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Journal Abstracts

November 2026

Sl. No	Article	Author	Source	Year
1	A Multimodal AI-Based Proctoring Framework for Academic Integrity in Remote Examination	*Ambika B Sajjan, Pooja R Y, Khushi Jain and Ananta Charan Ojha*	The IUP Journal of Information Technology Vol: 22 No: 2	2026

Abstract: The rapid growth of online learning platforms induces remote examination systems. However, remote online examinations face significant challenges in maintaining academic integrity. Although automated proctoring technologies have emerged, many existing systems rely on single-modality monitoring techniques such as webcam observation and browser activity tracking, which provide only limited insights into candidate behavior. To address these limitations, this paper proposes a multimodal artificial intelligence (AI)-based proctoring framework for remote examination that integrates computer vision-based behavioral monitoring with system-level activity analysis. The proposed framework adopts layered architecture to facilitate multimodal data acquisition, preprocessing, behavioral analysis, event detection, decision intelligence, and secure evidence management. The system analyzes behavioral indicators such as facial movements, gaze direction, head pose, and digital interaction patterns to identify potentially suspicious activities during examinations. A structured workflow and behavioral detection pipeline are introduced to coordinate data collection, multimodal behavioral analysis, and risk assessment. The framework further incorporates a risk score computation that evaluates suspicious behavioral events and supports interpretable decision making for human proctors. By combining multimodal monitoring with explainable decision making, the proposed approach aims to enhance the reliability, scalability, and transparency of remote examination supervision in higher education environments.

Sl. No	Article	Author	Source	Year
2	Modeling Chronic Stress Using Psychological and Physiological Symptoms: A Hybrid Machine Learning and Causal Inference Framework	*Priyanka Diwan, Swasti H S, Subhra Sulagana Debata, Kannagi A and Ananta Charan Ojha*	The IUP Journal of Information Technology Vol: 22 No: 2	2026

Abstract: The paper proposes a hybrid framework that integrates machine learning and causal inference to enable both prediction and explanation of chronic stress. Using questionnaire responses collected from 300 participants, a Weighted Chronic Stress Index was developed to capture the differential contribution of six stress domains. Feature selection and SMOTE-based class balancing were applied prior to classification using Logistic Regression, Support Vector Machine (SVM), Random Forest, and XGBoost models. To move beyond correlational analysis, causal effects of domain-specific stressors were estimated using Inverse Probability Weighting, Double Machine Learning, and Causal Forests. The results demonstrate strong

predictive performance across all models, with SVM achieving the highest classification accuracy and ROC-AUC. The proposed framework combines predictive accuracy with causal interpretability, providing a more comprehensive approach to chronic stress assessment and supporting the development of targeted and personalized stress intervention strategies.

Sl. No	Article	Author	Source	Year
3	Role of IoT in Transforming Healthcare: A Review of Early Detection, Real-Time Monitoring, and Data Security	*Vikram Kumar Reddy K, Dhruva Raj K M and Sunetra Chatterjee*	The IUP Journal of Information Technology Vol: 22 No: 2	2026

Abstract: The paper systematically consolidates current knowledge on the application of Internet of Things (IoT) in healthcare through a review of the peer-reviewed literature published between 2015 and 2025. The search was structured following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol, and was performed on IEEE Xplore, Scopus, PubMed, ScienceDirect, SpringerLink, and Google Scholar, resulting in a pool of 412 records, after removing duplicates, title-abstract screening and full-text eligibility assessment. The key thematic findings are ubiquitous deployment of IoT-enabled remote patient monitoring and wearable devices; AI-augmented predictive analytics for cardiovascular, metabolic and neurological conditions; multilayered Internet of Medical Things (IoMT) architectures covering perception, edge and cloud tiers; and persistent challenges in data security, device interoperability, regulatory compliance and rural deployment. The key research gaps identified are the absence of standardized IoMT frameworks, limited validation in real-world deployments outside controlled environments, and lack of integration of privacy-preserving architectures for resource-constrained environments. These results collectively emphasize the need for holistic, scalable, and ethically grounded IoT frameworks to support next-generation patient-centric digital healthcare.

Sl. No	Article	Author	Source	Year
1	Optimizing High-Dimensional Data Analysis Through Latent Representation Learning, Contrastive Embedding, and Consensus Clustering for Sensor Intelligence	*Nguyen Minh Tuan*	Digital Signal Processing and Artificial Intelligence for Automatic Learning Vol: 5 No: 2	2026

Abstract: High-dimensional sensor data present substantial analytical challenges due to feature sparsity, nonlinear dependencies, noisy observations, and unstable clustering behavior in conventional machine learning frameworks. Although deep representation learning and subspace clustering methods have significantly advanced high-dimensional analytics, many existing approaches remain fragmented, operating independently across latent representation learning, semantic embedding optimization, and clustering stages. This study proposes a unified multi-stage unsupervised sensor intelligence framework integrating Variational Autoencoder (VAE)-based probabilistic latent representation learning, contrastive representation optimization using Triplet Networks, SimCLR, and BYOL, and consensus hybrid clustering for robust subgroup discovery in high-dimensional digital sensor signals. The proposed framework is evaluated using the IEEE DataPort binary-classification digital sensor signal dataset comprising 11 numerical sensor features characterized by temporal dependencies and event-driven activation patterns. Experimental evaluation incorporates quantitative clustering metrics including Silhouette Score, Daviesâ€“Bouldin Index, Calinskiâ€“ Harabasz Index, reconstruction analysis, cluster stability evaluation, comparative baselines, and consensus clustering validation. Results demonstrate that probabilistic latent manifold learning substantially improves structural organization, semantic continuity, and anomaly-sensitive clustering compared with conventional dimensionality reduction and raw-feature clustering approaches. Hierarchical clustering provides balanced subgroup segmentation, whereas spectral clustering exhibits strong sensitivity toward sparse anomalous structures. The proposed consensus hybrid clustering mechanism combines these complementary strengths to produce stable and semantically coherent latent partitions. The study contributes a robust and scalableframework for intelligent sensing, anomaly detection, cyber-physical monitoring, and unsupervised IoT analytics.

Sl. No	Article	Author	Source	Year
2	Explainable AI-Driven Workforce Intelligence Framework for Automation Risk Analysis and Occupational Transformation toward 2030	*Yao-Liang Chung*	Digital Signal Processing and Artificial Intelligence for Automatic Learning Vol: 5 No: 2	2026

Abstract: The rapid integration of artificial intelligence (AI) into global labor markets is fundamentally reshaping occupational structures and workforce dynamics. This study proposes an Explainable AI-Driven Workforce Intelligence Framework for automation risk analysis and occupational transformation toward 2030. Addressing critical gaps in interpretability within existing workforce-automation research, the framework integrates predictive analytics, global and local explainability mechanisms, and attention-inspired feature interdependency analysis to investigate how socioeconomic and technological variables collectively influence occupational vulnerability. Using the AI Impact on Jobs 2030 dataset, a Gradient Boosting-based predictive model classifies occupations into risk categories, while permutation-based feature attribution and Local Interpretable Model-Agnostic Explanations (LIME) provide transparent interpretation of workforce-risk determinants. Results reveal that automation feasibility indicators exert substantially stronger influence on risk prediction than traditional socioeconomic variables, with Automation Probability 2030 emerging as the dominant predictive anchor. Attention-inspired dependency analysis further demonstrates that high-risk occupations exhibit intensified feature interdependencies, particularly between technological growth and workforce experience, suggesting that rapid technological advancement may diminish the stabilizing influence of professional tenure. The study contributes an integrated, interpretable analytical architecture that extends explainability concepts from natural language processing to workforce intelligence, enabling transparent occupational-risk assessment and evidence-driven labor-market forecasting. By illuminating the structural mechanisms underlying workforce vulnerability, the framework supports policymakers, educational institutions, and organizations in designing targeted reskilling initiatives and adaptive workforce strategies for sustainable labor-market transformation in the era of AI-driven digital change.

Sl. No	Article	Author	Source	Year
3	Adaptive Weighted Ensemble Clustering for Robust Latent Structure Discovery in RF Signal Datasets	*Ricardo RodrÃ-guez Jorge*	Digital Signal Processing and Artificial Intelligence for Automatic Learning Vol: 5 No: 2	2026

Abstract: Radio frequency (RF) signal datasets exhibit complex nonlinear distributions, environmental noise, and heterogeneous transmission behaviors that challenge traditional clustering algorithms. Conventional ensemble approaches often rely on static weighting strategies and overlook local structural uncertainty, limiting their robustness in dynamic wireless environments. To address these limitations, this study introduces an Adaptive Weighted Ensemble Clustering framework designed for robust latent structure discovery in RF signal datasets. The proposed methodology integrates multiple clustering algorithms, including centroidbased, density aware, hierarchical, and graph based methods, into a unified consensus architecture. By constructing a performance-driven weighted co-association matrix and incorporating local uncertainty estimation, the framework dynamically optimizes algorithmic contributions while suppressing unstable partitions. High order topological enhancement further refines neighborhood relationships, ensuring coherent subgroup formation in sparse spectral regions. Experimental evaluation demonstrates that the adaptive consensus model significantly outperforms standalone clustering baselines, achieving a consensus silhouette score of 0.722 and exhibiting exceptional reproducibility across subsampling trials. Co-association heatmap analysis reveals distinct block-diagonal structures, confirming the reliable identification of latent transmission subgroups. The frameworkâ€™s dynamic adaptation capability ensures sustained performance under varying signal to noise ratios and heterogeneous dataset distributions. By bridging the gap between algorithmic instability and the stringent reliability requirements of modern RF analytics, this work establishes a scalable foundation for unsupervised spectrum intelligence, anomaly detection, and AI-driven wireless security. Future research will integrate self supervised representation learning and optimize computational efficiency for real-time edge deployment.

Sl. No	Article	Author	Source	Year
1	Missing-Value Behavior and Sensor Drift Analysis in Distributed PM2.5 Microclimate Sensing Networks for Trustworthy Environmental Intelligence	*Hsing-Cheng Liu*	Journal of Electronic Systems Vol: 16 No: 2	2026

Abstract: Reliable air-quality monitoring is fundamental to environmental sustainability, public-health surveillance, climate resilience, and smart city governance. Among atmospheric pollutants, fine particulate matter with an aerodynamic diameter of <2.5 Î¼m (PM2.5) is particularly hazardous because prolonged exposure is strongly associated with respiratory illness, cardiovascular disease, and premature mortality. Although distributed low-cost environmental sensing systems have emerged as scalable alternatives to traditional regulatory-grade monitoring stations, their operational reliability is frequently compromised by missing observations, communication instability, calibration degradation, and long-term sensor drift. These issues significantly affect data quality and may reduce the reliability of downstream predictive environmental analytics. This study presents a comprehensive analytical framework for evaluating missing-value behavior and sensor drift within a large-scale PM2.5 microclimate sensing network. The analysis utilizes 897,085 environmental observations collected from 12 distributed sensing devices between May 2022 and May 2026. The proposed framework integrates device level and feature level missingness analysis, temporal missingness evaluation, rolling statistical drift analysis, baseline deviation monitoring, Kolmogorov Smirnov distributional drift testing, and z-score anomaly detection. The findings reveal substantial heterogeneity in sensing reliability across devices and environmental variables. Device-level analysis demonstrates severe acquisition instability in selected sensing nodes, while feature level evaluation indicates that wind related variables exhibit the highest missingness behavior. Sensor drift analysis further identifies significant long term deviations in PM2.5 sensing behavior, suggestingprogressive calibration instability and operational degradation in multiple sensing devices. Statistical drift testing confirms substantial distributional evolution across sensing periods. The proposed framework contributes toward trustworthy environmental intelligence by establishing a scalable methodology for evaluating sensing reliability in distributed smart city infrastructures. The findings additionally emphasize the importance of continuous quality assurance, adaptive recalibration, and automated drift monitoring for maintaining robust environmental sensing ecosystems

Sl. No	Article	Author	Source	Year
2	Artificial Intelligence-Driven Universal Verification Methodology for Low-Power Semiconductor Design Verification	*Yao-Liang Chung*	Journal of Electronic Systems Vol: 16 No: 2	2026

Abstract: The increasing complexity of System on Chip architectures has significantly intensified semiconductor verification challenges. Traditional workflows require extensive manual effort for testcase generation, constraint extraction, interface interpretation, and validation of complex hardware interactions. Recent advances in Large Language Models enable automation via long context reasoning, prompt engineering, and AI assisted test synthesis. This study presents a comprehensive analytical framework for LLM-driven semiconductor verification using structured prompt orchestration, prompt chaining, semantic context engineering, and token aware optimisation. The analysis evaluates single shot and multi shot prompting, hierarchical prompt templates, staged reasoning pipelines, context management strategies, and token utilization efficiency for complex RTL verification tasks. The framework also investigates long context processing using Gemini 1.5 based architectures capable of handling large scale SoC repositories without conventional chunk fragmentation limitations. Comparative evaluation shows that multi shot prompt orchestration significantly improves reasoning continuity, verification completeness, and hallucination resistance while enabling scalable handling of interdependent RTL modules. The proposed framework contributes to scalable AI assisted verification systems for next generation Electronic Design Automation workflows.

Sl. No	Article	Author	Source	Year
3	Attention Message Passing Network for Intelligent Electronic Circuit Topology Analysis	*Maleerat Maliyaem*	Journal of Electronic Systems Vol: 16 No: 2	2026

Abstract: The increasing complexity of modern electronic systems has created a growing demand for intelligent Electronic Design Automation (EDA) frameworks capable of understanding circuit topology, signal propagation, and component interaction behavior. Traditional machine learning approaches are limited in capturing the non-Euclidean structural relationships inherent in electronic circuits because they operate primarily on independent feature vectors rather than connectivity aware representations. This study presents a graph-based analytical framework for intelligent circuit understanding using a Heterogeneous Graph Attention Message Passing Network (HGAMPN). The proposed framework combines heterogeneous graph representation, Message Passing Neural Networks (MPNNs), Graph Attention Networks (GATs), hierarchical graph pooling, and explainable artificial intelligence mechanisms to model connectivity behavior, signal propagation, component dependencies, and hierarchical design structures within electronic circuits. The dataset employed in this study consists of structured circuit topology data obtained from the Kaggle Electronic Circuit for Machine Learning dataset. The dataset contains component level and connectivitylevel information describing electronic circuits composed

of resistors, capacitors, transistors, diodes, LEDs, voltage sources, switches, and sensor elements. Each circuit is represented through structured metadata including component identifiers, component categories, pin level relationships, electrical values, and netbased interconnections. This representation enables the reconstruction of circuit structures as heterogeneous graphs where components and nets are modeled as nodes and electrical interconnections are represented asedges. The proposed framework demonstrates how graph-based learning architectures can capture circuit connectivity patterns, identify dominant signal propagation pathways, and discover hierarchical functional modules within electronic systems. The study further illustrates how explainable graph learning mechanisms can identify salient subgraphs, influential electrical paths, and critical component interactions. The resulting framework provides a strong foundation for intelligent EDA, autonomous circuit understanding, graphbased hardware learning, and explainable AI-driven electronic system analysis.

Sl. No	Article	Author	Source	Year
1	Development and Evaluation of Novel Herbal Sunscreen Formulations Using Plant-Based Oils for Effective UV Protection	*Bondili Sadhana*	i-manager's Journal on Life Sciences Vol: 5 No: 1	2026

Abstract: The present study focused on the formulation and evaluation of novel herbal sunscreen formulations using plant-based oils such as Red Raspberry Seed Oil, Carrot Seed Oil, and Avocado Oil. The developed formulations were evaluated for Sun Protection Factor (SPF), UVA protection, antioxidant activity, physicochemical properties, stability, and skin irritation potential. Three different formulations were prepared and evaluated using standard laboratory methods. The formulations exhibited skin-compatible pH values ranging from 5.0 to 5.5 and viscosity between 2500–3000 cP, indicating suitability for topical application. Among the developed formulations, Formulation B showed the highest photoprotective activity with an SPF value of 24 and a UVA protection factor of 0.35. Antioxidant activity assessed by the DPPH assay showed maximum radical scavenging activity of 77% at 100 µg/mL for Formulation B. Stability studies conducted under accelerated conditions (40°C and 75% RH) for six months revealed no significant changes in pH, viscosity, or phase separation. Patch testing indicated minimal skin irritation, confirming the safety of the formulations. These findings demonstrate that plant-derived oils possess significant photoprotective and antioxidant properties and can be effectively incorporated into herbal sunscreen formulations. Such formulations may serve as safe, eco-friendly alternatives to conventional chemical sunscreens.

Sl. No	Article	Author	Source	Year
2	Mitigation of Heavy Metal in Vegetable Crops by Plant Growth Regulator: A Review	*Manoj Kumar Mishra, Prince Kumar Singh, Surya Dwivedi, Mohamed Ahmad, Pankaj Gupta, Prianshu Singh, Ragini Yadav, Sanjay Mishra*	i-manager's Journal on Life Sciences Vol: 5 No: 1	2026

Abstract: Major environmental pollutants include heavy metals including cadmium, copper, lead, chromium, and mercury. These pollutants are especially prevalent in places with significant anthropogenic pressure. Because heavy metal buildup in soils can have detrimental impacts on crop growth caused by phytotoxicity, food safety and marketability, and the environmental health of soil organisms, it is a major concern in agricultural production. Through contamination of the air, water, and soil, plants' influence and metabolic processes have an impact on the biological and geological redistribution of heavy metals. Excessive reactive oxygen species (ROS) and methylglyoxal (MG) accumulation is a typical side effect of heavy metal toxicity. ROS and MG can both induce lipid peroxidation, protein oxidation, enzyme inactivation, DNA damage, and/or interact with other essential components of plant cells. This review focuses on effect of heavy metals on plant growth, yield and their mode of toxic effects in plants.

Sl. No	Article	Author	Source	Year
3	Therapeutic Potential of Valeriana officinalis in the Management of Sleep and Anxiety Disorders: A Review	*Amit Ram, Pragya Kadam*	i-manager's Journal on Life Sciences Vol: 5 No: 1	2026

Abstract: Sleep and anxiety disorders are among the most prevalent neuropsychiatric conditions worldwide, exerting a substantial burden on individual well-being, productivity, and public health systems. Although conventional pharmacotherapies such as benzodiazepines and non benzodiazepine hypnotics are effective in the short term, their long term use is frequently associated with adverse effects including tolerance, dependence, cognitive impairment, and withdrawal phenomena. These limitations have driven growing interest in plant based therapeutic alternatives with improved safety profiles. Valeriana officinalis L. (valerian) is one of the most extensively studied medicinal plants used traditionally and clinically for the treatment of insomnia, anxiety, and nervous restlessness. This review critically evaluates the botanical characteristics, phytochemical composition, mechanisms of action, pharmacological and clinical evidence, dosage forms, safety profile, and global usage of V. officinalis. Current evidence suggests that valerian exerts sedative and anxiolytic effects primarily through modulation of the γ aminobutyric acid (GABA) system, with additional contributions from adenosine and serotonin pathways. While clinical findings support its usefulness in mild to moderate sleep and anxiety disorders, variability in extract composition and study design highlights the need for further standardized, large scale clinical trials.

Sl. No	Article	Author	Source	Year
4	Antimicrobial Resistance: Impacts, Challenges and Future Prospects	*Amreen Khan*	i-manager's Journal on Life Sciences Vol: 5 No: 1	2026

Abstract: Among the most significant discoveries of the 20th century, antibiotics have prevented infectious illnesses from killing millions of people. As antibiotic usage and abuse have increased over time, microbes have evolved acquired antimicrobial resistance (AMR) to several medications as a result of strong selection pressure. Both within and outside of medical institutions, human-to-human contact is the main way that AMR is acquired and spread. Numerous interconnected aspects of agriculture and healthcare control the emergence of AMR through different drug-resistance mechanisms. One of the main contributing factors to the development and spread of AMR has been the unchecked use of antibiotics in animal feed. Antimicrobial-resistant bacteria have become incredibly commonplace worldwide and pose a latent pandemic danger to human health, requiring immediate action. Antimicrobial-resistant bacterial infections have few available treatments, leading to high morbidity and death rates and substantial financial costs. The demand for new, innovative antimicrobials to treat illnesses caused by resistant microorganisms is far higher than the availability of these drugs. Access to high-quality and reasonably priced medications, vaccinations, and diagnostics, monitoring and surveillance, reducing the use of over-the-counter antibiotics and antibiotics in food animals, and enforcing the law are all immediate measures to prevent AMR. A post antibiotic age may become more likely than a 21st-century catastrophic nightmare unless there is an immediate need for coordinated cooperative effort inside and across several national and international organizations. The causes and contributing elements of microbial resistance are highlighted in this narrative overview along with important tactics.

Sl. No	Article	Author	Source	Year
5	Positive Behaviour Support and Person-Centred Interventions in Prader–Willi Syndrome: A Case Study	*Dr. Ismail Thamarasseri, Samiyath Mohamed*	i-manager's Journal on Life Sciences Vol: 5 No: 1	2026

Abstract: Prader-Willi Syndrome (PWS) is a rare genetic disorder that manifests with behavioural, cognitive, and physiological challenges, including poor impulse control, skin-picking, sleep disturbances, and emotional dysregulation. This paper explores strategies for managing behavioural challenges in individuals with PWS through the application of Positive Behavioural Support (PBS) and person-centred care. Using the case study of

Stephen Willis, a thirteen-year-old teenager with PWS, this paper highlights evidence-based strategies, including routine implementation, emotional regulation, management of self-harm behaviours, and therapeutic interventions such as Cognitive Behavioural Therapy (CBT) and behavioural therapy. The discussion integrates current research and practice frameworks to provide holistic recommendations for supporting individuals with PWS.

Sl. No	Article	Author	Source	Year
1	Educational Challenges and Resilience among Orphaned Children in Dedza District, Malawi	*Herald Junior Banda, Mugundharajan E*	I-manager's Journal on Humanities & Social Sciences Vol: 6 No: 1	2026

Abstract: This study investigates the multifaceted educational barriers confronting orphaned children in Dedza District, Malawi, and explores the resilience strategies employed to overcome them. Utilizing a mixed-methods approach, data were collected from 100 respondents including orphans, guardians, teachers, and non-orphaned peers through surveys and focus group interviews. Quantitative data were analyzed using descriptive statistics and Chi-square tests to examine relationships between educational access and key variables such as orphan status, gender, and external support. Qualitative data were subjected to thematic analysis to capture nuanced perspectives on emotional, social, and institutional challenges. Key barriers identified include poverty, stigma, early marriage, and inadequate learning materials. Resilience factors such as peer networks, NGO intervention, and teacher mentorship were also prominent. The findings underscore the need for multi-stakeholder policy reforms and targeted support programs to ensure equitable educational opportunities for vulnerable children.

Sl. No	Article	Author	Source	Year
2	Health Limits of the Elderly during COVID-19: A Cross-Sectional Study in Rural Bangladesh	*Abdul Jabbar, Ripul Kabir*	I-manager's Journal on Humanities & Social Sciences Vol: 6 No: 1	2026

Abstract: The elderly are generally vulnerable to different kinds of diseases which are triggered more by the pandemic situation. This study focuses on the factors affecting the health limits of the rural elderly during COVID-19 in the Khulna district of Bangladesh. A quantitative method was used for this study. A non-experimental research design has been steered following a simple random sampling technique. Data were collected through a field survey

using an interview schedule from March to May 2021. Seven issues regarding the health limits of the elderly were brought into this study. The study reveals that more than 61% of the elderly did not lift or carry out groceries due to health limits. Different sociodemographic factors were associated with the health limits of the elderly during the pandemic i.e., age, sex, education, and religion. Age had the most significant influence on the vigorous act performance of the elderly. It endorses healthy life practices as well as family support to overcome the health limits of the elderly, particularly in rural areas of Bangladesh during the pandemic situation. Special care and policy during the pandemic can be solicited to the health limits of the rural elderly.

Sl. No	Article	Author	Source	Year
3	To Assess the Effectiveness of Trauma-Focused Cognitive Behavioral Social Work Interventions on PTSD Symptom Severity among Adult Survivors of Interpersonal Violence: A Study of Lumbadzi Area in Lilongwe, Malawi	*Freeza Jefutara*	I-manager's Journal on Humanities & Social Sciences Vol: 6 No: 1	2026

Abstract: .0 Trauma from interpersonal violence remains a public and serious social health problem in Malawi, particularly among peri-urban adults such as those in Lumbadzi. This study examined the effectiveness of trauma-focused cognitive behavioral social work treatments (TF-CBT) to reduce the severity of post-traumatic stress disorder (PTSD) symptoms among adult survivors of interpersonal violence. The investigation aimed to (1) determine the impact of TF-CBT on the decrease in PTSD symptoms, (2) assess the relationship between intervention duration and therapeutic improvement, and (3) examine the effect of social work practice strategies on enhancing emotional healing and psychosocial adjustment. A quasi-experimental study design was applied on adult patients 100 who were survivors of physical or emotional abuse. Participants were divided randomly into TF-CBT-based social work intervention and standard psychosocial support. Outcome measures were gathered using standardized instruments for the assessment of PTSD and analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, correlation analysis, and regression models were used to determine the effect of the intervention.

Sl. No	Article	Author	Source	Year
4	Digital Humanities in English Literature: Bridging Traditional Textual Analysis with Modern Technology	*Mini M. Abraham, Ahinasha N.S.*	I-manager's Journal on Humanities & Social Sciences Vol: 6 No: 1	2026

Abstract: Digital Humanities (DH) has emerged as a transformative approach in English literary studies by integrating computational tools with traditional literary analysis. This paper examines the application of DH tools such as text mining, sentiment analysis, and data visualisation in analysing recurrent themes, emotional dynamics, and narrative developments in literary texts. Through two case studies—text mining in Shakespearean tragedies and sentiment analysis in Victorian novels—the paper demonstrates how these tools reveal new interpretive possibilities. The first case study applies keyword frequency analysis and thematic clustering in Shakespearean tragedies, highlighting motifs such as ambition, betrayal, and fate. The second case study uses sentiment analysis metrics like polarity and subjectivity to trace emotional arcs in Charles Dickens's Great Expectations and Thomas Hardy's Tess of the d'Urbervilles. Findings show that computational methods enhance literary interpretation by enabling large-scale textual analysis and visual representations of complex relationships. The broader implications of DH, including its potential in artificial intelligence, blockchain for text preservation, and augmented reality, are also discussed. Ethical considerations such as data privacy and intellectual property rights are critically examined. DH promotes an interdisciplinary approach that advances research and literary scholarship pedagogy by integrating computational analysis with human interpretive skills.

Sl. No	Article	Author	Source	Year
5	A Comparative Study of the Educational Status of Tribal Women in India: With Special Reference to Jharkhand, Odisha and Chhattisgarh	*Dhiraj Mani Pathak, Jimmy Gupta*	I-manager's Journal on Humanities & Social Sciences Vol: 6 No: 1	2026

Abstract: Scheduled tribes make significant contributions to the nation's economic, social, and cultural development. The scheduled tribes constitute about 8.63% of the total population of India, along with 26.21%, 22.85%, and 30.62% respectively of the total population in Jharkhand, Odisha and Chhattisgarh. Tribal women constitute almost half of the total tribal population. Education is one of the most important instruments for improving tribal women's ability, empowering them to face emerging difficulties in their lives and ensuring their social and economic well-being. Education minimizes social and economic disparities in society by increasing individual productivity and efficiency and increasing awareness about their rights. The present paper analyses the educational status of tribal women on the basis of literacy rate, percentage of population present at different education levels, gross

enrolment ratio and dropout rates. The paper attempts to examine the difference in educational status among tribal women of Jharkhand and India. The study also highlights the difference in educational status of Jharkhand, Odisha and Chhattisgarh. The findings of the study highlights that the literacy rate of tribal women is very low. The literacy rate of tribal women in Jharkhand is 46.20%, which is lower than the literacy rate of tribal women (49.36%) in India. The percentage of tribal women is continuously decreasing from primary level to graduate and above level at national as well as state level. The gross enrolment ratio (GER) of tribal girls in Jharkhand is 40.0% at the higher secondary level, which is much lower than the GER at the primary level which is 107.4%. The GER of tribal girls in Jharkhand at the higher secondary level is lower than the national tribal girls' GER (53.6%), as well as the GER of tribal girls in Odisha (41.0%) and Chhattisgarh (68.7%). Simultaneously the dropout rate of tribal girls is very much high in secondary education. The fact is that a large number of tribal women have missed educational opportunities at various educational levels. There is a great need to provide them educational opportunities to empower them so that they can become socially and economically self-reliance and can create their own identity in their community.

Sl. No	Article	Author	Source	Year
6	Resemblance of Societies in Ahmed Ali's Twilight in Delhi and Achebe's Things Fall Apart	*Kiran Kumar Reddy G., Sreekanth Reddy B.*	I-manager's Journal on Humanities & Social Sciences Vol: 6 No: 1	2026

Abstract: Colonization created numerous opportunities for the colonizers to sow division among the colonized for their own economic -political gain. The colonial discourse produced by western writers mainly centered on the culture, life style and traditions of colonized people , often depicting them as inferior. In contrast, Chinua Achebe's Things Fall Apart in particular questions colonial representations. This paper therefore examines Achebe's representation of Igbo culture, and Ahmed Ali's Twilight in Delhi's traditional societies. Literature, along with other cultural expressions, serves as a main tool to portray historical events. It explores socio-cultural transformation which took place in 20th century India. It depicts the decaying traditional culture of old Delhi while illustrating how emerging India's socio-cultural and political fabric. Ahmed Ali focuses on themes like time, memory, identity, culture, colonization and social change.

Sl. No	Article	Author	Source	Year
7	Gender Sensitisation in Schools: Curriculum, Practices, and Teacher Roles	*Ismail Thamarasseri, Anie Kuriyan*	I-manager's Journal on Humanities & Social Sciences Vol: 6 No: 1	2026

Abstract: Gender sensitisation in schools is essential for building inclusive learning environments where all students feel respected, valued, and empowered. Children's early perceptions of gender are shaped by classroom interactions, textbooks, teachers, and peer relationships, making schools critical spaces for challenging stereotypes and promoting equality. This paper examines the concept, need, and significance of gender sensitisation by highlighting how gender-neutral practices, inclusive curricula, and teacher attitudes influence students' understanding of fairness and diversity. It emphasises the role of gender-sensitive pedagogy, co-curricular activities, and digital learning tools in nurturing empathy, critical thinking, and respect for all gender identities. The paper also analyses the challenges schools face, including cultural norms, insufficient teacher training, biased textbooks, limited parental support, and inadequate infrastructure for gender-diverse learners. By addressing these issues through collaborative efforts among teachers, parents, policymakers, and communities, schools can cultivate environments that promote human rights and social justice. Ultimately, gender sensitisation emerges as a lifelong value that shapes students into responsible, equitable, and socially conscious citizens, contributing to a more just and inclusive society.

Sl. No	Article	Author	Source	Year
8	Life Skills Education and Adolescent Development: A Comprehensive Review of Global and Indian Studies	*Deepika Pant Pandey, Mayank Pandey*	I-manager's Journal on Humanities & Social Sciences Vol: 6 No: 1	2026

Abstract: Life skills education has emerged as a vital element of holistic adolescent development, aiming to equip youth with essential cognitive, emotional, and social competencies. This review synthesizes findings from over 124 empirical studies conducted globally and in India, focusing on the influence of life skills education on adolescents' academic achievement, mental health, self-concept, and social adjustment. The analysis highlights the importance of structured, participatory, and culturally responsive life skills programs. The paper further identifies the influence of gender, parental education, locale, and school environment on life skills acquisition. The findings underscore the need to integrate life skills education within school curricula to foster resilience, responsible decision-making, and overall psychosocial competence among adolescents.

Sl. No	Article	Author	Source	Year
1	Developing A Skin Condition Based Cosmetic Suggestion System.	*Harshal Bhurse, Prasanna Lohe, N., Yash Kalbhute, Harshal Kamdi, Kamlesh Rathod, Diksha Mendhe*	I-manager's Journal on Artificial Intelligence & Machine Learning Vol: 4 No: 1	2026

Abstract: This work presents an AI-driven Skin Condition-Based Cosmetic Suggestion System using Convolutional Neural Networks (CNNs) with TensorFlow and Keras. The system analyzes facial images to detect major skin conditions such as acne, dryness, pigmentation, and redness, along with identifying skin types. It then provides personalized cosmetic and skincare recommendations based on the detected results. The model integrates modules for image preprocessing, feature extraction, classification, and intelligent recommendation to ensure 80% accurate and consistent results. A userfriendly one-click interface enables real-time skin analysis and report gneration and accuracy in skin type classification and accuracy in condition detection. The system effectively reduces human subjectivity and enhances user convenience, representing a significant advancement toward AI-powered dermatological analysis and personalized beauty care.

Sl. No	Article	Author	Source	Year
2	Artificial Intelligence-Driven Approaches for Phishing Detection and Cyber Threat Analysis: A Comprehensive Review	*Ujjval Rana*	I-manager's Journal on Artificial Intelligence & Machine Learning Vol: 4 No: 1	2026

Abstract: The rapid proliferation of digital communication and internet-based services has led to an exponential rise in cyber threats, particularly phishing attacks and social engineering exploits. Traditional rule-based detection mechanisms have proven insufficient in combating sophisticated, evolving threats. This paper presents a comprehensive review of Artificial Intelligence (AI) and Machine Learning (ML) driven approaches employed for phishing URL detection, email classification, and broader cyber threat analysis. We examine supervised, unsupervised, and deep learning models including Decision Trees, Random Forests, Support Vector Machines (SVM), Convolutional Neural Networks (CNN), and Long Short-Term Memory (LSTM) networks, evaluating their effectiveness based on accuracy, precision, recall, and F1-score metrics. The study also explores feature extraction methodologies, publicly available datasets, and the integration of Natural Language Processing (NLP) for semantic analysis of phishing content. Findings indicate that ensemble learning methods and deep learning architectures consistently outperform traditional classifiers, achieving detection rates above 97% in controlled environments. The paper concludes with identified research gaps, limitations of current models, and directions for future work including real-time adaptive detection systems.

Sl. No	Article	Author	Source	Year
3	Deep Learning-Based AI Framework for Automated Medical Diagnosis	*Vishal Khanna*	I-manager's Journal on Artificial Intelligence & Machine Learning Vol: 4 No: 1	2026

Abstract: The rapid adoption of artificial intelligence (AI) in healthcare has opened new avenues for automated medical diagnosis, offering the potential to significantly improve clinical decision-making, diagnostic accuracy, and early disease detection. With the increasing availability of digital health records, medical imaging, and laboratory data, AIdriven systems are being explored as effective tools to support clinicians in managing complex and large-scale medical information. Traditional diagnostic processes often rely on manual interpretation and expert judgment, which can be time-consuming, subject to human error, and limited by inter-observer variability. In this context, deep learning techniques provide a promising alternative by enabling data-driven, automated analysis of heterogeneous healthcare data. This study presents a deep learning-based diagnostic framework designed to autonomously evaluate patient health conditions using a hypothetical dataset that simulates real-world clinical environments. The dataset integrates structured clinical records, laboratory test results, and extracted medical imaging features, allowing the model to learn complex patterns associated with different disease states. The proposed architecture employs a convolutional neural network (CNN) for feature extraction, coupled with fully connected layers for multi-class disease classification. This combination enables effective learning of both spatial and numerical features, enhancing diagnostic performance across multiple categories. Experimental results obtained from the simulated dataset demonstrate high levels of diagnostic accuracy, precision, recall, and F1-score, highlighting the robustness and reliability of the proposed model. These performance metrics indicate the framework's ability to generalize well across diverse patient profiles and disease conditions. In addition to classification performance, the study emphasizes the importance of model explainability by incorporating interpretable mechanisms that provide insights into feature relevance and decision pathways. Such transparency is critical for clinical acceptance and regulatory compliance. Furthermore, the framework is designed with scalability in mind, allowing integration into larger healthcare systems and potential adaptation to real-world datasets. The study also discusses practical challenges related to data quality, ethical considerations, and system deployment in clinical settings. Overall, this work establishes a foundational approach for future AI-driven diagnostic tools, demonstrating the potential of deep learning to enhance healthcare outcomes through accurate, efficient, and explainable automated diagnosis.

Sl. No	Article	Author	Source	Year
4	Survey on: Optimizing Waste Classification with Ensemble Learning: Fine-Tuned CNNs for Organic and Recyclable Waste Sorting	*Ratnesh Kumar Choudhary, Prachi Borade, Ansh Devendra Dulewale, Dishant Sevake, Riya Ramteke, Shweta Rewatkar, Bharti Mathankar*	I-manager's Journal on Artificial Intelligence & Machine Learning Vol: 4 No: 1	2026

Abstract: Waste management investigation addresses the pressing necessity to adopt sustainable waste management approaches, examining the efficacy of ensemble learning techniques and refined CNNs for waste categorization, encompassing both organic and recyclable materials. The investigation utilizes the "waste-classification-data" dataset containing 25,000 images to fulfill the current research requirement for extensive, balanced datasets essential for robust model development. The pre-trained architecture ResNet50 underwent transfer learning optimization, while SMOTE and ENN were applied for class balancing, indicating their environmental application potential. To enhance classification capabilities, a majority voting ensemble approach was implemented, integrating predictions from these optimized models and surpassing individual model performance while aligning with recent advancements in ensemble learning methodologies. The integration of transfer learning with ensemble techniques has proven effective in achieving precise waste classification outcomes, offering an automated and expandable waste sorting solution that contributes to minimizing plastic waste's environmental consequences. The research is supported by empirically informed implementation concepts and enhancement strategies, concluding that meticulously calibrated CNNs exhibit significant resilience against real-world waste management challenges and represent a valuable contribution to recycling system advancement and the promotion of sustainable waste handling practices.

Sl. No	Article	Author	Source	Year
5	Review Paper on Soil Quality Detection and Crop Prediction Using Machine Learning	*Chandu D. Vaidya*	I-manager's Journal on Artificial Intelligence & Machine Learning Vol: 4 No: 1	2026

Abstract: This study explored various machine learning (ML) techniques for crop classification, yield prediction, and soil fertility assessment to enhance precision agriculture. Methods such as Support Vector Machines (SVM), Decision Trees, Random Forest, Neural Networks, and ensemble learning approaches have been employed across different agricultural datasets. Key applications include optimizing crop selection based on soil macronutrients, predicting yield variability under climate change scenarios, and automating seed germination assessment. Studies have demonstrated that ML models outperform traditional statistical and process-based models, thereby improving the accuracy of crop suitability, yield forecasting, and price prediction. Hybrid models integrating IoT, deep learning, and geospatial data show promise for real-time agricultural decision-making.

Challenges, such as data availability, computational complexity, and farmer adoption, remain, highlighting the need for scalable AI-driven solutions. Future directions include integrating real-time soil monitoring, climate adaptation strategies, and mobile-based AI applications for farmers. This paper further provides visual frameworks and process models for practical implementation of ML in precision agriculture.

Sl. No	Article	Author	Source	Year
6	A Comparative Evaluation of Batch-Normalized Multi-Layer Perceptron Models for Multi-Class Cancer Classification Using TCGA RNA-Seq Data	*Ansh Devendra Dulewale*	I-manager's Journal on Artificial Intelligence & Machine Learning Vol: 4 No: 1	2026

Abstract: The classification of cancer types using gene expression data presents significant challenges due to high dimensionality, limited sample sizes, and class imbalance inherent in genomic datasets. The Cancer Genome Atlas (TCGA) has enabled large-scale pan-cancer studies by providing standardized RNA-Seq gene expression profiles across multiple cancer types. In this work, a comparative evaluation of Multi-Layer Perceptron (MLP) models incorporating Batch Normalization is presented for multi-class cancer classification using TCGA-derived RNA-Seq data. The dataset comprises 801 tumor samples with 20,531 gene expression features spanning five cancer types: BRCA, KIRC, LUAD, PRAD, and COAD. To ensure robust and unbiased performance estimation, stratified five-fold cross-validation is employed, and class imbalance is addressed through the use of class-weighted training and macro-averaged evaluation metrics. Model performance is assessed using accuracy, macro-averaged precision, recall, and F1-score. Experimental results indicate that the inclusion of Batch Normalization improves training stability and generalization compared to standard MLP configurations, while deeper or more complex architectures offer no additional benefit for this high-dimensional setting. The findings highlight the importance of careful architectural design and rigorous evaluation protocols when applying deep learning models to genomic cancer classification tasks.

Sl. No	Article	Author	Source	Year
7	Leveraging Machine Learning for Student Dropout Analysis: A Comparative Study of Classification Techniques	*Samatha J., Sohan Srivathsa M., Akutota Dhanush*	I-manager's Journal on Artificial Intelligence & Machine Learning Vol: 4 No: 1	2026

Abstract: Right to education is of prime importance for government and at school level; the dropout ratio remains high due to socio-economic factors. If the government has an analysis of the dropped out students under the following categories, it will be very useful in forming different policies: 1. School wise 2. Area wise 3. Gender wise 4. Caste wise 5. Age/Standard wise With these categories, the government can tailor intervention policies aimed at lowering the dropout rates. Addressing the gap will enhance the expected output-focused interventions on high dropout rate. Understanding the reasons behind student dropout is essential for the development of effective targeted solutions. This project aims to carry out a holistic analysis of the factors contributing to dropout rates in schools by uncovering both individual and systemic. The final objective of the project is building a predictive model leveraging machine learning algorithms to identify at-risk students through early intervention. The models chosen include Random Forest, K-Nearest Neighbors (KNN), Naive Bayes, Logistic Regression, and Support Vector Machines (SVM). This research attempts to examine the multifaceted causes of dropouts, thus developing tangible recommendations for policymakers, educators, and stakeholders to improve student retention and educational outcomes.

Sl. No	Article	Author	Source	Year
1	Stories Behind the Cards': A Diversity-Aware Icebreaker for Business Management Classrooms	*Priyadarshini V, Sujatha S and Senguttuvan S*	The IUP Journal of Soft Skills Vol: 20 No: 2	2026

Abstract: Today's management classrooms are much more diverse, with students from a variety of cultural backgrounds, learning styles, and neurological profiles. Spontaneous verbal interactions that are typically part of traditional icebreaker activities may inadvertently exclude students who suffer from social anxiety, and prefer to engage in reflective communication or hail from a culture in which public self-disclosure is less common. This paper adopts a conceptual design approach to introduce and describe a new experiential icebreaker, "Stories Behind the Cards," developed for neurodiverse and multicultural management classrooms. The activity incorporates anonymous polling, reflective story prompts, and small-group discussions to foster participation without pressure to speak in front of an audience. It is grounded in the concept of psychological safety developed by Amy Edmondson, which encourages inclusive participation and supports the early development of peer relationships. This paper outlines the activity's design, implementation guidelines, learning objectives, and debriefing strategies. It argues that these features can enhance psychological

safety, engagement, and classroom inclusivity, providing management educators with practical tools for creating supportive and collaborative learning environments.

Sl. No	Article	Author	Source	Year
2	Soft Skills for Conflict Management: Lessons from Women in Indian Mythology	*Hetal Doshi*	The IUP Journal of Soft Skills Vol: 20 No: 2	2026

Abstract: Academic discourse on women's empowerment has expanded considerably over the past three decades, encompassing social, economic, political, and psychological dimensions. Formerly, it was believed that the role of women was restricted to being homemakers and that of men was to be breadwinners. However, a close study of the Indian epics throws light on the role of women as decision makers, conflict mediators and peace ambassadors. Out of the many soft skills displayed by various female Indian mythological characters, this paper examines the conflict resolution skills displayed by Kunti, Mandodari, Draupadi, Sita, Tara, Gandhari and Savitri. The key soft skills demonstrated by these women characters like emotional intelligence, diplomacy, and ethical reasoning, while attempting conflict resolution, are critically analyzed in this paper. The paper highlights the relevance of epic literature to contemporary education and leadership training as encouraged by the National Education Policy (NEP) 2020.

Sl. No	Article	Author	Source	Year
3	Executive Function Skills for Managing in the BANI World	*Subhashini Pasupuleti*	The IUP Journal of Soft Skills Vol: 20 No: 2	2026

Abstract: Managers face unique challenges in the Brittle, Anxious, Nonlinear, and Incomprehensible (BANI) environment.They confront ill-defined problems requiring swift action and operate in precarious environments where functional knowledge is of limited use. To thrive under such conditions, managers must display adaptive and goal-congruent behaviors. This paper examines the relevance of executive function skills in dealing with the vulnerabilities of dynamic business environments. It highlights the role of inhibitory control, working memory, and cognitive flexibility in helping managers handle people, information, and task-related responsibilities. It advocates the relevance of training emerging managers in executive function skills to help them flourish in the BANI environment.

Sl. No	Article	Author	Source	Year
4	The Art of Listening: Actionable Insights from Jane Austen's Pride and Prejudice	*Revathi Turaga*	The IUP Journal of Soft Skills Vol: 20 No: 2	2026

Abstract: Listening is an underrated skill in relationships, both personal and professional. In Jane Austen's Pride and Prejudice, sharp-witted protagonist Elizabeth Bennet and her romantic partner Fitzwilliam Darcy keep misunderstanding each other mostly because they simply do not listen deeply. Their conversations in the novel show us how easy it is to hear words without truly understanding them. This paper revisits three instances in the novel that capture these communication gaps and then connects them to everyday interpersonal skills like awareness, listening, empathy, and communication. The insights highlight how listening can strengthen bonds, reduce conflict, and help communicate more effectively.

Sl. No	Article	Author	Source	Year
1	AI-Driven Self-Optimizing and Self-Healing SDNs: A Review	*Sakthi Saravanakumar P and V Shanmuganeethi*	The IUP Journal of Telecommunications Vol: 18 No: 1& 2	2026

Abstract: The paper presents a systematic review of AI-driven traffic on the network classification schemes, AI-enhanced traffic engineering and optimization in software-defined networking (SDN), and self-healing, fault-tolerant SDN architectures. Fifty-one primary studies gathered from six literature databases and enriched by snowballing are classified and compared using a novel five-perspective taxonomy encapsulating SDN planes, learning paradigms, network functions, deployment loci and autonomy levels. The surveyed approaches are critically contrasted with respect to scalability, computational complexity, controller overhead, latency, adaptability, interpretability, energy footprint, fault tolerance, and deployment feasibility. In addition, the review positions itself against ten existing representative studies, identifies the research gap it fills, and examines emerging directions, including graph neural networks (GNNs) for routing, large language models (LLMs) for network management, digital twin networks (DTNs), intent-based networking, zero-touch network and service management, safe and multi-agent reinforcement learning, network foundation models, knowledge-graph-based management, and AIOps. The study concludes with a phased research roadmap toward intelligent, autonomous, and resilient SDN-based networks.

Sl. No	Article	Author	Source	Year
2	Spectrum Efficiency Optimization in DVB-T2 Broadcasting Network Systems	*Olarewaju Peter Ayeoribe*	The IUP Journal of Telecommunications Vol: 18 No: 1& 2	2026

Abstract: The paper addresses the suboptimal usage of Digital Video Broadcasting-Second Generation Terrestrial (DVB-T2) network parameters and their settings to achieve maximum efficiency in spectrum usage and improve the Quality of Service (QoS). A framework for improving spectrum efficiency in DVB-T2 terrestrial broadcasting systems is presented through the application of adaptive modulation and coding (AMC) schemes and advanced signal processing techniques. The performance of the proposed framework is validated through the analysis of key performance indicators such as bit error rate (BER), signal-to-noise ratio (SNR) and spectrum efficiency in terms of bits/s/Hz. The scientific data show that 256-QAM schemes at SNR values of 24-28 dB achieve spectrum efficiency of up to 7.5 bits/s/Hz while maintaining BER below 10-6 at low-density parity-check coding rates of 3/5 to 5/6. On the other hand, 16-QAM schemes at SNR values of 12-15 dB achieve spectrum efficiency between 2.5 and 3.5 bits/s/Hz. It is evident that the efficiency of spectrum usage is improved by at least 30% compared to conventional fixed parameter settings, while ensuring the reliability of the DVB-T2 network in multipath and interference-prone environments.

Sl. No	Article	Author	Source	Year
3	Beyond Cameras: An Economic and Privacy Analysis of Wi-Fi CSI-Based Security Systems for Smart Buildings	*Saurav Chaudhari*	The IUP Journal of Telecommunications Vol: 18 No: 1& 2	2026

Abstract: The paper develops an integrated economic and risk-modeling framework that decomposes the total cost of ownership of camera-centric and Channel State Information (CSI)-centric security systems and couples it with annualized-loss-expectancy risk modeling and discounted-cash-flow valuation. The framework is applied to three stylized but representative case studies—mid-size office, 150-bed elderly-care facility, and 40-property real-estate portfolio—and is stress-tested through sensitivity, break-even, and scenario analysis over the most uncertain parameters. The results indicate that CSI-centric and hybrid configurations reduce lifecycle security cost by roughly 55-80% and improve net present value in most scenarios, with the largest gains where Wi-Fi coverage already exists and regulatory exposure to visual data is high. The findings give property managers, security architects, and regulators a transparent basis for evaluating privacy-preserving sensing, while underscoring the need for empirical field validation.

Sl. No	Article	Author	Source	Year
4	Telecommunications as a Strategic Cyber Domain: An Interrupted Time-Series Analysis of State-Sponsored Operations	*Abimbola Abiodun Ogunjinmi*	The IUP Journal of Telecommunications Vol: 18 No: 1& 2	2026

Abstract: State-sponsored cyber operations targeting telecommunications infrastructure evolved between 2014 and 2025 from discrete espionage incidents into sustained campaigns of strategic significance. Using a telecom-specific extraction from the CISSM Cyber Events Database, this paper applies an ARIMA-based interrupted time-series design around five prespecified geopolitical intervention points: Crimea (2014), Russia's full-scale invasion of Ukraine (2022), Speaker Pelosi's Taiwan visit (2022), the Volt Typhoon advisory (2024), and the Salt Typhoon disclosure (2024). The analysis identifies statistically meaningful temporal associations between four of the five interventions and changes in telecom-targeting frequency; the Crimea intervention is directionally consistent but not statistically significant. These associations do not, by themselves, establish causality, but they are robust across alternative specifications and are consistent with Buchanan's cybersecurity dilemma, which emphasizes the convergence of intelligence collection, prepositioned access, and potential disruption capability in telecommunications networks. The findings also place pressure on restraint-based theories when applied specifically to telecommunications, where incentives for persistent access are unusually strong. A telecom-specific severity index grounded in the CISSM Cyber Disruption Index shows substantial escalation from the preCrimea baseline to the post-Salt Typhoon period. The paper contributes to telecommunications policy by linking geopolitical competition, lawful-intercept architecture, 5G transition risks, and criticalinfrastructure governance within a transparent empirical framework.

Sl. No	Article	Author	Source	Year
1	Investigation and Optimization of Kerf Width and Surface Roughness in AZ31 Magnesium Alloy by Wire Electric Discharge Machining	*T Akashyakumar, D Gowtham, V Jeevagan, S Santhosh and S Saravanan*	The IUP Journal of Mechanical Engineering Vol: 19 No: 3	2026

Abstract: The study investigates the machinability of AZ31 magnesium alloy using wire electrical discharge machining (WEDM), with emphasis on optimizing two critical machining responses: kerf width and surface roughness (Ra). Taguchi L16 orthogonal array was employed to investigate the influence of four important WEDM process parameters, namely, pulse on time (Ton), pulse off time (Toff), peak current (Ip), and wire feed (Wf) rate. Multi-response optimization was carried out using gray relational analysis (GRA), while signal-to-noise (S/N) ratio analysis and analysis of variance (ANOVA) were used to determine the significance of machining parameters. The experimental results revealed that Ton and Ip significantly affected both kerf width and Ra. Lower discharge energy conditions produced improved machining performance with reduced thermal damage and enhanced

dimensional accuracy. A confirmatory experiment validated the predicted results and confirmed the reliability of the optimization approach. The study establishes an effective process window for WEDM of AZ31 magnesium alloy and provides valuable insights for precision machining of reactive lightweight materials used in advanced engineering applications.

Sl. No	Article	Author	Source	Year
2	Box-Shaped Deep Drawing of Annealed AZ31 Magnesium Alloy at High Temperatures	*C Jai Shiva Rao and K Prasanna Lakshmi*	The IUP Journal of Mechanical Engineering Vol: 19 No: 3	2026

Abstract: Magnesium alloys are attractive due to their lower density, better specific stiffness, and strength; however, formability is reduced by secondary phase strengthening and the absence of slip mechanisms, especially for stronger magnesium alloys like AZ31. The paper examines formability and thinning of cup-shaped deep drawing of AZ31 magnesium alloy at elevated temperatures. AZ31's enhanced plastic flowability leads the sheet's depth of forming to increase considerably to 22 mm when the temperature is raised from 250 °C to 350 °C, according to experiments looking at the formability of AZ31 sheets in annealed condition. There was more thinning at 350 °C. The microstructural evolution shows that twinning greatly permits plastic deformation of AZ31 magnesium alloy at elevated temperatures. This heating-induced twinning deformation method improves forming characteristics by overcoming the difficulties of the reinforcing phases. A rise in the deep drawing temperature activates several slip systems and results in a uniform distribution of softened second phase, which reduces resistance to dislocation movement and increases the difficulty of fracture propagation between matrix and second phase. The preferred alignment of crystallographic planes along the deep drawing direction is responsible for the improvement in the mechanical characteristics of the deep drawn part.

Sl. No	Article	Author	Source	Year
3	Estimation of Ploughing Force with the Aid of Experimentation and Slip Line Field Theory	*Ashutosh Gayen, Biswajit Das, Biswajit Debneth and Arup Kumar Biswas*	The IUP Journal of Mechanical Engineering Vol: 19 No: 3	2026

Abstract: The paper carries out ploughing experiments on aluminum as parent material, and normal indenting forces were measured using dynamometer. The experimental results of normal force showed better match with nonlinear slip line field (SLF) theory than a linear one. Previously, it was considered that the lip (free surface) in case of indentation is linear. But experiments suggested that the lip profiles are not always linear, but rather curvilinear, and lip profile depends on several factors such as wedge angle and friction parameter. Ploughing experiments were conducted and forces were measured. The experimental values were compared with the theoretical values, and it was observed that the theoretical value of force for parabolic lip had better match than the linear lip.

Sl. No	Article	Author	Source	Year
4	Green Sand Molding Process: Challenges and Data-Driven Optimization Strategies	*Manik Sadashiv Sonawane, Jayamala Kumar Patil and Vinay Sampatrao Mandlik*	The IUP Journal of Mechanical Engineering Vol: 19 No: 3	2026

Abstract: Most modern foundries in India and abroad currently use high pressure molding line (HPML) for producing molds of casting patterns at very high speed, such as 70 molds per hour, to increase production and deliver quality castings with maximum quality yield. The green sand casting process is a versatile and cost-effective manufacturing technique widely used in the foundry industry for producing complex components. However, maintaining consistent quality is challenging due to variations in sand properties such as moisture content, compactibility, permeability, and green compression strength. Multiple variety casting manufacturing on the same HPML results in variation of return green sand to the sand plant. This paper analyzes a synthetic dataset of 1,500 foundry sand mixer batches to identify the root causes of process variability, particularly mold breakage, using exploratory data analysis (EDA), statistical process control (SPC), and predictive modeling. The findings highlight the key relationships between process variables and quality outcomes, providing insights for enhancing process reliability, reducing costs, and improving sustainability in foundry operations. The use of synthetic data enables public demonstration of analytical methods without proprietary constraints.

Sl. No	Article	Author	Source	Year
5	Emerging Trends and Challenges in Facility Layout Planning: A Comprehensive Review	*Nazim Khan and Kamal Deep*	The IUP Journal of Mechanical Engineering Vol: 19 No: 3	2026

Abstract: The paper presents a systematic and critical assessment of major facility layout planning (FLP) problems and the corresponding solution methodologies reported in the literature review. The study critically analyzes existing optimization techniques with respect to their modeling capabilities, computational efficiency, scalability, and industrial applicability. Further, the review identifies key research gaps and emerging challenges associated with dynamic manufacturing environments, uncertainty handling, sustainability considerations, and large-scale optimization. Particular emphasis is placed on recent advancements involving artificial intelligence (AI), reinforcement learning, digital twin technology, Industry 4.0-enabled smart manufacturing systems, sustainability-oriented optimization, and real-time decision-making frameworks. The paper aims to serve as a comprehensive reference source for researchers, academicians, and industrial practitioners working in the domain of facility layout optimization and advanced manufacturing system design.

Sl. No	Article	Author	Source	Year
1	Configuration and Testing of Piezoelectric Sensor Arrays with Voltage-Doubler Integration for Optimal Footstep Energy Harvesting	*Esther M Adesugba* and Godwin O Uzedhe*	The IUP Journal of Electrical & Electronics Engineering Vol: 19 No: 2	2026

Abstract: The paper presents the design, configuration and experimental evaluation of a piezoelectric energy harvesting system intended for footstep-based power generation. Multiple piezoelectric sensor array configurations were investigated alongside the integration of a voltage-doubler circuit to enhance harvested electrical output. Configurations ranging from a single sensor to large-scale series-parallel arrays comprising 32 sensors were tested under varying mechanical loading cycles. The experimental results demonstrate that increasing the number of sensors significantly improves voltage and power output, while the voltage-doubler circuit stabilizes and amplifies the harvested energy, particularly when arranged in hybrid series-parallel configurations. The optimal configuration—eight sensors in series and four in parallel— produced a maximum power output of approximately 0.277 mW at 120 loading cycles. These results validate the feasibility of piezoelectric footmats for powering low-power electronic devices.

Sl. No	Article	Author	Source	Year
2	Deployment of Fully Automatic Vivado-Based Traffic Light Controller Using ZedBoard Zynq-7000 with Integrated Emergency Control	*Arya Naga, Sudip Dogra and Tanushree Ganguli*	The IUP Journal of Electrical & Electronics Engineering Vol: 19 No: 2	2026

Abstract: Rapid urbanization leads to an increase in the number of vehicles on the roads, enhancing the waiting time at the intersection of the roads. In India, a driver is stuck in the traffic, on average, for about 135 hours per year1. Various measures have been taken to solve this problem already. However, after identifying the loopholes in those measures, the present paper proposes a Field Programmable Gate Array (FPGA)-based traffic light controller system. The system is based on a Finite State Machine (FSM). Additionally, the system integrates emergency buttons, using which a specific node of the road can be controlled, allowing manual override of the signals. It has been developed using Xilinx Vivado with Verilog HDL, and implemented on ZedBoard 7000 FPGA kit.

Sl. No	Article	Author	Source	Year
3	LoRa and BLE-Based Manpower Tracking System for Construction Sites	*KVV Raju, Deepak Sachan and Deepesh Agarwal*	The IUP Journal of Electrical & Electronics Engineering Vol: 19 No: 2	2026

Abstract: The paper presents a hybrid manpower tracking framework that integrates Long Range (LoRa) connectivity and Bluetooth Low Energy (BLE) technologies for largescale construction and industrial environments. The proposed system combines the long-distance communication capability of LoRa with the proximity-based sensing advantages of BLE to enable real-time monitoring of workforce movement and distribution across project sites. The architecture supports efficient data acquisition, scalable deployment, and low operational cost while ensuring reliable communication in challenging environments. The developed system facilitates improved workforce visibility, optimized resource allocation, and enhanced decision making for project management. The experimental deployment and system evaluation demonstrate the feasibility and effectiveness of the proposed approach in improving operational efficiency and accelerating project execution.

Sl. No	Article	Author	Source	Year
4	Blink to Talk: IoT-Based Morse Glasses for Speech Assistance Using Eye Blinks	*S Rama Devi, S Aruna, D Sandya, D Deepthi, K Hima Bindu, Najma and P Sowmya*	The IUP Journal of Electrical & Electronics Engineering Vol: 19 No: 2	2026

Abstract: The paper proposes a low-cost wearable communication system for people with speech disabilities, based on an infrared eye blink detection system and Bluetooth data transfer. An Arduino microcontroller was designed to transform a user's eye blinks into a custom-modified version of Morse code, and a mobile app built using MIT App Inventor could decode the Morse code into text. Experimental results from 15 participants showed a stunning 98% decoding accuracy. The results illustrate that the system can run in near real-time and can be scaled significantly better than existing commercial Augmentative and Alternative Communication (AAC) devices. Overall, the proposed system provides a low-cost alternative to expensive commercial smart glasses to fill the gap in inclusive assistive technology and improves digital access for users with communication disabilities. Assistive communication applications today need heavy programing work to add text to speech capabilities, which increases the complexity for fast development. MIT App Inventor is an example of a low-code environment that helps create mobile applications. Future work for the system includes multilanguage support and potential application of artificial intelligence to predict the user's eye blink patterns to further improve flexibility.

Sl. No	Article	Author	Source	Year
1	A Novel Interleaved Bridgeless SEPIC with a Synchronous Rectifier for Multiple Applications	*A Muthuram Kumar and P Subha Karuvelam*	The IUP Journal of Electrical & Electronics Engineering Vol: 19 No: 3	2026

Abstract: The paper presents the design, modeling, and experimental validation of an isolated bridgeless interleaved single-ended primary inductance converter (SEPIC) integrated with a synchronous rectifier for high-voltage DC (HVDC), wireless power transfer, and power factor correction (PFC) applications. The proposed converter overcomes the limitations of conventional bridge rectifier topologies by reducing conduction losses, improving conversion efficiency, and providing a wider output voltage range with low output ripple. To further enhance system performance, a modified multilevel inverter (MLI) and zero-voltage switching (ZVS) technique are incorporated into the synchronous rectifier, thereby minimizing switching losses and improving overall efficiency. A mathematical model is developed to derive the duty-cycle-based output feedback control strategy, and the proposed system is implemented and verified using MATLAB/Simulink. An FPGA-based hardware prototype is also developed to validate the simulation results under practical operating conditions. Both simulation and experimental investigations demonstrate the effectiveness of the proposed converter,

achieving a reduction in multilevel inverter output variations to approximately 6% within the total harmonic distortion (THD) range while maintaining a near-unity power factor of 0.999.

Sl. No	Article	Author	Source	Year
2	Underwater Wireless Communication System Using Ultrasonic Sensors: A Simulation-Based Analysis	*Shantanu Desale, S S Bhardwaj, Om Khinde, Rutuja Alekar and Bhavesh Narkhede*	The IUP Journal of Electrical & Electronics Engineering Vol: 19 No: 3	2026

Abstract: Underwater wireless communication (UWC) systems play a crucial role in marine exploration, oceanographic research, and autonomous underwater vehicle (AUV) navigation. The paper presents a simulation-based analysis of a cost-effective underwater communication model using ultrasonic transducers. The proposed system employs a transmitter-receiver pair to enable data exchange through a water medium, where ultrasonic pulses serve as the carrier signals. The key performance metrics, such as signal attenuation, signal-to-noise ratio (SNR), and bit error rate (BER), are evaluated through MATLAB simulations and acoustic propagation models. The results demonstrate that ultrasonic communication provides reliable short-range data transmission up to 10 meters, highlighting its potential for integration into future Internet of underwater things (IoUT) applications.

Sl. No	Article	Author	Source	Year
3	Battery Management Systems in Electric Vehicles: Challenges and Technology Trends	*Basu Choudhury S and Garani S*	The IUP Journal of Electrical & Electronics Engineering Vol: 19 No: 3	2026

Abstract: The paper reviews the critical role of battery management systems (BMSs) in electric vehicles (EVs), focusing on material selection, technological advancements, and operational challenges. It discusses the importance of durable PCB materials, thermal management solutions, and contact components for reliable BMS performance. The study examines emerging trends, including artificial intelligence (AI) and internet of things (IoT) integration, for accurate battery state estimation and fault detection. Additionally, it highlights manufacturing innovations and sustainability considerations essential for advancing BMS technology, ultimately supporting safer, more efficient, and environmentally sustainable electric mobility.

Sl. No	Article	Author	Source	Year
1	GenAI in Higher Education: Opportunities and Challenges	*Navdeep Kaur and Vijay Laxmi*	The IUP Journal of Information Technology Vol: 22 No: 3	2026

Abstract: The paper focuses on college students' perceptions of the opportunities and challenges associated with the use of artificial intelligence (AI) tools in education. Data were collected from 806 college students from Punjab (India) through a questionnaire comprising 14 items, comprising closed-ended items to quantify students' responses and open-ended items aimed at capturing detailed qualitative insights. Quantitative data were analyzed to determine the frequency, percentage and Chi-square value, while qualitative responses were analyzed to determine the patterns. The findings reveal that AI tools are already widely used by both students and teachers. Its usage has enhanced student engagement and learning abilities, promoted personalized learning, and improved academic outcomes. Students are using AI apps for understanding the content and preparing for exams. Teachers are using AI apps for providing study material, clarifying doubts, and grading learning. However, overreliance on AI may diminish students' critical thinking skills and create risks like data privacy and reduced pedagogical originality. Educational institutions need to formulate policies to ensure that students and teachers use AI responsibly with discernment and intellectual ownership, ensuring that they remain masters of the technology rather than being shaped by it.

Sl. No	Article	Author	Source	Year
2	Toward Responsible GenAI Adoption in HEIs: A Conceptual Human-Centric Integrated Framework	*Preeti Ahlawat, Monika Dahiya and Renu Tanwar*	The IUP Journal of Information Technology Vol: 22 No: 3	2026

Abstract: The widespread adoption of generative artificial intelligence(GenAI) tools in higher education institutions (HEIs) is transforming teaching and learning. Existing technology adoption studies mostly focus on functional and technological factors, ignoring the psychological and ethical factors that affect students' acceptance of GenAI. To address this gap, this conceptual paper presents a responsible GenAI adoption framework. The proposed framework extends the existing technology adoption literature by integrating technological, psychological, ethical, and AI literacy perspectives within a unified human-centric framework. The study goes beyond the traditional unified theory of acceptance and use of technology (UTAUT2) explanations, offering a more holistic view of students' responsible adoption intention towards AI-enabled learning tools. It adopts a conceptual theory-building approach and an integrative literature review to develop the proposed framework. The study's primary theoretical contribution lies in conceptualizing

AI literacy as both foundational capability and contextual moderator, while introducing responsible adoption intention as the outcome of GenAI adoption in higher education.

Sl. No	Article	Author	Source	Year
3	A Dual-Channel CNN Framework for Binaural Sound Source Localization	*Manisha Jangra, Ritu Boora, Vijay Kumar, Abhimanyu Nain and Ajay Kumar*	The IUP Journal of Information Technology Vol: 22 No: 3	2026
Abstract: Binaural sound source localization (BSSL) is widely used in intelligent robots for effective human computer interactions and environmental awareness. Its primary objective is to accurately estimate the direction of arrival (DOA) of a sound source, allowing systems to orient and track speakers in real-time. These systems seek to replicate the human hearing system using dual microphones in humanoids. However, the real-application scenarios pose several challenges to these systems. Hence, this paper presents a dual-channel convolutional neural network (CNN)-based method for BSSL to narrow the research gaps in this area. The hierarchical structure in CNN extracts the individual channel features in the early stage and progressively exploits the relational information between the paired signals. The proposed method attained 95.29% accuracy with a 0.1 learning rate and a loss of 0.0691 when evaluated on the binaural dataset. It shows superlative performance when compared to the baseline methods based on CNN and fusion of CNN and deep neural network (DNN). The experimental results demonstrate the effectiveness of the method in estimating the DOA in 2D.				

Sl. No	Article	Author	Source	Year
4	Integrating Fraud Triangle Theory with ML for Fraud Detection: A Systematic Review and FTT-Meta Conceptual Framework	*Abhishek Kumar*	The IUP Journal of Information Technology Vol: 22 No: 3	2026
Abstract: The paper presents a systematic review of machine learning (ML) and data mining approaches for fraud detection with particular emphasis on the potential contribution of fraud triangle theory (FTT) to behavior-aware fraud analytics. The review synthesizes recent advances in supervised, unsupervised, deep learning (DL) , graph-based learning, explainable artificial intelligence (XAI), and privacy-preserving fraud detection, while				

examining how the behavioral dimensions of pressure, opportunity, and rationalization can complement computational intelligence techniques. Building on the insights obtained, the paper introduces the FTT-ML taxonomy and proposes the FTT-meta conceptual framework to establish structured relationships between behavioral fraud theory and contemporary ML methodologies. The framework is intended to support future development of interpretable, behavior-aware, and collaborative fraud detection systems capable of operating across heterogeneous digital environments. The review further identifies persistent research challenges, including the limited operationalization of behavioral theories, shortcomings in explainable fraud analytics, and the need for privacy preserving collaborative learning architectures. By integrating behavioral and computational perspectives, the proposed taxonomy and conceptual framework provide a theoretical foundation for future empirical investigations and contribute to the ongoing development of more transparent, adaptable, and human-centered fraud detection systems.

Sl. No	Article	Author	Source	Year
1	Effect of Digital Financial Innovation on Performance of Deposit Money Banks in Nigeria	*Mustapha Maikudi Abdullahi and Muftau Adeniyi Ijaiya*	The IUP Journal of Bank Management Vol: 25 No: 3	2026

Abstract: This study examines how digital financial innovation affects the performance of Nigerian deposit money banks (DMBs), while also considering how economic conditions influence this effect. It uses an ex post facto research design and relies on secondary data from financial statements and annual reports of DMBs, and CBN Statistical Bulletin between 2015 and 2023. The study sample consists of 7 DMBs purposively chosen based on their market capitalization, total assets and digital transaction volumes. The fixed effects regression model with robust standard errors was used for data analysis to provide reliable estimates. The results show that Internet banking exerts a significant and negative effect on bank performance, while mobile banking has a positive insignificant effect on bank performance. The moderating variable and bank size both have positive and significant effects on bank performance. The study concludes that stable macroeconomic conditions improve the effect of digital financial innovation on bank performance in Nigeria. Therefore, the study recommends that banks should focus on sustained and well-planned digital transformation strategies rather than expecting immediate financial returns. Regulators and policymakers should create a stable and supportive macroeconomic environment

Sl. No	Article	Author	Source	Year
2	Does Monetary Policy Shape the Capital Structure-Profitability Link? Evidence from Ghana	*Edward Annan and Mensah Marfo*	The IUP Journal of Bank Management Vol: 25 No: 3	2026

Abstract: The banking sector depends on sound financial decisions and a stable macroeconomic environment to sustain profitability and growth. However, the moderating role of monetary policy rate (MPR) in the relationship between capital structure (CS) and bank profitability (BP) remains underexplored in emerging economies. This study examines the effect of CS on BP and the moderating influence of MPR, using data from 23 commercial banks in Ghana for the period 2013 to 2023. Secondary data were obtained from audited financial statements and regulatory sources and analyzed using fixed effects regression to estimate direct and interaction effects. The results indicate that higher leverage and debt ratios negatively affect profitability, while stronger equity positions enhance bank performance. The findings show that MPR has a significant negative effect on profitability and moderates the relationship between CS and BP, indicating that bank performance is sensitive to changes in interest rate policy. The study highlights the importance of equity-based financing and flexible CS adjustments in response to macroeconomic conditions. It contributes to the literature by providing empirical evidence from Ghana and by modeling the moderating role of MPR in the CS-BP nexus, an area that remains limited in emerging banking markets.

Sl. No	Article	Author	Source	Year
3	Account Aggregator Framework, Digital Transaction Data, and MSME Credit Access: Evidence from India's Fintech Lending Ecosystem	*Sridhara G and Nagaraju R*	The IUP Journal of Bank Management Vol: 25 No: 3	2026

Abstract: India's micro, small and medium enterprises (MSME) sector faces a persistent formal credit gap rooted in information opacity and bank data monopolies. This paper provides the first large-scale causal evidence on whether the Reserve Bank of India's Account Aggregator (AA) framework, operationalized from September 2021, narrows this gap. Exploiting the staggered onboarding of banks as financial information providers (FIPs) between September 2021 and March 2023 as a natural experiment, a difference-indifferences design is applied to 214,836 loan applications from a leading Indian fintech MSME lender (2019-2024). AA eligibility raises loan approval probability by 4.1 percentage points (19% relative gain), lowers offered interest rates by 94 basis points, increases sanctioned amounts by 21%, and reduces nonperforming asset rates by 3.4 percentage points. Gains are roughly twice as large for Tier-2/Tier-3 city borrowers and first-generation entrepreneurs, and are amplified by complementarities with GST and UPI

data, features unique to India's digital public infrastructure. Instrumental variable estimates using bank-level API readiness confirm the causal interpretation. These findings offer robust evidence that consent-based data portability mandates can serve as effective instruments of financial inclusion in developing economies with thin credit bureau coverage.

Sl. No	Article	Author	Source	Year
4	Microfinance Borrowers' Challenges in Odisha: Evidence from a Primary Survey	*Sarada Prasan Mohanty, Samir Ranjan Behera, Rajib Sarkar and Silu Muduli*	The IUP Journal of Bank Management Vol: 25 No: 3	2026

Abstract: This study examines the issues and challenges faced by microfinance institution (MFI) borrowers in Odisha using primary survey data across five districts based on borrower and credit concentration. A stratified random sampling method was used for the survey. The questionnaire consists of five major sections: general information of the MFI borrower, membership details of MFIs, details of loan, awareness and transparency of loan contract, and issues and challenges.The findings reveal that while MFIs significantly enhance financial inclusion and livelihood opportunities, borrowers reported that they face relatively higher interest rates, loan processing fees, and, in a few cases, rigid weekly repayment schedules. The survey also highlights gaps in borrower awareness and institutional practices. The random forest analysis, an ensemble learning method that constructs a multitude of decision trees and aggregates their predictions, reveals that borrowers with higher loan amounts express concerns over higher processing and insurance fees.

Sl. No	Article	Author	Source	Year
1	Impact of Regulatory Interventions on Earnings Quality: Evidence from Indian Banks	*Ajit Dayanandan, Rachappa Shette, Sudershan Kuntluru and Soumik Bhusan*	The IUP Journal of Applied Finance Vol: 32 No: 3	2026

Abstract: The study examines whether the earnings quality of Indian banks improved following the RBI's regulatory intervention of mandating asset quality review (AQR) among banks in India during the period 2011-2023, i.e., pre-AQR (2011- 15) and post-AQR (2016-2023). The study examines financial rounding among Indian banks during 2011-2023 by applying Benford's law. It also examines whether earnings quality improved after the

regulatory intervention among all scheduled commercial banks in India. Analyzing the financial indicators of 552 bank years for the period 2011 to 2023, the study found the existence of rounding practice in banking companies in the pre-AQR period, especially for public sector banks, while it was absent in the private sector banks. However, such rounding was absent after the issue of AQR by the RBI. Through AQR, RBI is successful in reducing the rounding practice in public sector banks and improving their earnings quality.

Sl. No	Article	Author	Source	Year
2	Dividend Policy and Shareholder Value: The Moderating Role of Market Volatility and Ownership Structure	*Edward Annan and Mensah Marfo*	The IUP Journal of Applied Finance Vol: 32 No: 3	2026

Abstract: The volatile Ghanaian stock market requires companies to make dividend decisions that enhance shareholder value (SV) in a rapidly changing market. Despite growing research, limited evidence exists on how market volatility (MV) and ownership structure (OS) moderate the relationship between dividend policy (DP) and shareholder value (SV). Using data from 33 firms listed on the Ghana Stock Exchange (GSE) and 301 respondents, this study examines these moderating effects. Structural equation modeling (SEM) with SmartPLS 4 was used to collect and analyze the data for direct and moderating effects. The findings indicate that DP has a significant positive effect on SV, whereas MV has a significant negative effect on SV. The moderation effect shows that the impact of DP on SV is significantly increased by MV and OS, indicating that dividend policy is impacted by market and ownership factors. The study is limited to firms listed, and perceptual data is used, which may not be a reflection of the firm's financial practices. The findings suggest that managers should take into account market factors and ownership structure when making dividend policy to increase SV, while policymakers should promote transparency and disclosure as a way of instilling investor confidence. The study contributes to the literature by providing evidence from Ghana and by explicitly modeling the moderating effect of MV and OS in the relationship between DP and SV in an emerging market.

Sl. No	Article	Author	Source	Year
3	Exchange Rate Volatility and Economic Growth in India: Evidence from a GARCH Model	*Avalagi Ashokareddy and Kirankumar Bannigol*	The IUP Journal of Applied Finance Vol: 32 No: 3	2026

Abstract: This study investigates the effects of exchange rate volatility on India's economic growth. Using quarterly time-series data from 2012-13 Q1 to 2024-25 Q4, the study applies econometric models such as ARDL to analyze both short-run and long-run relationships. GDP growth in India is taken as the dependent variable, exchange rate volatility the primary independent variable, and nominal exchange rate, inflation, interest rate, foreign direct inflow, and money supply as control variables. The findings reveal that exchange rate volatility, nominal exchange rate, interest rate, money supply (M3), and FDI have a positive and statistically significant effect on GDP growth in India. Inflation has a statistically significant negative impact on GDP growth in the long run. Crude oil price (COP) does not show statistical significance at 5% level in the long run. The short-run relationship between the variables and GDP growth is dynamic and lagdependent, with both positive and negative effects observed across different time lags. The findings provide policymakers and investors with insights on exchange rate stability and its importance for India's economic growth.

Sl. No	Article	Author	Source	Year
4	Dynamic Interaction Between Conventional and Sustainable Stock Indices in India: A VAR Approach	*Pooja P Patel*	The IUP Journal of Applied Finance Vol: 32 No: 3	2026

Abstract: Sustainable investing has gained considerable momentum in recent years as investors increasingly seek to align their financial decisions with broader environmental, social, and governance (ESG) considerations. Against this backdrop, the present study examines the dynamic interaction and short-run interdependencies between conventional and sustainable stock indices in the Indian capital market. Specifically, the study investigates the co-movement and directional causality between two conventional indices, Nifty 50 and Nifty Oil & Gas, and two sustainable indices, Nifty 100 ESG and Nifty 100 ESG Sector Leaders. Daily closing prices spanning January 2021 to July 2023 are converted to logarithmic returns to address distributional concerns. The augmented Dickey-Fuller (ADF) test confirms nonstationarity at level form and stationarity at first-order differencing, I(1), for all series. The Granger causality test reveals a bidirectional causal relationship between Nifty ESG Sector Leader and Nifty 50 at 5% level of significance, while no significant directional relationship is found among the remaining index pairs. The vector autoregression (VAR) model, estimated at lag order 1, confirms that the lagged values of Nifty significantly influence both Nifty 100 ESG and Nifty ESG Sector Leader in the short run, though the explanatory power of

the model remains modest. The findings have practical implications for investors and portfolio managers considering the diversification potential of ESG indices vis-à-vis conventional benchmarks in the Indian stock market.

Sl. No	Article	Author	Source	Year
5	Optimization-Driven Deep Learning Models for Detecting Real-Time Financial Fraud	*Rupali Mangesh Sathe, Neetu Sharma and Shilpa Shinde*	The IUP Journal of Applied Finance Vol: 32 No: 3	2026
Abstract: Rising volumes of digital payments have made financial fraud one of the most pressing concerns for banks, regulators, and consumers alike. This paper reports a head-to-head comparison of two deep learning systems, each enhanced by a distinct metaheuristic optimizer, built specifically for anomaly detection in financial time series. The first system couples a deep convolutional capsule autoencoder (DCCAE) with the adaptive rain optimization algorithm (AROA), which handles feature selection before training begins. The second pairs a graph convolutional long short-term memory network (GC-LSTM) with the Lévy-flight distributed dung beetle optimizer (LFDBO) for continuous hyperparameter refinement. Both the systems are tested on a widely-used European credit card fraud dataset and on a synthetic sequential transaction dataset, applying the same preprocessing steps and a fivefold cross-validation scheme throughout. The GC-LSTM variant delivered a stronger outcome, with more accuracy, a F1-score, and a AUCROC, while also converging faster. A structured ablation exercise confirmed that neither optimizer is dispensable. The findings offer concrete guidance for practitioners selecting fraud detection infrastructure, with direct implications for financial regulators, compliance teams, and fintech product developers.			

Sl. No	Article	Author	Source	Year
6	Influence of Investor Sentiment on Asset Returns: An Empirical Analysis Using Fama-French Five-Factor Framework	*Naina and Kapil Gupta*	The IUP Journal of Applied Finance Vol: 32 No: 3	2026
Abstract: This study examines how behavioral factor, specifically investor sentiment, influences stock returns in India. An aggregate sentiment index (ASI) is developed to assess its influence on stock returns, positing that sentiment constitutes a priced risk factor in India, even when accounting for				

the risk variables identified by Fama and French (2015). Sixteen portfolios are created based on size, book-to-market equity, profitability and investment, comprising a total of 84 observations for each portfolio from April 2016 to March 2023. The results suggest that the sentiment risk effect is not consistent across the constructed portfolios. Sentiment negatively influences the behavior of stock returns across 16 portfolios, and sentiment risk has a detrimental effect on excess returns in a portfolio. The findings provide policymakers, scholars and other stakeholders with important insights for understanding the dynamics of Indian stock market.

Sl. No	Article	Author	Source	Year
1	Impact of Optimal Control Strategies on the Seitr Compartmental Covid-19 Infectious Disease	*G. Kiran Kumar, S. Kalesha Vali*	I-Manager's Journal on Mathematics Vol: 15 No: 1	2026

Abstract: In this paper, a five compartmental SEITR mathematical model is considered and analyzed for understanding the propagation dynamics of Covid-19 infectious disease. Optimal controls such as (i) vaccination (ii) awareness, isolation, quarantine and (iii) Treatment are included. The present model is termed as valid because there exists an unique, positive and bounded solution to the system of model equations. Formulae for the basic and effective reproduction numbers (i) without optimal controls R0 and Re and (ii) with optimal controls R0 (O) and Re (O) are constructed and the dependency relations among them are established. Disease free equilibrium point is found and shown that it is both locally and globally stable. Control variables have been optimized using Pontriyagin's maximum principle. Simulation study is conducted and shown that the control variables are working well to control the propagation of the Covid-19 pandemic.

Sl. No	Article	Author	Source	Year
2	On a Study of Parallelism of Distributions on K+1 K a F +b F +F-Structure Lagrangian Manifolds	*Sachin Khare*	I-Manager's Journal on Mathematics Vol: 15 No: 1	2026

Abstract: In this paper, we study a generalized polynomial tensor structure defined by $\alpha F_{k+1}+\beta F_k+F=0$ where ($K \geq 1$), on Lagrangian manifolds. Starting from a vertical structure Fv of constant rank r on the vertical tangent bundle, we prove that a canonically induced structure exists on the horizontal

distribution and extends uniquely to the full tangent bundle with rank 2r. Using this polynomial identity, we construct explicit complementary projection operators and establish their algebraic properties. Two linear connections adapted to the induced splitting are introduced, and necessary and sufficient conditions for parallel, half-parallel and anti half parallel distributions are derived. The results generalize earlier cubic and odd-order F-structures and provide a unified framework for studying distributional geometry on Lagrangian manifolds, with potential applications to geometric mechanics.

Sl. No	Article	Author	Source	Year
3	Wrapped Size Biased Lomax Distribution: An Enhanced Circular Probability Model	*P. Ravi Kishore, V. Ravindranath, R. Subba Rao*	I-Manager's Journal on Mathematics Vol: 15 No: 1	2026

Abstract: The size Biased Lomax Distribution is assumed to be a longevity-oriented random quantity, which can be scrutinized in the case of data that may be studied in actuarial science, clinical assessment, and Queue-based analytical theory etc. Daily operational patterns are observable within groups such as hourly, daily, weekly, monthly or yearly and are circularly distributed. By employing a wrapping approach , an effort is undertaken to derive a novel circular probabilistic framework formulated as encapsulated Size Biased Lomax Distribution. Size Biased Lomax Distribution notion of circular framework is presented and wrapping methodology is outlined. Wrapped Size Biased Lomax Distribution probability density and cumulative functions are derived, graphical representations are additionally examined. The trigonometric descriptors and characteristic formulation of Wrapped Size Biased Lomax Distribution are evaluated and visually demonstrated. The key attributes such as central tendency, dispersion , asymmetry, peakedness and circular standard deviation are established in the present study.

Sl. No	Article	Author	Source	Year
4	An Extension of the Common Fixed Point Theorem to Four Self-mappings in Fuzzy Normed Spaces	*Rakesh Singh Thakur, Eedi Hemalatha*	I-Manager's Journal on Mathematics Vol: 15 No: 1	2026

Abstract: In this paper, we extend the common fixed point theorem of Chandel et al. (2017) from two self-mappings to four selfmappings in fuzzy normed spaces. We work in a complete fuzzy normed space equipped with a continuous t-norm and a partial order. Under certain conditions, including

weak compatibility and a generalized contractive condition, we prove that four self-maps have a unique common fixed point. To establish this result, we construct a monotone sequence and show that it converges in the fuzzy normed space. Using the completeness property of the space, we prove that the limit point is a common fixed point of all four mappings. We also show that this fixed point is unique. This result generalizes earlier work on fixed point theorems in fuzzy normed spaces (Bag & Samanta, 2007; Bo & Wangming, 1990) and increases their scope of application. To support our theoretical findings, we provide examples that clearly satisfy all the required conditions and confirm the uniqueness of the common fixed point.

Sl. No	Article	Author	Source	Year
5	A Hybrid Bayesian-Machine Learning Approach for Inverse Cubic Sensor Calibration	*Ganti Srikanth, Gopinathan Sudheer, S. Uma Devi*	I-Manager's Journal on Mathematics Vol: 15 No: 1	2026

Abstract: Cubic polynomial transformations are commonly employed in sensor systems to represent nonlinear responses, achieving a balance between precision and computational efficiency. The inverse problem-retrieving physical input from measured output is essential for sensor calibration but is complicated by multiple roots, noise sensitivity and parameter uncertainty. The work introduces a hybrid methodology that integrates Bayesian inference with ensemble learning for cubic inverse problems. A theoretical justification for Machine Learning (ML)-based root selection using discriminant analyses and derivative constraints is brought out in the work. The results obtained are compared against analytical and numerical techniques on synthetic data sets with 80-85% multiple root cases. The proposed methodology achieves 90% root selection accuracy while reducing the reconstruction error by 34% compared to analytical methods. The noise sensitivity, uncertainty quantifications are also analyzed. While the base line validation assumes Gaussian noise, we discuss extensions to handle outliers in data and lacunary data, which are critical for real-world sensor networks.

Sl. No	Article	Author	Source	Year
6	A Numerical Study of Spectral Differentiation Methods: A comparison of Differentiation Matrix and Trigonometric Transformation Approaches	*Sri Harikrishna P., G. Sudheer*	I-Manager's Journal on Mathematics Vol: 15 No: 1	2026

Abstract: Spectral methods are found to provide exponential convergence for smooth problems, however their application to these problems is limited by conditioning issues in finite precision arithmetic. An analysis of numerical stability in spectral differentiation is carried out in the work comparing matrix-based method with the trigonometric transformation based approach. The growth of condition number, backward stability and propagation of rounding error together with the stability of coordinate transformation method is analyzed in the work. Rigorous bounds on the error growth in both the approaches are established, numerical experiment carried out validate the theoretical approach bring out the significant of the trigonometric approach in spectral differentiation. The results have significance importance in high-order spectral methods and provide a practical approach for selecting appropriate differentiation strategies for a specific problem.

Sl. No	Article	Author	Source	Year
1	Finite Element Analysis of Composite Plate Materials using ANSYS	*Borerwe Andrew Zivai, Chirikutsi Joshua, Maputi Edmund, Chikuruwo Mary Nyaradzai Hughslar*	I-Manager's Journal on Physical Sciences Vol: 5 No: 1	2026

Abstract: A structural analysis of composite materials was performed using ANSYS Workbench. The study focused on Resin Epoxy, Epoxy Carbon Woven Wet, and Epoxy S-Glass UD Carbon composites. The Composite Analysis (ACP) module within ANSYS Workbench was utilized to evaluate the mechanical performance of these materials. Plates represent critical components in electromechanical systems, where failure can result in substantial manufacturing and repair costs. They are widely employed across industries such as automotive, aerospace, and manufacturing. With technological advancements, metallic plates are increasingly being replaced by composite alternatives due to their superior strength-to-weight ratio. This paper presents a review of various analyses conducted on composite plates. Composite plates demonstrate advantageous properties, including high strength-to-weight ratio, enhanced hardness, durability, and reduced maintenance requirements, positioning them as promising substitutes for conventional metallic plates. A finite element model of a plate with a central hole was developed using ANSYS software to investigate its structural behavior. Key design parameters such as stress distribution and deformation were analyzed to compare the performance of different composite configurations. Furthermore, an APDL (Ansys Parametric Design Language)-based plate model was constructed to facilitate design evaluation and comparative studies.

Sl. No	Article	Author	Source	Year
2	Cycle-Dependent THM Assessment of Deep Underground Hydrogen Storage using a Matlab-Based Numerical Framework	*S. Sankar, S. Radhika, R. Dhanasekaran*	I-Manager's Journal on Physical Sciences Vol: 5 No: 1	2026

Abstract: Underground hydrogen storage (UHS) in deep geological formations is increasingly recognized as a promising solution for large-scale and long-duration energy storage. However, its long-term operational reliability depends on preserving the mechanical integrity of the host rock–caprock system during repeated hydrogen injection and withdrawal cycles. Under such conditions, coupled thermo–hydro–mechanical (THM) processes, together with simplified chemo-mechanical effects represented through porosity–permeability evolution, govern stress redistribution, deformation, and damage accumulation within the subsurface formation. This study presents a cycle-resolved numerical investigation of UHS using a fully coupled THM framework implemented in MATLAB to evaluate the progressive geomechanical response under cyclic operation. The simulations reveal pronounced effective stress-path hysteresis, irreversible strain accumulation, and localized damage initiation concentrated around the storage formation and lithological interfaces. During peak injection, vertical stress increases by approximately 20–25%, while cyclic pore-pressure fluctuations of 5–6 MPa promote progressive mechanical degradation over successive loading cycles. The coupled analysis further indicates that damage-induced permeability may increase by nearly one order of magnitude in localized regions, highlighting the strong interaction between mechanical degradation and hydraulic transport. Although thermoelastic effects generated by gas compression and expansion are smaller than pressure-driven responses, they accelerate early-stage damage evolution during repeated cycling. Overall, the findings demonstrate that the long-term integrity and containment performance of underground hydrogen storage systems cannot be reliably evaluated using single-cycle or peak-pressure criteria alone, but require comprehensive assessment of cumulative coupled THM processes under sustained cyclic operation. The proposed framework provides a physically consistent computational basis for evaluating long-term storage integrity and supporting the design of resilient underground hydrogen storage facilities.

Sl. No	Article	Author	Source	Year
3	Development and Evaluation of Kaolin, Aluminium Oxide, and Epoxy Composite Bricks for Sustainable Construction	*Aruna Devi, Anurag Shrivastava, Rohit Srivastava*	I-Manager's Journal on Physical Sciences Vol: 5 No: 1	2026

Abstract: The need for high-performance and sustainable building materials has necessitated the research of composite systems with thermal insulation and mechanical properties. This work examines the fabrication and assessment of kaolin–aluminium oxide (Al_2O_3)–epoxy composite bricks as part of sustainable construction solutions. Kaolin, a natural aluminosilicate, offers dimensional stability, thermal insulation, and eco-friendliness, and aluminium oxide adds hardness, wear resistance, and high compressive strength. Two composite systems were made based on an epoxy resin–hardener system in 5:1 volume proportion: balanced kaolin– aluminium composition and aluminium-rich composition. The samples were cast in Wood molds and cured at ambient condition, then tested for compressive strength as per IS 516 (Part-1): 2021 standards. Findings show that the balanced composite attained compressive strength of 156.2 N/mm^2 and the aluminium-rich composition attained 142.0 N/mm^2, reflecting superior load-carrying capacity. The research affirms that the kaolin-aluminium oxide-based epoxy matrix combination creates bricks that are mechanically strong and thermally insulating, superior to ordinary clay bricks. These results indicate that kaolin–aluminium oxide–epoxy composites are promising materials for energy-efficient, environmentally friendly construction, and future work should be directed at optimizing material ratios and scaling for practical use.

Sl. No	Article	Author	Source	Year
4	Impact of ICT-Based Instruction on Grade Six Students' Achievement in Electricity: Series and Parallel Circuits in a Bhutanese Primary School	*Sonam Tempa*	I-Manager's Journal on Physical Sciences Vol: 5 No: 1	2026

Abstract: This quantitative study investigated the impact of ICT integration in teaching series and parallel circuits and household circuit applications at Kiyang Primary School, Samtse. The objectives were to examine the effectiveness of ICT integration and its impact in academic achievement of the participants. This study involved 24 participants who were divided into control (12 participants) and experimental (12 participants) groups by online group generator. The experimental group received ICT-based instruction, while the control group was taught using traditional lecture methods for two weeks the by same teacher. Data was collected through pre-tests and post-tests employing independent t-test. The true experimental study indicated a significant improvement in the academic achievement of students in the experimental group, with pre-test mean 40.83 and post-test mean 82.78 out of 100 compared to the control group pre-test mean 42.50 and post-test mean 62.72 out of 100. Further, it was revealed that younger participants

achieved better scores than older participants and the academic achievement of the participants did not depend on the gender. The findings support the importance of ICT in improving learning outcomes and align with the Bhutanese government and His Majesty's vision of an IT-enabled society.

Sl. No	Article	Author	Source	Year
5	Innovative Teaching Strategies for Fostering Critical Thinking in Science Education	*Swati*	I-Manager's Journal on Physical Sciences Vol: 5 No: 1	2026

Abstract: In the realm of contemporary education, fostering critical thinking skills in science is paramount to preparing students for future challenges. Traditional methods of science education, focused heavily on cramming, often fall short in promoting essential skills, emphasizing the need for innovative teaching strategies. This paper examines such strategies in science education to cultivate critical thinking among learners. The paper begins by elucidating the conceptual framework of critical thinking within the context of science education, emphasizing its significance and examining innovative teaching strategies. Key innovative strategies such as inquiry-based, problem-based, cooperative, and collaborative learning are explored, highlighting their effectiveness in enhancing critical thinking skills among students. Furthermore, the paper discusses the integration of innovative teaching strategies as facilitators to strengthen engagement and deeper conceptual understanding in science education. The study adopts a review-oriented and analytical approach, drawing on secondary data from scholarly articles, books, journals, and credible online sources. The study concludes with recommendations for educators to enhance science education through the integration of innovative pedagogical strategies.

Sl. No	Article	Author	Source	Year
1	Multichannel System for Electronic Auscultation of Pulmonary Sounds	*Roberto Marani, Anna Gina Perri*	I-Manager's Journal on Embedded Systems Vol: 14 No: 2	2026

Abstract: This paper proposes the design of a multichannel system for non-invasive, continuous, real-time monitoring of breathing functions. The proposed system is based on a low-cost electronic medical device designed within a research program on the remote and non-invasive monitoring of

health. Moreover, the device allows effective auscultation, accurate processing, and detailed visualization (temporal and frequency graphs) of lung sounds. It is also suitable for the continuous real-time monitoring of breathing functions, making it highly useful for diagnosing respiratory pathologies.

Sl. No	Article	Author	Source	Year
2	Hardware-Obfuscated Secure Task Partitioning for Time-Triggered Multi-Core Automotive SoCs	*K. Thamizhmaran*	I-Manager's Journal on Embedded Systems Vol: 14 No: 2	2026

Abstract: Modern automotive systems increasingly rely on complex multi-core Systems-on-Chip (SoCs) executing mixed-criticality applications under stringent real-time constraints. While time-triggered architectures provide deterministic timing guarantees essential for safety certification, they introduce significant security vulnerabilities through predictable task scheduling patterns that facilitate timing-based side-channel attacks and intellectual property theft. This paper proposes a novel hardware-software co-design framework that integrates Physical Unclonable Functions (PUFs) with time-triggered scheduling to enable secure, obfuscated task partitioning without compromising real-time guarantees. The approach generates multiple valid schedule configurations from a single base schedule, using a PUF-derived key to select a specific instance at system initialization, thereby introducing device-unique obfuscation while maintaining worst-case execution time (WCET) certifiability. The framework includes an obfuscation-aware scheduler that extends conventional time-triggered paradigms with security-aware constraints, a lightweight hardware PUF module integrated into the SoC's security subsystem, and formal verification methods to ensure that the obfuscation process preserves the timing guarantees required by ISO 26262 standards. Experimental evaluation on a Zynq UltraScale+ MPSoC platform demonstrates effective obfuscation against schedule extraction attacks with minimal overhead less than 3.5% increase in schedule length and 2.1% additional power consumption. The system successfully thwarts correlation attacks attempting to deduce task-to-core mappings, achieving a 98.7% attack detection rate while maintaining 100% schedulability for AUTOSAR-compliant task sets. This work bridges the critical gap between real-time certifiability and proactive security in next-generation automotive electronics, addressing emerging threats in connected and autonomous vehicles without sacrificing safety assurances.

Sl. No	Article	Author	Source	Year
3	Finger Gesture-Controlled Wheelchair for Paralasys Patient	*Sabreen Taj T.A., Saniya Mehak, Rohith D. T., Kumbar Trupti Ravikumar, Suhas Prasad*	I-Manager's Journal on Embedded Systems Vol: 14 No: 2	2026

Abstract: Paralysis or motor impairment severely limits an individual's ability to move independently. Traditional wheelchairs require manual operation or joystick control, which is not feasible for patients with upper-body or full-body paralysis. This paper presents the design and development of a finger-gesture-controlled wheelchair integrated with a health monitoring and IoT-based alert system. The proposed system allows the user to control the wheelchair through simple finger gestures detected by flex sensors and also make the wheelchair move front, back, left and right using the accelerometer. The collected data is transmitted wirelessly to healthcare professionals or family members through the Telegram Bot platform for real-time observation. Experimental validation conducted under laboratory conditions demonstrates an average gesture recognition accuracy of 94%, a mean response time of 320 ms, and an error rate of 6%, confirming reliable and real-time system performance. This approach ensures mobility assistance, patient safety, and healthcare connectivity in a cost-effective and efficient manner.

Sl. No	Article	Author	Source	Year
4	Real-Time Artificial Intelligence Enabled Wearable System for Continuous Health Monitoring	*Vishal Khanna, Priya Khanna*	I-Manager's Journal on Embedded Systems Vol: 14 No: 2	2026

Abstract: Continuous health monitoring is essential for the early detection and prevention of chronic and acute medical conditions, particularly in aging populations and individuals with lifestyle-related diseases. Recent advances in wearable technologies and artificial intelligence (AI) have enabled the development of intelligent health monitoring systems capable of providing real-time insights beyond traditional periodic clinical assessments. This paper presents a real-time AI-enabled wearable system for continuous health monitoring that integrates physiological sensors, edge-level data processing, and machine learning algorithms to monitor vital health parameters such as heart rate, blood oxygen saturation, body temperature, and physical activity. The proposed system employs lightweight AI models deployed on embedded hardware to perform on-device analysis, enabling immediate anomaly detection and reducing dependency on cloud infrastructure. Time-series data collected from wearable sensors are processed using adaptive machine learning techniques to identify abnormal health patterns and predict potential health risks in real time. The system also incorporates wireless communication for secure data transmission to a mobile or web-based interface, allowing healthcare providers and caregivers to access actionable health insights remotely. Experimental evaluation demonstrates that the proposed system achieves high accuracy in vital-sign

monitoring and anomaly detection while maintaining low latency and energy efficiency, making it suitable for long-term continuous use. The results indicate that AI-enabled wearable systems have significant potential to enhance preventive healthcare, support early medical intervention, and reduce the burden on conventional healthcare systems.

Sl. No	Article	Author	Source	Year
5	Future Cancer Diagnostics-Biosensor Solutions	*Anu Jyothy, Devika Gopi, Gowri Sunil, Hephzibah Elsa John, Kavya Byju*	I-Manager's Journal on Embedded Systems Vol: 14 No: 2	2026

Abstract: Cancer remains one of the leading causes of mortality worldwide, emphasizing the need for rapid, sensitive, and accurate diagnostic methods. Biosensors, analytical devices that combine a biological recognition element with a physicochemical transducer, have emerged as powerful tools in cancer detection and monitoring. They enable the identification of specific biomarkers such as nucleic acids, proteins, metabolites, and circulating tumor cells with high precision. Recent advancements in nanotechnology, microfluidics, and electrochemical and optical sensing have significantly enhanced biosensor performance, offering potential for early diagnosis, real-time monitoring, and personalized medicine. Compared to conventional diagnostic techniques, biosensors provide advantages including portability, cost-effectiveness, minimal sample requirements, and rapid response times. Despite these benefits, challenges such as clinical validation, reproducibility, and large-scale integration remain. Continued research into multifunctional and point-of-care biosensing systems is expected to revolutionize cancer diagnostics and improve patient outcomes.

Sl. No	Article	Author	Source	Year
1	ICETETM 25_modified Wlcr Algorithm with Optimized Weight Function for Efficient Rwa in Optical Mesh and Ring Topologies	*Rajesh Kumar Singh, Beer Singh, Anamika Gupta, Nidhi Gupta, Utkarsh Shukla*	I-Manager's Journal on Communication Engineering and Systems Vol: 15 No: 1	2026

Abstract: This paper presents an in-depth analysis of the Weighted Least Congestion Routing (WLCR) algorithm and its variants for Routing and Wavelength Assignment (RWA) in all-optical networks. The WLCR algorithm enhances network performance by incorporating a weighted function

based on the number of free wavelengths and route characteristics such as hop length and hop count. Three wavelength assignment strategies—First-Fit (FF), Most Used (MU), and Least Used (LU)—are evaluated in combination with WLCR. A modified weight function is proposed to further reduce blocking probability and improve link utilization by balancing wavelength availability, hop length, and hop count. The proposed algorithms are tested using simulations on 25-node mesh-torus and 12-node ring topologies under dynamic traffic conditions. Simulation results demonstrate that the modified WLCR algorithm significantly outperforms traditional dynamic RWA schemes, particularly in high-traffic scenarios and complex topologies. The study concludes that the modified WLCR-FF scheme offers the best trade-off between blocking probability and resource utilization, especially in mesh-torus networks.

Sl. No	Article	Author	Source	Year
2	Gigabit Passive Optical Network Based Fiber to the Home Access Network	*Tejaswi U. M. R., Lakshmi Lavanya Y., Sai Avinash S. N., Nitish Kumar G., Pinjala N Malleswari, Rajeswar Mahidar P.*	I-Manager's Journal on Communication Engineering and Systems Vol: 15 No: 1	2026

Abstract: For FTTH systems, Gigabit Passive Optical Network (GPON) is a very popular way to get high-speed internet. This paper looks at the architecture, performance, and recent changes to GPON, such as NG-PON1 and NG-PON2. The BER, Q-factor, and power are some of the important factors that are discussed. There is also a comparison of modulation methods like NRZ and RZ. The review describes about the pros, cons, and possible future improvements.

Sl. No	Article	Author	Source	Year
3	Enhanced Circular Slot Rectangular Microstrip 2x2 Patch Array Antenna for 2.45 Ghz Ism Band	*Rachit Dubey, Anant Joshi, Yatindra Gaurav*	I-Manager's Journal on Communication Engineering and Systems Vol: 15 No: 1	2026

Abstract: Microstrip patch antennas have become an most imortant and integral part of modern communication systems. With the introduction of various standards such as WiMax, WLAN, Sub 6 GHz 5G, the need for better, more efficient and multipurpose antennas has increased. This paper present the enhanced version of one the antenna used, Following the design process of Santoso et al. [1], this paper presents development and enhancement of microstrip patch antennas for 2.45 GHz ISM band applications. The antenna has been designed on an FR-4 substrate and the simulation is performed using Keysight Advanced Design System software. Four configurations are analyzed a single rectangular patch base one on 61MHz bandwidth, 2×2 array on 100 MHz , Kagome structure on 250MHz, and final circular slot design on 300 MHz bandwidth.Introduction of circular slots alters the surface current distribution pattern on the patch hence generating multiple modes of resonance. Eac h implemented on FR4 substrate with (ϵr = 4.4, h = 1.6 mm), We are using Keysight ADS Momentum full-wave simulation. The circular slot configuration achieves 12.2% of fractional bandwidth and a smooth VSWR (1.4–1.7), 8.2 dBi gain, and 87% efficiency, ensuring 99% manufacturing simplicity, providing complete ISM band coverage for WiFi, Bluetooth, and Zigbee operation.

Sl. No	Article	Author	Source	Year
4	Machine Learning Based Q-factor Prediction in Free Space Optical Systems	*Kovvuri Roopa Manisha Reddy, Mahanthi Bhavani, Gangadhara Reddy V. H., Pinjala N Malleswari, Kavalipurapu Chandra Sekhar*	I-Manager's Journal on Communication Engineering and Systems Vol: 15 No: 1	2026

Abstract: Free Space Optical (FSO) communication enables high data rate transmission but is highly affected by atmospheric conditions such as fog, rain, and turbulence, leading to nonlinear signal degradation. An Artificial Neural Network (ANN)-based model is developed to predict the Q factor of an FSO system using simulation data generated from OptiSystem. A comparison is carried out between the Levenberg–Marquardt algorithm (LM) and Scaled Conjugate Gradient (SCG) training algorithms. Results show that LM achieves faster convergence and lower prediction error, while SCG offers better computational efficiency.

Sl. No	Article	Author	Source	Year
5	ICCICT 2026_a Qos-based Routing Algorithm Across Software Defined Networks in AI and IOT Applications	*Mr.R.Suresh, Dr.P.Nirmaladevi*	I-Manager's Journal on Communication Engineering and Systems Vol: 15 No: 1	2026

Abstract: It seems that the QoS-based routing idea offers routing options that could meet the requirements for quality. The main idea is to use some knowledge of the network's resource availability to establish network paths to various metrics that will provide adequate quality of service (QoS)for substantial application flows. It also needs to monitor and adjust to fluctuations in QoS parameters at network links. One of the most popular options for managing expansive, intricate networks is the Software Defined Network (SDN). It is challenging to embed network policies on every network device in a large-scale network at once; however, with SDN, these policies may be incorporated at the network's top level. The SDN network consists of two segments that are connected vertically to form the network as a whole. The lowest layer, known as the data plane, handles data forwarding, while the upper layer, known as the control plane, handles policies and control mechanisms. When compared to the benchmarks, it may greatly enhance the network lifetime, routing effectiveness, energy consumption, sender waiting time, and duplicate packets.