral Fibers, their Composites and Applications* Pages 495 - 5111  
January 2024

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## Synthetic and Mineral Fibers, Their Composites and Applications

Woodhead Publishing in Materials



### Abstract

Composite materials are customizable materials on a macroscopic scale formed by the combination of two or more individual insoluble materials with different physical, morphological, and chemical properties in various compositions. Synthetic fibers are mostly derived from petroleum-based sources and are considered the most common reinforcements in polymer composites owing to their high strength, stiffness, and compatibility with the polymer matrix. Synthetic fiber composites and other classes of polymer composites find their applications in various commercial applications, including biomedical applications for heart valves, stents, ligament repair, bone and cartilage support, artificial skin, tendon repair, teeth, wound dressing, and oral tissues. This is mainly due to the presence of an extracellular matrix available in the synthetic fibers and their versatility and suitability in various applications. Manufacturing

methods of synthetic fiber-reinforced polymer composites are diverse enough to produce a large spectrum of composites for these applications. Owing to their tremendous mechanical support and biocompatibility, their suitability for biomedical applications is highly commendable. In recent times, with advanced research and medical facilities, trials have been made to construct artificial human organs from synthetic fiber-based polymer composites and other biocomposite materials. Accordingly, this chapter deals with the classification of various synthetic fibers, the fabrication of synthetic fiber-based composites, their biocompatible and mechanical properties, and some prominent applications of synthetic fibers and their composites in the field of biomedical engineering. © 2024 Elsevier Ltd. All rights are reserved including those for text and data mining AI training and similar technologies.

**Author keywords-** biomedical applications; Composite materials; polymers; synthetic fibers; tissue engineering



## ADVERSARIAL TRAINING FOR ROBUST NATURAL LANGUAGE PROCESSING: A FOCUS ON SENTIMENT ANALYSIS AND MACHINE TRANSLATION

Gomathy B.; Jayachitra T.; Rajkumar R.; Lalithamani V.; **Pradeep Ghantasala G.S.**; Anantraj I.; Shyamala C.; Vinoth Rajkumar G.; Saranya S.

*Communications on Applied Nonlinear Analysis Open Access Volume 31, Issue 6s, Pages 388 – 4002024*

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DOI: 10.52783/cana.v31.1231 • Corpus ID: 272086995

## Adversarial Training for Robust Natural Language Processing: A Focus on Sentiment Analysis and Machine Translation

[Dr B Gomathy](#), [Dr. T. Jayachitra](#), [Dr. R. Rajkumar](#), [Ms. V. Lalithamani](#), [G. S. P. Ghantasala](#), [Mr. I. Anantraj](#), [Dr. C. Shyamala](#), [G. V. Rajkumar](#), [S. Saranya](#) [less](#)

Published in [Communications on Applied...](#) 15 August 2024 • Computer Science, Linguistics

### Abstract

Adversarial training has emerged as a powerful technique to improve the reliability of natural language processing (NLP) designs, especially sentiment analysis and machine translation. By providing adversarial examples during training process, models are exposed to perturbations that challenge their understanding and interpretation of textual data. This process helps in developing models that are not only accurate but also resilient to manipulations and noise in real-world scenarios. In sentiment analysis, adversarial training ensures that models can maintain consistent performance despite variations in input text, such as paraphrasing or the inclusion of misleading sentiment indicators. This robustness is crucial for applications involving user-generated content, where linguistic diversity and intentional manipulations are common. In the context of machine translation, adversarial

training contributes to the development of models that can handle diverse linguistic structures and idiomatic expressions, which are often sources of errors in traditional models. By simulating adversarial attacks that introduce such complexities, the training process makes models more adept at preserving the semantic integrity of translated texts across different languages. This improved robustness is particularly beneficial for applications requiring high translation accuracy and reliability, such as international communication, content localization, and multilingual information retrieval. Overall, adversarial training provides a significant advancement in creating more resilient and effective NLP models for sentiment analysis and machine translation.

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**Author keywords-** Adversarial examples; Adversarial training; Linguistic diversity; Machine translation; Model robustness; Robust natural language processing; Sentiment analysis; Text perturbations; Translation accuracy



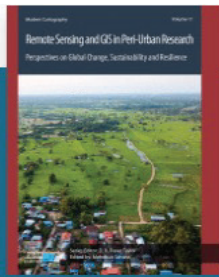
## DYNAMICS OF URBAN EXPANSION AND ITS IMPACTS ON LAND USE CHANGES AT SUBURBAN FRINGE AREAS OF RANCHI AND PATNA CITIES: A COMPARATIVE STUDY

Das S.; **Das S.**; Dhanaraj K.

*Modern Cartography Series Volume 11, Pages 161 - 190 January 2024*

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### Modern Cartography Series

Book series

### Abstract

Accurate land use change detection over specific time intervals is essential for sustainable development planning. Understanding periurban land use transitions informs future land optimization strategies. Urban expansion management in large metropolitan areas is often challenging, highlighting the need for micro-community-level urban databases to support policy implementation and sustainable growth. This study compares urban sprawl and its impact on land use changes in the periurban areas of Ranchi and Patna cities. The study aims to analyze Land Use Land Cover (LULC) Change using a multi-temporal approach and assess urban expansion dynamics over the past 22

years for two cities. GIS and statistical measures are employed to study urban growth and plan for future sustainable development. Buffer proximity modes are used to analyze the periurban interface (PUI) from city centers and transition zones. Results indicate increased compactness in both cities due to infill growth, with rapid expansion observed in periurban and village areas. Changing landscape patterns have ecological implications, necessitating resilient land resource management strategies for regional planners and the scientific community.

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**Author keywords-** land transition and GIS; periurban interface; Urban expansion



## INNOVATIVE CYBERATTACK DETECTION MECHANISM FOR HOSPITAL MANAGEMENT SYSTEM USING HYBRID DEEP LEARNING ALGORITHM

Deniel Sampson J.; **Ramalakshmi K.**; Venkatesan R.; Sundar G.N.; Nancy G.; Nickson P.

2024 Asia Pacific Conference on Innovation in Technology, APCIT 2024 2024 2024 Asia Pacific Conference on Innovation in Technology, APCIT 2024 Mysore 26 July 2024 through 27 July 2024 Code 202724

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## Innovative Cyberattack Detection Mechanism for Hospital Management System Using Hybrid Deep Learning Algorithm

Publisher: IEEE

Cite This

PDF

Deniel Sampson J ; K Ramalakshmi ; R Venkatesan ; G Naveen Sundar ; Golden Nancy ; Prince Nickson All Authors

### Abstract

The simulation focused on assessing the vulnerabilities and potential impacts of cyberattacks within the healthcare sector, specifically in a hospital environment. Various attack scenarios, including ransomware, distributed denial-of-service (DDoS) attacks, and unauthorized access to patient records, were simulated to gauge the extent of potential damage. The cybersecurity team successfully identified weak points and devised strategies to mitigate these risks. To enhance detection and response capabilities, a machine learning-based mechanism was implemented, leveraging algorithms like support vector machines, random forest, and deep learning models. This mechanism analyzes real-time network traffic data, identifying deviations from normal behavior such as

unusual data transfer patterns, unauthorized access attempts, or abnormal system behaviors. Trained on labeled datasets, these algorithms classify network traffic into normal or potentially malicious activities. The system's continuous learning capabilities enable it to adapt and improve detection as new attack patterns emerge. Overall, the simulation, coupled with the advanced detection mechanism, empowers the cybersecurity team to proactively safeguard patient data, ensure uninterrupted healthcare services, and fortify critical infrastructure against evolving cyber threats, thereby enhancing their understanding of vulnerabilities and bolstering incident response capabilities.

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**Author keywords-** Classification Techniques; Convolutional Neural Networks (CNNs); Data Augmentation; Generative Adversarial Networks (GANs); Image Denoising; Medical Imaging



## MANUFACTURING ADVANCEMENTS IN SYNTHETIC FIBERS FOR COMPOSITE TECHNOLOGIES

Ng L.F.; Yahya M.Y.; Muthukumar C.; **Parameswaranpillai J.**; Rahman M.Z.; Asyraf M.R.M.

*Synthetic and Mineral Fibers, their Composites and Applications* Pages 31 - 591  
January 2024

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## Synthetic and Mineral Fibers, Their Composites and Applications

Woodhead Publishing in Materials



### Abstract

Fiber-reinforced composites are considered versatile materials offering plenty of benefits across various engineering applications. When scrutinizing the current trend in material selection, it is observed that fiber-reinforced composites are increasingly being utilized to replace metal alloys. Synthetic fibers dominate the majority of fiber-reinforced composites due to their outstanding mechanical properties. Several synthetic fibers show high performance when used as reinforcement for composite materials. Because of the wide usage of synthetic fibers in various applications, their manufacturing techniques have garnered the attention of researchers and scientists. The spinning technique has been commonly used to yield continuous synthetic fibers since the early 20<sup>th</sup>

century. The spinning process of synthetic fibers has recently undergone a major transformation in which the spinning speed has been optimized, and the types of polymers that can produce synthetic fibers have increased. Hence, it is necessary to delve deeper into different kinds of synthetic fiber and their associated advanced manufacturing techniques. This chapter intends to highlight the manufacturing advancements in producing synthetic fibers and discuss various kinds of conventional synthetic fibers used as reinforcement for composite materials.

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**Author keywords-** fiber extrusion; fiber spinning; Fiber-reinforced composites; manufacturing techniques; synthetic fibers



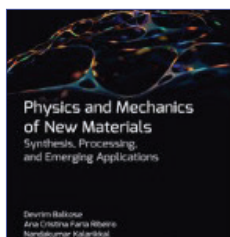
## TWO-DIMENSIONAL (2D) MATERIALS-BASED NANOSTRUCTURED HYBRID COMPOSITE: A NEWER PARADIGM FOR ENERGY APPLICATION

Sharma N.; **Talreja N.**; Chauhan D.; Ashfq M.

*Physics and Mechanics of New Materials: Synthesis, Processing, and Emerging Applications* Pages 191 – 213 1 January 2024

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## Two-Dimensional (2D) Materials-Based Nanostructured Hybrid Composite: A Newer Paradigm for Energy Application

### Abstract

Presently, two-dimensional nanomaterials (2D-NM) uninterruptedly increase the attention of researchers because of their extraordinary properties, mainly high mechanical strength, high surface area, and electrical and optical, which create a promising and appropriate candidates for numerous end applications. The high surface area, atomic thickness, and easily tunable ability might be advantageous to increase their applicability towards end applications. Emphasizing the mechanical, electrical, and thermal properties of 2D-NM, their numerous potential applications, and their characteristic

properties affect the applicability of 2D-NM. This mini-review article focuses on the synthesis processes of 2D-NM, composition, and crystal structure of the 2D-NM. The role of 2D-NM-based hybrid composite in solar cells and supercapacitor applications on the basis of its characteristics was also discussed. In conclusion, future challenges in the area of the 2D-NM-based hybrid composite were addressed based on their characteristics.

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## FACIAL RECOGNITION SYSTEM WITH LBPH ALGORITHM: IMPLEMENTATION IN PYTHON FOR MACHINE LEARNING

**Ramalakshmi K.**; Jingle B.J.; Shirley C.P.; Suvishiek V.; Joyce Beryl Princess P.; Vidhya K.

*2<sup>nd</sup> International Conference on Intelligent Cyber Physical Systems and Internet of Things, ICoCI 2024 – Proceedings Pages 1681 – 1686 2024 2<sup>nd</sup> International Conference on Intelligent Cyber Physical Systems and Internet of Things, ICoCI 2024 Coimbatore 28 August 2024 through 30 August 2024 Code 203161*

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### Facial Recognition System with LBPH Algorithm: Implementation in Python for Machine Learning

Publisher: IEEE

[Cite This](#)

[PDF](#)

Ramalakshmi K; Berin Jeba Jingle; Shirley C P; Suvishiek V; Joyce Beryl Princess P; Vidhya K **All Authors**

### Abstract

Face recognition technology, while making significant advancements, faces challenges in achieving human-level accuracy due to factors like variations in facial appearance, lighting conditions, and noise. This research proposes a novel approach using the Local Binary Pattern (LBP) algorithm to improve face recognition accuracy. By utilizing LBP histograms, our method enables face recognition from both frontal and side views, enhances performance in low-light conditions, and increases real-time identification rates. The primary objective of this research is to develop a robust face recognition system for security applications.

The proposed system offers user benefits by preventing unauthorized access and ensuring security. The LBP histogram method is employed for face recognition, requiring users to enter their name and photo into a database. Upon login, the system identifies the user, displaying their name and triggering a warning alert for unknown individuals. The implementation of this face recognition system using the LBP algorithm aims to provide a widely applicable and valuable solution for various organizational settings.

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**Author keywords-** Deep Learning; Face Recognition; Haar cascade classifier; Local Binary Pattern Algorithm; Machine Learning



## HYBRID ELEPHANT HERDING OPTIMIZATION APPROACH FOR CLUSTER HEAD SELECTION AND SECURE DATA TRANSMISSION IN WSN USING HYBRID APPROACH CRYPTOGRAPHY TECHNIQUES

Yuvaraja M.; **Sumathi D.**; Rajeshkumar M.; Ahamed Ayoobkhan M.U.  
*Data and Metadata Volume 31 January 2024 Article number 366*

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## Hybrid Elephant Herding Optimization Approach for Cluster Head Selection And Secure Data Transmission In Wsn Using Hybrid Approach Cryptography Techniques

Y. M. Sumathi D., M. Rajeshkumar, Mohamed Uvaze Ahamed Ayoobkhan | less | Published in Data and Metadata 29 August 2024 |  
Computer Science, Engineering, Environmental Science | Data and Metadata

### Abstract

Introduction: the wireless nature of sensor networks makes safe transfer of data from one node to another a major challenge in communications. Sensing tasks connect these sensor nodes which have limitations of memories and energies. Cryptography techniques are utilised to handle critical issues of security in these networks. The performance of large-scale networks is enhanced in this case by optimisation algorithm mimicking natural behaviours. Method: this work uses H-EHO (Hybrid Elephant Herding Optimisation technique based on Individual strategies to enhance cluster head selections in WSNs (Wireless Sensor Networks) and thus extend networks' lifetime. WSNs complete cluster head selection processes, and proposed optimisation approach which selects cluster heads based on tracking of sensor nodes for enhancements. The clan operators of optimisation

algorithms are adjusted to handle random walk scale factors of elephants. Clusters of WSNs elect updated sensor nodes in principle. Hybrid algorithm HSR19, a novel security symmetric technique offers greater security during data transfers. It offers integrity, confidentiality, and authentication for cryptographic primary keys. Results: the output of the simulation demonstrates the energy consumption, network longevity, end to end delay, and secure data transfer metrics. The results for choosing an effective and time-efficient cluster head selection process for WSNs are improved by contrasting the two approaches. Conclusion: this comparison also shows the efficiency of communication devices in terms of calculation times for encoding, decoding and energies consumed for various file sizes.

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**Author keywords-** Cryptography; Hybrid Algorithm HSR 19; Hybrid–Elephant Herding Optimization (H-EHO); Wireless Sensor Network (WSNs)



## NATION AND ITS STUDENTS: REFLECTIONS ON EDUCATIONAL ACTIVISM FROM A PUBLIC UNIVERSITY IN DELHI, INDIA

**Sinha S.**

*Education, Citizenship and Social Justice 2024*

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## Education, Citizenship and Social Justice

Impact Factor: **0.7** / 5-Year Impact Factor: **1.1**

### Abstract

This article examines contemporary facets of student mobilization that unfolded with the introduction of the Citizenship Amendment Act of 2019 (CAA). Taking cues from a premier public university in India, the article explores how CAA-driven activism enabled the political socialization of students, and how such a process was entangled with their identities and ideologies. It provides an ethnographic description of student mobilizations for and against the amended citizenship laws to show that (1) the space of the university has witnessed a steady resurgence insofar as the questions of nationalism and nation-building are concerned, (2) higher education in India is at

a paradoxical crossroads, and is traversing through rapid neoliberalisation and burgeoning religious nationalism, and (3) 'competing nationalisms' between student organizations are on display, where each group believes that their idea of the nation is more suitable than another. Using Pierre Bourdieu's conceptual armory, the article's contribution lies in arguing that campus activism leads to the formation of dispositions that enable and assist in the production of political capital among student activists. It concludes that the university then serves as a platform and creates further pathways for accumulating such capital.

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**Author keywords-** citizenship; Delhi; nation; Pierre Bourdieu; political capital; university



## MICRONEEDLE (MN)-BASED SENSING TECHNOLOGY: AN INNOVATIVE SOLUTION FOR AGRICULTURE

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*Materials Advances Open Access*2024

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## Microneedle (MN)-based sensing technology: an innovative solution for agriculture

[Sonu Kumari](#),<sup>a</sup> [Neetu Talreja](#),  <sup>\*bc</sup> [Divya Chauhan](#)<sup>d</sup> and [Mohammad Ashfaq](#)  <sup>\*e</sup>

### Abstract

Agricultural health is one of the most important aspects of improving crop productivity, which can significantly decrease the demand for food. Plant diseases and nutritional value are among the crucial factors affecting food safety and quality, subsequently reducing the yield of the crops and increasing plant mortality. Therefore, continuous monitoring of plant health is of utmost importance to enhance the yield of crops. In this aspect, microneedle (MN)-based sensing technology is potentially able to monitor agricultural health. Borrowing a page from medicine, minimally invasive MNs have been effectively used to deliver drugs and biomolecules within the human body without any pain or tissue damage. Usually, MNs have been divided by researchers into four groups:

solid microneedles (S-MNs), hollow microneedles (H-MNs), dissolving microneedles (D-MNs), and coated microneedles (C-MNs), which are effectively used according to requirements of delivery of biomolecules and sensing applications. The MN-based probe is directly attached to the relevant part of the plant tissue, thereby bypassing the cuticles. Interestingly, MN-based sensing technology offers newer insight into agriculture health by continuously monitoring plant health, including nutritional values and pathogens. This article opens newer avenues and provides knowledge about the fabrication of MN-based sensing technology for plant health that might benefit the food and agricultural industry.

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## ISCHEMIC STROKE: PATHOPHYSIOLOGY AND EVOLVING TREATMENT APPROACHES

**Majumder D.**

*Neuroscience Insights Open Access Volume 19 January-December 2024*

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Neuroscience Insights

Impact Factor: 2.9 / 5-Year Impact Factor: 3.6

### Abstract

Stroke remains a leading cause of mortality and disability, with ischemic stroke being the most common type. It occurs due to reduced cerebral blood flow, leading to a cascade of events initiated by oxygen and nutrient deprivation, triggering excitotoxicity, oxidative stress, and inflammation and finally culminating in neuronal injury and death. Key molecular players in ischemic stroke include glutamate receptors, acid-sensing ion channels, and purinergic receptors, exacerbating cellular damage through calcium influx, oxidative stress, and mitochondrial dysfunction.

Understanding these mechanisms has shaped

therapeutic strategies, such as neuroprotective agents and stem cell therapies. Current treatments such as tissue plasminogen activator (tPA) emphasize timely intervention, yet challenges persist in patient-specific variability and accessibility. This review provides an overview of ischemic stroke pathophysiology, emphasizing cellular responses to ischemia and current and future therapeutic approaches including stem cell therapies aimed at mitigating stroke-induced disabilities and improving long-term outcomes.

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**Author keywords-** ASIC; ion channels; Ischemic stroke; NMDA; stroke therapy



## BEL-PID CONTROLLER FOR VIBRATION MITIGATION

**Kilaru S.H.; Kumar G.**

*2024 Control Instrumentation System Conference: Guiding Tomorrow: Emerging Trends in Control, Instrumentation, and Systems Engineering, CISCON 2024 2024 2024 Control Instrumentation System Conference, CISCON 2024 Manipal 2 August 2024 through 3 August 2024 Code 203083*

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## BEL-PID controller for Vibration Mitigation

Publisher: IEEE

[Cite This](#)

[PDF](#)

[Sri Harsha Kilaru](#) ; [Gaurav Kumar](#) **All Authors**

### Abstract

This paper aims to reduce the vibrations of the building during natural disasters to protect the building from structural damage and avoid loss of human lives by using closed loop Intelligent controller inspired by human brain. Brain emotional learning-based intelligent controller (BELBIC) functions like a closed loop system where system learns by using reward signal, which corrects error signals. In this work BEL controller is used in conjunction with the conventional

PID controller. It tries to reduce the vibrations by commanding a magneto rheological damper (MRD) through an appropriate command signal based on structural response. The efficiency of BEL-PID controller is compared with the legacy PID controller. The results established that BEL-PID controller is better than the legacy PID controller.

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**Author keywords-** BELBIC; controller; earthquake; PID; structural vibrations



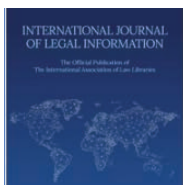
## HISTORICAL TRAJECTORIES AND MODERN DYNAMICS OF ISLAMIC FINANCIAL LAW IN CENTRAL ASIA

Rakhmanov A.; **Thommandru A.**; Tillaboiev S.

*International Journal of Legal Information* 2024

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### Historical Trajectories and Modern Dynamics of Islamic Financial Law in Central Asia

Published online by Cambridge University Press: 02 October 2024

Abdumukhtor Rakhmanov, Abhishek Thommandru and Shokhrukhbek Tillaboiev

©

### Abstract

This paper examines the historical development and contemporary landscape of Islamic financial law in Central Asia. Rooted in Sharia principles such as avoiding riba (usury), gharar (uncertainty), and maysir (gambling), Islamic finance has evolved into a sophisticated framework that promotes equity, transparency, and social welfare. In Central Asia, a predominantly Muslim region shaped by diverse cultural influences, Islamic financial jurisprudence reflects a unique blend of traditional practices and modern regulations. The growth of Islamic finance in this region is driven by increasing awareness,

regulatory support, and integration with global markets. Key principles like the prohibition of interest, risk-sharing, and asset-backed financing underpin the operations of Islamic financial institutions. Case studies from Kazakhstan, Uzbekistan, and Tajikistan illustrate successful implementation strategies. The paper concludes by emphasizing the potential for Islamic finance to drive sustainable economic development in Central Asia and the need for ongoing research, collaboration, and policy support to navigate the complex dynamics of this evolving field.

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**Author keywords-** Central Asia; economic development; Islamic finance; regulation; Sharia



## EFFICIENT IMPLEMENTATION OF FIRMWARE OVER-THE-AIR UPDATE USING RASPBERRY PI 4 AND STM32F103C8T6

Sabarishraj K.; Jayanthi S.; **Judeson Antony Kovilpillai J.**; Sabari Santhosh S.; Swathi R.  
*Proceedings of CONECCT 2024 - 10th IEEE International Conference on Electronics, Computing and Communication Technologies 2024 10th IEEE International Conference on Electronics, Computing and Communication Technologies, CONECCT 2024 Bangalore 12 July 2024 through 14 July 2024 Code 202811*

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## Efficient Implementation of Firmware Over-the-Air Update using Raspberry Pi 4 and STM32F103C8T6

Publisher: IEEE

[Cite This](#)

[PDF](#)

[Sabarishraj K](#); [Jayanthi S](#); [Judeson Antony Kovilpillai J](#); [Sabari Santhosh S](#); [Swathi R](#) **All Authors**

### Abstract

The rapidly expanding Internet of Things (IoT) necessitates efficient and secure methods for firmware updates to improve device functionality, introduce new features and mitigate existing bugs. Firmware Over-the-Air (FOTA) is crucial in achieving these goals, employing diverse implementation techniques. However, evolving cybersecurity threats necessitate enhanced security measures in FOTA methods. This paper introduces a novel FOTA update approach integrating advanced encryption, compression techniques, and robust communication protocols to enhance the security and performance of the system. A comparative analysis with current state-of-the-art methods demonstrates the improved performance of the proposed solution. Key features include

formal registration of IoT vendors and devices via a secure website, IPV6 VPN connectivity with TLS/SSL encryption, and IPFS-based retrieval of firmware updates using Content Identifiers (CIDs). Additionally, the paper discusses a conceptual approach for updating firmware in IoT devices without internet connectivity using Unmanned Aerial Vehicles (UAVs). Overall, the methodology addresses limitations of existing approaches and emphasizes strengthened security measures in FOTA operations. The proposed method not only enhances FOTA security but also ensures efficient and reliable firmware updates across diverse IoT ecosystems.

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**Author keywords-** FOTA; IoT; IPFS; TLS/SSL encryption; UAV



## IMPROVING GLIOBLASTOMA MULTIFORME RECURRENCE PREDICTION THROUGH INTEGRATED RADIOMICS AND DEEP LEARNING TECHNIQUES

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### Abstract

Glioblastoma multiforme (GBM) is one of the most lethal forms of brain cancer, with a five-year survival rate of only 4% to 5%. The recurrence rate is alarmingly high, reaching up to 90%. While tumor-treating fields have shown potential in extending survival, their efficacy in treating recurrent GBM remains limited. This study aims to leverage Deep Learning (DNN) to predict the recurrence of GBM in patients, both pre- and post-surgery. Utilizing advanced computational techniques, this research employs radiomics to analyze brain tumor images, aiding clinicians in identifying tumor spread, predicting post-surgical recurrence, and estimating patient survival. Pre-surgery, Multi-Parametric Magnetic Resonance Imaging (MP-MRI) scans are used to detect tumor locations and forecast potential recurrences. To enhance image processing, Z-score normalization and spatial resampling are applied. Additionally, a model was developed to address the issue of imbalanced data in medical imaging. The study

utilized Contrast-Enhanced T1-Weighted Imaging (CE-T1WI) MRI to assess treatment effectiveness and predict recurrence-free survival. A Deep Neural Network was trained to forecast tumor recurrence, identifying patients at risk of early recurrence. Feature extraction from brain images was performed using the Inheritable Bi-Objective Combinatorial Genetic Algorithm. The accuracy of the recurrence predictions was validated and compared against other models, including CNN Inception-V3, CNN AlexNet, and VGG16, using the Python programming language. Results indicate that the proposed method surpasses existing techniques by 3%, 4%, and 5% in accuracy, specificity, and sensitivity, respectively. This research demonstrates that in a retrospective patient population, predictions of patient survival and time to recurrence exhibit high sensitivity, specificity, and accuracy, offering a promising tool for improving GBM management and patient outcomes.

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**Author keywords-** Deep Learning (DNN); Glioblastoma multiforme (GBM); Inheritable Bi-Objective Combinatorial Genetic Algorithm; Multi-Parametric Magnetic Resonance Imaging (MP-MRI); Radiomics; Tumor recurrence prediction



## REINFORCEMENT EFFECTS OF DIFFERENT TYPES OF CHITIN NANOFIBERS ON CELLULOSE/CHITIN NANOCOMPOSITE FILAMENTS

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*Cellulose 2024*

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## Reinforcement effects of different types of chitin nanofibers on cellulose/chitin nanocomposite filaments

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### Abstract

Recently, there has been a significant global focus on the development of fully biobased, strong, and tough filaments. This paper presents a deep investigation into the reinforcing effect of chitin nanofibers (ChNFs) on the fabrication of robust cellulose nanofiber (CNF)-ChNF composite filaments. Three types of ChNFs were produced using distinct. Methods aqueous counter-collision (ChACC), acid hydrolysis (ChAH), and TEMPO-oxidization (ChTEMPO). Subsequently, these ChNFs were blended with CNFs derived from hardwood bleached-kraft pulp to create the nanocomposites. The CNFs underwent TEMPO-oxidization and aqueous counter-collision (ACC) treatment. The composite filaments were fabricated

via wet spinning, followed by coagulation in a CaCl<sub>2</sub> solution bath. A comparative analysis was conducted among all composites comprising various ChNFs and CNFs, examining their morphological, thermal, optical, and mechanical properties. Among them, the CNF-ChACC filament displayed the highest UV protection, while the CNF-ChAH filament demonstrated the highest tensile strength (614 MPa) and elongation-at-break, surpassing pure CNF filaments by 31.5% and 47%, respectively. It is anticipated that this study will contribute to a deeper understanding of the production of strong biobased filaments for advanced applications. © The Author(s), under exclusive licence to Springer Nature B.V. 2024.

**Author keywords-** Central Asia; economic development; Islamic finance; regulation; Sharia



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## HARNESSING NOVEL TECHNOLOGIES TO FORTIFY ANTI-CORRUPTION EFFORTS: ASSIMILATING INDIA'S EXPERIENCES INTO UZBEKISTAN'S FIGHT AGAINST CRIMINALITY

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### HARNESSING NOVEL TECHNOLOGIES TO FORTIFY ANTI-CORRUPTION EFFORTS: ASSIMILATING INDIA'S EXPERIENCES INTO UZBEKISTAN'S FIGHT AGAINST CRIMINALITY

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#### Abstract

Corruption casts a long shadow over Uzbekistan's socio-political landscape, hindering economic growth and social harmony. To confront this formidable challenge, Uzbekistan seeks to draw upon India's extensive experience harnessing New Emerging Technologies (NET), such as the Digital India mission and the Unified Payments Interface (UPI), for effective anti-corruption measures. This paper conducts a comprehensive exploration of Uzbekistan's corruption landscape, unveiling the historical, cultural, and institutional factors fueling this pervasive issue. It delves into corruption's severe consequences on Uzbekistan's economy, governance, and society, underscoring the critical need for robust anti-corruption strategies. Leveraging India's proven insights, the paper meticulously dissects successful strategies tailored to the Indian context, including strengthening anti-corruption laws, empowering agencies, fostering transparency, promoting accountability, and engaging civil society. Recognizing that combating corruption demands a multi-dimensional approach, it advocates a holistic strategy encompassing legal, institutional, societal, and

cultural dimensions. Through comparative analysis, the research offers recommendations for Uzbekistan's anti-corruption arsenal. These include establishing specialized agencies, enacting comprehensive anti-corruption legislation, promoting transparency and accountability via digital platforms, and nurturing a culture of integrity through education and awareness initiatives. While acknowledging disparities between Uzbekistan and India, the paper underscores adapting strategies to the local context through institutional capacity-building, international collaboration, and civil society engagement. Unwavering political commitment and leadership are stressed as pivotal. The integration of India's experiential insights and strategic utilization of NET provide Uzbekistan a unique opportunity to confront pervasive corruption. By embracing these recommendations tailored to its context, Uzbekistan can aspire to a more transparent, accountable, and corruption-free society – paving the way for sustainable development, good governance, and social justice. © 2024 Centro Universitario de Brasilia. All rights reserved.

**Author keywords-** Anti-corruption; Criminoverse; Governance; Transparency; Uzbekistan



## DOES PARTICIPATION IN THE SERVICE PROCESS AFFECT TOURISTS' WELL-BEING? THE MEDIATING ROLE OF SERVICE EXPERIENCE

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## Does participation in the service process affect tourists' well-being? The mediating role of service experience

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### Abstract

This study aims to explore the mediating role of service experience on tourists' participation in the service process and their well-being. The study contributes to the transformative service research literature by examining the relationship between tourist participation in the services process, service experience, and well-being. The convenience sampling procedure was adopted to collect the data from 335 respondents. Structural Equation Modeling technique was applied to test the hypotheses. The results indicate a positive

effect of tourist participation on hedonic as well as eudaimonic well-being. In the service process, the service experience partially mediated the effect of tourists' participation on hedonic as well as eudaimonic well-being. The study advocates the participatory approach by collaborating with different stakeholders such as tourists. Their skills and knowledge can facilitate in better designing and delivery of tourism services.

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**Author keywords-** eudaimonic well-being; service domain logic; Services experience; tourist participation hedonic well-being; transformative service



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# RESEARCH

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