



AMRITA
VISHWA VIDYAPEETHAM

CENTRAL LIBRARY

Amritapuri Campus

Journal Abstracts

October 2026

Sl. No	Article	Author	Source	Year
1	The effect of the student – teacher dialogue journal practice on english writing skills: A Quasi-experimental study	<i>Nurda Karadeniz Kayali</i>	I-Manager's Journal on English Language Teaching Vol:16, No :1	2026

Abstract: The aim of this study is to examine the effect of the student–teacher dialogue journal practice, which is used to improve the writing skills of students learning English as a foreign language, on writing performance. The research was conducted using a quasi-experimental design with a pre-test–post-test control group. While the students in the experimental group exchanged written journals with their teacher outside of class for ten weeks, no such practice was implemented in the control group. As the data collection tool, the students’ written products were evaluated using an analytic scoring rubric that considered task completion, organization, grammatical accuracy, lexical knowledge, and overall effect. The findings did not reveal a significant difference in overall writing achievement; however, a significant improvement was observed in the organization dimension in favor of the experimental group. These results suggest that the student–teacher dialogue journal practice can particularly contribute to the development of text organization in writing instruction.

Sl. No	Article	Author	Source	Year
2	Assessing the enactment of mother tongue based multilingual education (MTB-MLE) Through a Linguistic schoolscape of A philippine elementary school	<i>Richard L.Oandason</i>	I-Manager's Journal on English Language Teaching Vol:16, No :1	2026

Abstract: The term linguistic landscape (LL), the language of road signs, is popularized by Landry and Bourhis (1997). Since then, the studies exploring signs in larger urban communities have grown. Recent trajectories have pointed to investigation of LL into semipublic contexts such as buildings, libraries, and schools. Gorter (2013) posits that the educational institution has gained most attention among scholars (Dagenais et al., 2009; Sayer, 2010; Gorter, 2017). With this, the field warrants further investigation of issues and novel perspectives within the context of education. This study is an attempt to provide a new perspective about linguistic landscape in school setting using the case of the implementation of a mother tongue-based multilingual education (MTB-MLE) in the Philippines. The study aims to explore the construction of LL as a representation of a local language policy and a reflection of language ideology in a public elementary school. To accomplish this, an eclectic approach combining quantitative qualitative design and “tourist guide technique” (Biro, 2016) is used. To aid in data analysis of 168 signs, Scollon and Scollon’s (2003) visual semiotics principles and Trumper-Hecht’s (2010) notions of space are utilized. Findings revealed that most of the signs found were monolingual and the dominant code use was English. Applying visual semiotics, signs in English are given prominence in terms of position, color, and physical materiality. Using Trumper Hecht's conceived space, the deployment of English might suggest an ideological act of putting premium on globalization. Conversely, this might manifest the continued marginalization of mother tongue in a multilingual school environment.

Sl. No	Article	Author	Source	Year
3	Facilitating ELT students professional learning in a practice teaching course through remote teaching: Lessons for future remote teacher education	<i>Pranjana Kalita Nath</i>	I-Manager's Journal on English Language Teaching Vol:16, No :1	2026

Abstract: This paper reports on an experience of preparing aspiring english language teachers for remote teaching during the pandemic lockdown period and facillitating their professional learning as part of a practicum course in postgraduate English language teaching program at an Indian university. Using a phenomenological approach, It analyzes the experience of the instructor and 11student teachers to understand the phenomenon of professional learning towards a teacher preparation during the pandemic and reports on emergent ideas obtained by observing behavior and interactions during the course delivery and administering questionnaires. It concludes that multi-mode delivery instructor support through multi-level graded feedback and support materials, minimized transactional distance, collaborative practices reportedly positive effect on the knowledge base and confidence level,and improvement in self-efficacy mark the essence of the experince of facilitating professional learning in the english language teacher education context of the study .

Sl. No	Article	Author	Source	Year
4	Why oral fluency remains low in Japanese EFL classrooms: A multi-level framework for policy and pedagogical reform	<i>Divyabha , Payal Khurana, Saranya Raja Muthumaniraja</i>	I-Manager's Journal on English Language Teaching Vol:16, No :1	2026

Abstract: Japan has introduced several major English education reforms, including the 2003 MEXT Action Plan and recent English medium instruction (EMI) initiatives to strengthen communicative competence; however, oral fluency remains persistently low. This conceptual review explains why these reforms have had limited impact by examining systemic misalignment across three interconnected levels: national policy (macro), curriculum and instructional practice (meso), and learner psychology (micro). Despite expanded English instruction, Japan continues to underperform on global indicators, such as the EF English Proficiency Index, and in speaking-focused assessments, such as the TOEFL iBT. Using a macro–meso–micro framework, this paper identifies key barriers, including assessment washback, an accuracy- focused pedagogy, limited opportunities for sustained interaction, and affective factors such as anxiety, perfectionism, and a low willingness to communicate. Comparative insights from South Korea, Taiwan, and Europe illustrate that long- Term alignment among assessment practices, teacher preparation, and classroom routines is essential for improving fluency outcomes. The paper argues that integrating speaking into national assessments, strengthening teacher training for communicative and CLIL-based instruction, and embedding structured, repeated speaking opportunities into classroom practices are necessary to realign Japanese English education with communicative goals and support the development of oral fluency.

Sl. No	Article	Author	Source	Year
5	Task-Based language teaching: A framework for lesson design and learner autonomy in adult esl education	<i>Ismail Thamarasseri, Samiyath Mohamed</i>	I-Manager's Journal on English Language Teaching Vol:16, No :1	2026

Abstract: Task-based language teaching (TBLT) has gained significant attention as an effective pedagogical approach in adult English as a second language (ESL) education. This paper examines the theoretical foundations of TBLT, highlighting its emphasis on communicative competence, learner autonomy and authentic task engagement. Drawing on contemporary research, the paper explains how TBLT principles can be applied to design structured but flexible lessons that support adult learners at the elementary (A2) level. The discussion outlines the value of pre-task preparation, task execution, and post-task reflection as an integrated sequence that promotes meaningful language use while reducing dependence on prescriptive lesson plans. The paper further argues that TBLT enhances learner motivation. Collaboration and metacognitive development by creating opportunities for purposeful interaction and self-directed learning. These strengths are particularly relevant for adult learners who seek practical and immediately applicable language skills for academic professional and social contexts. In addition, the paper identifies key challenges in implementing TBLT, including the need for appropriate scaffolding, responsive instructional strategies and alternative assessment methods designed with communicative outcomes. Despite these considerations, the overall analysis affirms that TBLT provides a comprehensive and learner-centred framework for adult ESL education. By prioritizing real-world tasks, fostering autonomy, and integrating reflective learning opportunities, TBLT supports holistic language development and strengthens learner agency, making it a highly suitable approach for diverse adult ESL learning environments.

Sl. No	Article	Author	Source	Year
1	Personal social and educational adjustment problems and anxiety level of adolescent transitional students from self-financing to government schools in Kerala	<i>Sarath Chandran R</i>	I-Manager's Journal on Educational Psychology Vol:19, No :3	2026

Abstract: Adjustment problems and anxiety are the two major psychological issues facing the students in their adolescent period. This study helps to find out the level of personal, social, and educational adjustment problems and anxiety level of adolescent transitional students from self-financing to government schools in Kerala. In this study, investigators defined the term transitional students as those who students undergo to change their school in terms of curriculum. That is, from self- financing to Govt. Schools. Self-financing schools follow NCERT syllabus and rigid curriculum while Govt. Schools follow SCERT curriculum with a constructivist approach. NCERT curriculum is more teacher-centered, but SCERT curriculum is more student-centered. The purpose sampling technique was used in this study with a sample size of three hundred (N=120) students from various districts of Kerala. In this study, the investigator administered Personal Adjustment Scale, Social Adjustment Scale and anxiety scale, and Educational Adjustment Scale for adolescent students who undergo transition from self-financing to Govt. Schools. The present study reveals also that the relationship between personal, social and educational adjustment problems and anxiety among adolescent transitional students from self-financing to Govt. schools

Sl. No	Article	Author	Source	Year
2	A study on social adjustment and academic achievement of pre-university students in mangalore taluk	Anitha C.H	I-Manager's Journal on Educational Psychology Vol:19, No :3	2026

Abstract: The present study examines the relationship between social adjustment and academic achievement among preuniversity students in Mangalore, Taluk. Adolescence is a critical stage of development during which students are required to adapt to changing social expectations, institutional demands, and academic responsibilities. Social adjustment plays a vital role in helping learners maintain healthy interpersonal relationships, respond effectively to environmental demands, and participate meaningfully in educational settings. Academic achievement, on the other hand, remains one of the most important indicators of educational progress and future success. In this context, the present investigation aimed to determine the relationship between social adjustment and academic achievement among pre-university students in general, and separately among students from rural and urban areas. The study was conducted on a sample of 320 pre-university students drawn from rural and urban areas of Mangalore Taluk through simple random sampling. A Social Adjustment Questionnaire comprising 45 items was prepared and validated by the investigator and the research guide. Academic achievement was assessed on the basis of students' documented examination scores. The data collected were analysed using Pearson's product-moment correlation technique along with descriptive statistical measures. The findings of the study revealed a significant positive relationship between social adjustment and academic achievement among pre-university students in Mangalore, Taluk. Similar positive relationships were also observed among rural and urban students considered separately. The study highlights the educational significance of promoting social adjustment as a means of enhancing students' academic performance and holistic development.

Sl. No	Article	Author	Source	Year
3	Awareness of learning disabilities among M. ED students: Implications for inclusive teacher preparation in India	<i>Ismail Thamarasseril, Sreelekshmi M.</i>	I-Manager's Journal on Educational Psychology Vol:19, No :3	2026

Abstract: Learning disabilities (LDs) are a group of neurologically based disorders that significantly affect a person's ability to learn, understand, and process information. These disabilities are not indicative of intelligence levels but rather reflect differences in how the brain processes information. In the context of education, especially inclusive classrooms, it becomes imperative for educators to recognize, understand, and respond to the diverse needs of learners with LDs. This research study aims to assess the level of awareness regarding learning disabilities among M.Ed. (Master of Education) students, who represent future educators, administrators, and curriculum planners. A sample of 51 M. Ed students from various teacher training institutions was selected using stratified random sampling. Data was collected through a standardized awareness scale and analysed using descriptive and inferential statistics. The results reveal that while students possess a moderate level of awareness, there are significant gaps in specific areas such as identification strategies, intervention techniques, and understanding of inclusive practices. The study further indicates that prior exposure to inclusive education has a positive impact on awareness levels. These findings emphasize the urgent need to integrate special education and disability awareness modules into the M. Ed curriculum to ensure better preparedness of educators for inclusive education.

Sl. No	Article	Author	Source	Year
4	A study on examination anxiety among high school students	<i>D.Ponmozhi, A.Sivasakthi</i>	I-Manager's Journal on Educational Psychology Vol:19, No :3	2026

Abstract: The present study aimed to analyze examination anxiety among high school students. A sample of 106 students was selected through random sampling from one government, Oneself-financing and one aided school. The quantitative survey method was employed, and data were collected through random sampling method using the westside test anxiety scale which includes 10 items on a 5-point scale, with reliability of 0.8 and validity of 0.9. Data were analyzed using SPSS IBM 23 through descriptive, inferential, and regression analysis. Findings revealed that students exhibited extremely high levels of examination anxiety. The prediction model contained one of the ten predictors and was reached in one step with 9 variables removed. The model was statistically significant, $F(1,105) = 107.699$, $P < .001$, and accounted for approximately 51% of the variance of examination anxiety $\{R^2 = 0.59$, adjusted $R^2 = 0.504\}$. Marks were the strongest predictor of examination anxiety in high school students.

Sl. No	Article	Author	Source	Year
5	The need for social –emotional learning in the age of artificial intelligence: strategies for the development of SELIN LIGHT OF NEP 2020	<i>Rupal Singh Tamar Ami Rathod</i>	I-Manager's Journal on Educational Psychology Vol:19, No :3	2026

Abstract: In an era dominated by Artificial Intelligence (AI), the significance of Social-Emotional Learning (SEL) has never been more critical. While AI facilitates cognitive learning by providing instant access to information, it lacks the human-centric skills necessary for emotional intelligence, ethical decision-making, and interpersonal relationships. As AI continues to shape education, SEL ensures the holistic development of learners by fostering self-awareness, empathy, resilience, and responsible decision-making. The National Education Policy (NEP) 2020 emphasizes the integration of SEL within the educational framework to create emotionally intelligent and socially responsible individuals. This paper explores strategies for embedding SEL at different developmental stages, from prenatal influences and early childhood experiences to school-based and community-driven approaches. By aligning SEL with NEP 2020, this study highlights the need for a structured approach to incorporating SEL into curricula, pedagogy, and teacher training programs. Ultimately, integrating SEL with AI-driven education will prepare students not only for academic success but also for emotional well-being and ethical leadership for future generations.

Sl. No	Article	Author	Source	Year
1	Efficient shared-multiplier mixed –Radix FFT Architecture with dynamic resource scheduling for ultra-high-speed OFDM systems	<i>Nancharaiah Vejendia, R.</i>	I-Manager's Journal on Electrical Engineering Vol:19, No :3	2026

Abstract: This paper presents an enhanced shared-multiplier scheduling scheme (e-SMSS) for ultra-high-speed Fast Fourier Transform (FFT) and Inverse FFT (IFFT) processors targeting next-generation optical and millimeter-wave OFDM standards. Building upon the mixed-radix multipath delay commutator (MRMDC) framework, the proposed architecture introduces dynamic twiddle-factor sharing and pipelined multiplier reuse across stages, reducing the complex multiplier count by 36% compared to prior works while supporting 128/256/512/1024-point transforms. The design employs eight parallel data paths with reconfigurable butterfly units and a multicycle scheduling controller that orchestrates multiplier access without throughput loss. The proposed design was synthesized using Xilinx Vivado on Viterx-7 FPGA; the processor achieves a 40 GS/s throughput at 500 MHz. Synthesizable Verilog models for the core butterfly, shared multiplier array, and scheduling controller were provided and validated.

Sl. No	Article	Author	Source	Year
2	Advanced intelligent database frameworks for yield enhancement in semiconductor fabrication	<i>Padmaja Puilvarthy, Anjali Reddy Erugula</i>	I-Manager's Journal on Electrical Engineering Vol:19, No :3	2026

Abstract: The semiconductor fabrication process is a complicated activity and entails intricate operations with noisy sensor information of high-dimensionality, and fault detection and yield enhancement are complicated. The conventional rule-based monitoring systems and statistical process control (SPC) methods are not effective to address these complexities and frequently results in unnoticed process variations and massive loss of yield. This study introduces a machine learning-based system to predict faults and improve yield, and these issues are handled in this study through a smart, data-driven framework. The system architecture will comprise a data ingestion module, preprocessing and feature handling module, machine learning engine and prediction and decision-support module. Data used: Semiconductor manufacturing sensor data of a benchmark data set with multivariate process data, high-dimensionality, missing data, binary quality data (pass/fail), and so on. The preprocessing module deals with the missing values, normalization, scaling, and feature selection. The machine learning engine uses the classifiers of Random Forest and XGBoost, model training, hyperparameter optimization, and techniques of dealing with class imbalance. The fault prediction method is a step-by-step method which entails reception of data, preprocessing, model training, fault prediction, and yield related insights generation. The yield enhancement decision module takes the prediction as its input and takes high-risk cases to give feedback on fine-tuning processes and preventive maintenance and finally gives recommendations to enhance the yield. It has been demonstrated that the suggested framework is superior in comparison with the traditional techniques and helps improve the accuracy of fault detection and promote the yield rate.

Sl. No	Article	Author	Source	Year
3	Hybrid quantum –enhanced gravitational swarm optimization for economic load dispatch of IEEE 6-Bus 3-Generator and IEEE 40-Generator power systems	<i>Chitrita Dasgupta, Spriha Dey, Smrtti Bera, Krishna Sarker</i>	I-Manager's Journal on Electrical Engineering Vol:19, No :3	2026

Abstract: Economic Load Dispatch (ELD) is one of the most significant optimization problems in modern power system operation, where the primary objective is to minimize total fuel generation cost while satisfying power balance equations and various operational constraints. Practical ELD problems become highly nonlinear, non-convex and discontinuous due to valve-point loading effects, prohibited operating zones, ramp-rate limits, transmission losses, and emission constraints. Conventional mathematical optimization approaches often fail to provide global optimal solutions under such complex operating conditions. This paper presents a novel Hybrid Quantum-Enhanced Gravitational Swarm Optimization (HQGSO) technique for solving convex and non-convex ELD problems. The proposed approach combines the exploration capability of quantum-based random search, the exploitation strength of Gravitational Search Algorithm (GSA) and adaptive swarm intelligence mechanisms to improve convergence accuracy, solution stability and computational efficiency. The effectiveness of the proposed HQGSO method is validated on standard IEEE 6-bus 3-generator and IEEE 40-generator benchmark systems considering transmission losses, valve-point effects, ramp-rate limits and prohibited operating zones. Simulation results demonstrate that the proposed technique achieves lower generation cost, reduced transmission loss and improved convergence characteristics compared with existing optimization methods such as Genetic Algorithm (GA), Particle Swarm Optimization (PSO), Differential Evolution (DE), Artificial Bee Colony (ABC), Ant Colony Optimization (ACO) and conventional GSA. For the IEEE 6-bus 3-generator system, the proposed technique provides optimal power scheduling with minimum fuel cost while maintaining operational feasibility under nonlinear constraints. For the IEEE 40-

generator system, the proposed method significantly reduces overall generation cost and enhances solution robustness for large-scale practical ELD problems. Comparative analysis confirms that the proposed HQGSO technique provides superior optimization performance, fast convergence speed, higher solution quality and better computational reliability for real-time power system applications.

Sl. No	Article	Author	Source	Year
4	Loss mitigation and efficiency enhancement in cascaded H-Bridge Multilevel Inverters Through inductive decoupling	Deepika K.S.R, Abdul Ahad S.K. Srinivas Rao R.	I-Manager's Journal on Electrical Engineering Vol:19, No :3	2026

Abstract: This cascaded h-bridge multilevel structure is designed to balance cost and efficiency. A key problem in such H-bridge inverters is the high switching loss that arises when the SiC-MOSFET turns against a silicon diode. This causes large turnoff losses in the silicon diode due to stored bipolar charge carriers. To solve this issue, the paper introduces an inductive decoupling concept. Small additional inductors are placed between the SiC-MOSFET half bridge and the IGBT with silicon diode half bridge. These inductors reduce the electrical interaction between the two branches during switching events. As a result, the turn-on losses of the active SiC-MOSFET and the turn-off losses of the passive silicon diode are greatly reduced. This leads to lower total inverter losses compared to a conventional non-decoupled cascaded Hbridge multilevel inverter. Double pulse tests are used to accurately measure switching losses. While a cascaded Hbridge multilevel inverter setup is used to validate system-level behaviour with closed loop AC motor load conditions. The proposed inductive decoupling reduces the total switching energy per event from approximately 420 μJ to 260 μJ . This corresponds to a reduction of about 38% compared with the conventional coupled hybrid inverter. This allows for

reorganization of an optimal value for decoupling inductance. The performance results show that inductive decoupling improves average efficiency during realistic vehicle operation with a proposed approach.

Sl. No	Article	Author	Source	Year
5	An Esp Mesh based IOT system for smart agriculture	<i>S.Deepak Raj</i>	I-Manager's Journal on Electrical Engineering Vol:19, No :3	2026

Abstract: Smart agriculture increasingly depends on distributed, high-resolution sensing systems capable of capturing real-time soil and environmental dynamics with minimal infrastructure and cost. Conventional wireless sensor networks often face limitations in scalability, energy efficiency, and network robustness, particularly in fragmented agricultural landscapes where connectivity is inconsistent. This work presents an ESP-based mesh IoT architecture designed to enable resilient, self-organizing, and low-cost monitoring of critical agronomic parameters. The system integrates a multi-node mesh network for distributed soil sensing, a gateway-assisted cloud uplink for remote accessibility, and a unified dashboard for visualization, alert generation, and long-term water-footprint assessment. By leveraging a decentralized mesh topology, the framework ensures reliable propagation of sensor data across dynamically changing link conditions, while cloud integration facilitates continuous supervision and early-warning capabilities for irrigation and soil-health anomalies. Experimental evaluation of the prototype demonstrates stable multi-hop communication, consistent sensing performance, and seamless end-to-end data flow from field nodes to the user interface. The results highlight the potential of ESP-based mesh networks as an accessible and scalable digital infrastructure for precision agriculture, supporting improved resource efficiency and informed agronomic decision-making.

Sl. No	Article	Author	Source	Year
1	Prof. Sulochana gadgil: A Pioneer in monsoon science	<i>Prof. Srinivasan</i>	Resonance Vol:31, No :1	2026

Abstract: Prof. Sulochana Gadgil was at the forefront of the revolution that occurred in monsoon science during the last 60 years. This revolution was driven by advances in satellite technology and computers. She showed that the land-sea contrast in surface temperature was not the major driving force for the seasonal variation of monsoon rainfall. She was the Chairman of the Centre for Atmospheric and Oceanic Sciences at the Indian Institute of Science from 1989 to 1996. The transition from statistical prediction to numerical prediction of monsoon rainfall (based on laws of physics) in India occurred because of her leadership.

Sl. No	Article	Author	Source	Year
2	Glacial lakes-Archives of the past environmental conditions from the himalayan region	<i>Priyanka Joshi and Balasubramanian karthick</i>	Resonance Vol:31, No :1	2026

Abstract: Glacial lakes appear remarkably gorgeous, with their clear, blue water. Glacial lakes, formed from the meltwater of retreating glaciers, are critical features of high-altitude mountain landscapes. These lakes are rapidly expanding due to climate change, increasing the risk of glacial lake outburst flood events that threaten downstream communities and ecosystems. Beyond their immediate hydrological significance, glacial lakes act as natural archives, preserving evidence of past environmental variability.

The sediments within these lakes hold valuable records of glacial dynamics, offering crucial insights into Earth's climatic history while also serving as vital freshwater reservoirs in fragile mountain regions.

Sl. No	Article	Author	Source	Year
3	Mathematical modelling in epidemiology	<i>Ruchi Kaur, Naman taggar, Vaishnavi Rajagopalan and Jaspreet Kaur</i>	Resonance Vol:31, No :1	2026

Abstract: Mathematical modeling is widely used to analyse and predict complex real-world systems. In infectious disease epidemiology, it provides a framework for understanding transmission dynamics and supporting control strategies. This article discusses two commonly used models: the Serfling regression model for seasonal disease outbreaks and the SIR compartmental model for epidemic spread. The Serfling model is applied to Influenza-A data from China, while the SIR model is fitted to COVID-19 data from South Africa with a time-dependent transmission rate $\beta(t)$. Real data illustrate the role of modelling in surveillance, prediction, and public health planning.

Sl. No	Article	Author	Source	Year
1	Jane Goodall: The passionate scientist	<i>Sindhu Radhakrishna</i>	Resonance Vol:31, No :3	2026

Abstract: Jane Goodall's name is synonymous with chimpanzee behaviour and conservation, but what is less well known is that she was a self-taught ethologist and conservationist who entered the field guided only by her love for animals. Her scientific

achievements and conservation legacy serve to remind us that science flourishes in the presence of love and compassion, not its absence.

Sl. No	Article	Author	Source	Year
2	Moon matters	<i>Shyama Narendranath K C</i>	Resonance Vol:31, No :3	2026

Abstract: The Moon, our nearest celestial neighbor, serves as an invaluable archive of the early Solar System—a pristine record book whose pages remain largely unaltered by the geological processes that have erased Earth’s earliest history. It is also the place where the expansion of the human realm of activities can be envisioned in the near future. How do planetary scientists use the Moon to answer fundamental questions about our cosmic origins: How did the Solar System form and evolve? What does the future hold for the expansion of humanity into space? We examine the scientific methods that allow us to read these ancient records, highlight India’s growing contributions to lunar science through the Chandrayaan missions, and look ahead to the Lunar South Pole as the next great frontier in space exploration. Understanding these ancient worlds is not merely an academic exercise; it provides essential context for our place in the cosmos and charts the path for humanity’s future beyond Earth.

Sl. No	Article	Author	Source	Year
3	An active soft codensed matter approach to the physics of living systems	Nitin Kumar	Resonance Vol:31, No :3	2026

Abstract: This article aims to introduce the broad field of soft active matter physics and its relevance to the life sciences in simple, accessible language. Although this area of research is relatively new, it has already demonstrated significant potential in providing a physical understanding of many biological processes. While several review articles by leading researchers exist, they can be difficult to grasp for undergraduate students and even early-career researchers who wish to enter this field. In this article, I cover the basics, introduce the origins of soft active matter physics, and explain how it differs from traditional equilibrium condensed matter ideas at the fundamental level. For the most part, I will avoid mathematical equations and excessive technical precision in several statements. Instead, I will focus on communicating the core ideas and the overall spirit of the argument, using everyday examples to develop a physical intuition. The primary focus will be on the dynamical aspects of these systems. I will conclude by briefly discussing a published experimental study from our research group that examines universal features of the trajectories of homing and migrating organisms.

Sl. No	Article	Author	Source	Year
4	Understanding thermodynamic equilibrium	<i>Satadal Bhattacharaya</i>	Resonance Vol:31, No :3	2026

Abstract: The approach to equilibrium of an isolated system of particles confined in a box has been examined and extended to study the ergodic hypothesis and entropy fluctuations in equilibrium. The Boltzmann H-theorem and its connection to the system's entropy has also been discussed.

Sl. No	Article	Author	Source	Year
5	Digital Herbaria: A Game changer in Botanical research	<i>Ajith Ashokan and Biju Dharmapala</i>	Resonance Vol:31, No :3	2026

Abstract: India, like much of the world, faces increasing threats to its rich plant biodiversity. In this context, herbaria serve as invaluable repositories of plant diversity, preserving specimens that document past and present floristic patterns. Traditionally, herbaria have been fundamental to plant taxonomy, ecological studies, and conservation research. However, advancements in molecular techniques and computational tools have expanded their utility beyond conventional applications. The digitization of herbarium collections has further revolutionized botanical research, enabling global accessibility, large-scale meta-analysis, and interdisciplinary studies. The rise of artificial intelligence (AI), deep learning (DL), and machine learning (ML) has enhanced species identification, improved taxonomic classification, and reduced human bias. While digital herbaria offer numerous advantages, including enhanced preservation and remote accessibility, they cannot replace physical collections entirely. A hybrid approach integrating traditional specimen-based research with digital advancements is crucial for ensuring the long-term sustainability of

herbaria. By embracing AI, remote sensing, and open-access databases, herbaria will remain indispensable tools for biodiversity conservation and botanical discovery amid environmental change.

Sl. No	Article	Author	Source	Year
6	Unification of various sundials: Understanding their underlying relations	<i>Deepak K Pattanaik, Jatadhari K Sharma</i>	Resonance Vol:31, No :3	2026

Abstract: In Siddhanta Darpana, a classic of India's last exponent of Siddhantic astronomy, Samanta Chandrasekhar, four types of sundials are discussed. These are the horizontal sundial, vertical sundial, equatorial sundial, and golardha yantra. We discuss the underlying unity between these sundials and two others: the polar sundial and the analemmatic sundial. Firstly, we derive the mathematical formula for the shadow angle (the time-showing angle) of a horizontal sundial using the geometry of the polar sundial. Next, we derive the shadow angle formula of a vertical sundial using the geometry of the equatorial sundial. We then discuss the underlying unity between the golardha yantra and the analemmatic sundial, from which we deduce the ratio of time-measuring coordinates in the analemmatic sundial. We create a model that integrates various sundials, each characterized by the angle between the gnomon's side parallel to the Earth's axis and the dial plate.

Sl. No	Article	Author	Source	Year
7	Artificial rain through cloud seeding	<i>Aditya H Iyer, krushna Chandra Gouda</i>	Resonance Vol:31, No :3	2026

Abstract: Freshwater is a vital commodity that humans and communi-ties require constant access to for basic activities related to agriculture, survival, and bodily upkeep. While rivers, lakes, and underground aquifers serve as long-term water sources, a significant fraction of the current population resides in re-gions that do not receive a reliable, steady supply of water. In these regions, rainfall is crucial for residents to survive, but it is often seasonal or irregular. Furthermore, accord-ing to UNESCO reports, billions of people worldwide lack access to safe and sanitised water, while natural and man-made disasters such as droughts and floods, resulting from improper land and resource use, exacerbate this issue. To mitigate these and several other problems, cloud seeding is a promising technique that induces precipitation when rain is needed or suspends it during periods of high-intensity rain-fall to reduce flood risk. It is crucial for addressing the afore-mentioned issues, as it can control the flow of rainwater in both quantity and region. This article explores the funda-mentals of cloud seeding, including the scientific principles behind the process, the chemical aspects of seeding materials and processes, the practical methods used to carry them out, and developments in cloud seeding technology since its con-ception in the 1940s, through a thorough review of scientific literature and patents.

Sl. No	Article	Author	Source	Year
1	Vitamin C: A journey from discovery to antioxidative significance	<i>Najima Ahmed, Ramesh Ch. Deka</i>	Resonance Vol:31, No :5	2026

Abstract: Vitamin C or ascorbic acid, discovered as the anti-scurvy factor, became very popular for its antioxidant properties. Vitamin C is a vital nutrient for plants, humans, and other animals. It has a rich history, from Albert Szent-Györgyi's discovery and chemical structure determination to Pauling's public health advocacy. This article highlights the antioxidant roles of vitamin C, its physiological functions, biosynthesis in plants, and industrial production pathways.

Sl. No	Article	Author	Source	Year
2	Compton Effect a Pedagogical review and its role in establishing particle nature of radiation	<i>Nisha Patel and Pruthul Desai</i>	Resonance Vol:31, No :5	2026

Abstract: The quantum nature of radiation received a dramatic confirmation in 1923 owing to the study of X-ray scattering by Arthur Holly Compton. It took nearly two decades for physicists to finally come to terms with Einstein's revolutionary idea of light-quantum—a radical break from the continuum of physics of the time, first proposed heuristically in 1905. In this pedagogical article, we briefly introduce Einstein's light quantum hypothesis and examine how, over the next two decades, he employed it to investigate the interaction of light with matter in profound ways. We then delve into Compton's ingenious experiments on X-ray scattering, exploring his initial conceptual challenges in explaining the observed wavelength shift, now known as the Compton effect, before a straightforward explanation emerged, rooted in Einstein's light-quantum hypothesis. We also present an elegant and simple

derivation of a relativistically invariant general expression for the wavelength shift using a conservation of momentum in a 4-vector formulation and show that under the assumption that the target electron is at rest, it reduces to the Compton shift formula, which is usually discussed in an undergraduate course in physics. Using a simple example of backscattering radar waves, we also show the equivalence of waves and particle character of radiation. Finally, a few applications of Compton scattering are briefly discussed.

Sl. No	Article	Author	Source	Year
3	Epistemic gaps that hinder laboratory safety compliance	<i>Bor Luen Tang</i>	Resonance Vol:31, No :5	2026

Abstract: Laboratory research is an integral part of tertiary and postgraduate STEM education. Safety is of paramount importance in a research laboratory. While laboratory activities are governed by strict safety regulations, with safety education training typically administered, instances of non-compliance and violations have nonetheless occurred. Beyond incidental clumsiness/carelessness and occasional recalcitrant behaviors, I posit that knowledge deficiency in a student’s comprehension and practice of safety training, rules, and regulations underlies many, if not most, of these apparent non-compliances. These deficiencies could be broadly grouped into three types: in one’s technical knowledge of immediate relevance (unto one’s tools), in one’s judgment of productivity versus risk (unto oneself), as well as in one’s broader ethical mindset (unto others). Together, these knowledge deficiencies and lack of practical wisdom form an epistemic gap between what’s generally taught during safety education and the actual daily safe practices of laboratory science, potentially hindering safety compliance. Safety of education and training could be more effective if these deficiencies are adequately addressed.

Sl. No	Article	Author	Source	Year
1	Capturing Nonlinear Dynamics in Global Debt Markets: An ARIMA–LSTM Comparative Study	<i>Hajar Ait Lamkademe</i>	Journal of Intelligent Computing Vol:17, No :2	2026

Abstract: Modeling the dynamics of global debt markets requires frameworks capable of capturing nonlinearity, nonstationarity, and structural regime shifts inherent in macro-financial time series. This study presents a rigorous comparative analysis of linear econometric and nonlinear deep learning models, specifically ARIMA,SARIMA, and Long Short-Term Memory (LSTM) networks, to evaluate their effectiveness in forecasting global debt issuance. Using a quarterly dataset from the Bank for International Settlements spanning 1962– 2025, the analysis integrates comprehensive preprocessing, including stationarity transformations, seasonal decomposition, and feature scaling, to ensure methodological robustness. Empirical results reveal that global debt issuance exhibits strong persistence, pronounced quarterly seasonality, and nonlinear responses to macroeconomic shocks, particularly during the Global Financial Crisis and the COVID-19 period. While ARIMA adequately captures linear dependencies under stationarity assumptions, it fails to model seasonal and nonlinear structures. SARIMA improves performance by explicitly incorporating seasonal autoregressive and moving average components, yielding statistically robust residual diagnostics consistent with white-noise processes. However, LSTM significantly outperforms both models by learning complex temporal dependencies and nonlinear interactions without requiring explicit model specification. Model evaluation using MAE, RMSE, MSE, and MAPE consistently demonstrates the superior predictive accuracy and adaptability of LSTM, particularly under structural instability and regime shifts. The findings underscore the limitations of purely linear frameworks and highlight the efficacy of deep learning, architectures in financial time-series forecasting. Furthermore, the results support the adoption of hybrid modeling strategies that

integrate econometric interpretability with machine learning flexibility, offering a robust paradigm for analyzing and forecasting complex global debt dynamics.

Sl. No	Article	Author	Source	Year
2	A Comprehensive Analysis of Code Duplication, Data Leakage, and Clone Detection in Large-Scale Python Corpora	<i>Pit Pichappan</i>	Journal of Intelligent Computing Vol:17, No :2	2026

Abstract: Code duplication is a pervasive phenomenon in software repositories that poses significant risks for both software quality and machine learning evaluation. This study presents a comprehensive analysis of code duplication, data leakage, and clone detection within large-scale Python corpora, focusing on the widely used py150 benchmark and its declbodies splits. Using a duplication index, we identify 7,336 duplicate groups comprising 17,033 entries, with an average cluster size of 2.3. Critically, we detect 575 leakage groups (7.9%) spanning training, validation, and test splits, including 280 test samples and 303 validation samples that appear verbatim in the training data a violation of dataset independence that can inflate performance metrics through memorization. To address this, we implement a deduplication strategy that eliminates all cross-split leakage. We then evaluate binary and multi-class clone detection using traditional models (SVM, Random Forest) and transformer-based architectures (CodeBERT). Results show that transformer models achieve strong performance (AUC up to 0.97) on syntactic clones (Types I and II) but exhibit systematic degradation on semantic clones (Type IV, F1-score 0.72). Statistical tests confirm that observed differences are significant ($p < 0.01$). Our findings underscore that uncontrolled redundancy compromises experimental validity, and we

advocate for routine duplication indexing and leakage quantification as essential preprocessing steps for reliable benchmarking of code intelligence systems.

Sl. No	Article	Author	Source	Year
3	Integrated Multi-Model Learning Framework for Structured" Textual"Temporal Data: A Descriptive Analysis	<i>Puttakul Puttawattanakul, Hathairat Ketmaneechairat</i>	Journal of Intelligent Computing Vol:17, No :2	2026

Abstract: Real-world datasets increasingly encompass heterogeneous modalities, yet conventional fusion techniques often struggle with varying data reliability, missing inputs, and dynamic cross-modal interactions. To address these limitations, this study proposes an integrated multi-model learning framework that synergistically combines transformer, tree, and sequential based architectures. Central to this approach is the AdaptiveFusion module, which dynamically estimates modality reliability, facilitates cross modal attention, and aggregates features adaptively via a learnable gating mechanism. The framework operationalizes this architecture by integrating BERT for deep textual semantics, XGBoost for structured numerical temporal prediction, and LSTM for sequential dependency modeling. Empirical validation is conducted on a curated dataset tracking the chronological evolution of conversational AI systems, comprising categorical, temporal, numerical, and textual attributes. Experimental results demonstrate that each component effectively captures its designated data dimension: BERT achieves rapid semantic convergence, XGBoost delivers robust structured classification with high F1-scores (>0.80), and LSTM successfully identifies latent temporal trajectories. When integrated, these paradigms overcome individual limitations, yielding a holistic analytical system that enhances both predictive accuracy and interpretability. Despite constraints related to dataset scale and class imbalance, the proposed framework

establishes a scalable, context-aware methodology for multimodal data fusion. This work underscores the critical value of hybrid modeling strategies in extracting comprehensive insights from complex, real-world information ecosystems.

Sl. No	Article	Author	Source	Year
1	AI-Driven Counterfeit and Fraud Detection in E-Commerce: A Dual-Layered Machine Learning Approach	<i>Hsing-Cheng Liu, Yao-Liang Chung</i>	Journal of Information & Systems Management Vol:16, No :2	2026

Abstract: The rapid expansion of e-commerce has intensified cybersecurity threats, particularly counterfeit product listings and fraudulent transactions, which severely undermine consumer trust and marketplace integrity. Traditional rule based monitoring systems increasingly struggle to detect these sophisticated, evolving fraud patterns. This study develops and evaluates a dual layer predictive analytics framework that leverages supervised machine learning to enhance counterfeit detection and fraud governance in digital marketplaces. Utilizing a Random Forest classifier, the research analyzes two complementary datasets: static productlevel metadata comprising seller credentials and listing characteristics, and dynamic transaction-level behavioral indicators capturing purchasing anomalies and device signatures. Following rigorous preprocessing, categorical encoding, and an 80/20 stratified train-test split, the models were benchmarked using accuracy, precision, recall, F1 Score, and ROC-AUC. The product-level classifier achieved perfect class separability, demonstrating the deterministic power of structural listing indicators. Conversely, the transaction-level model attained 99.33% accuracy, 97.99% precision, and a 0.9999 ROC-AUC, effectively capturing probabilistic behavioral fraud signatures with minimal false negatives. These findings confirm that integrating static asset metadata with dynamic transactional analytics significantly improves predictive robustness. The study concludes by proposing a unified, AI-driven

marketplace governance framework capable of real-time surveillance, automated threat mitigation, and scalable regulatory compliance, ultimately advancing the deployment of transparent artificial intelligence solutions across global digital commerce networks.

Sl. No	Article	Author	Source	Year
2	Data-Driven Investigation of Global Artificial Intelligence Ethics Frameworks and Governance Patterns	M. Krishnamurthy	Journal of Information & Systems Management Vol:16, No :2	2026

Abstract: This study presents a comprehensive data-driven investigation of global Artificial Intelligence (AI) ethics frameworks and governance patterns through machine learning and visual analytics techniques. Analyzing a curated dataset of 112 AI policy documents published between 2016 and 2019 across public-sector institutions, private corporations, and non-governmental organizations worldwide, the research employs K-Means clustering, Principal Component Analysis, hierarchical clustering, and correlation analysis to systematically examine ethical priorities embedded within 25 conceptual dimensions. Results identify three distinct document clusters: Technical and Governance Leaders emphasizing accountability, privacy, and technical explainability; Thematic or Generalist Frameworks articulating broad ethical principles with limited operational guidance; and Comprehensive Adopters reflecting mainstream consensus on fairness, transparency, and safety. Sectoral analysis reveals divergent ethical emphases: private organizations prioritize technical implementation and reliability, NGOs emphasize human rights and equity, while public institutions focus on regulatory accountability and governance. Temporal analysis demonstrates a significant shift in discourse from speculative concerns about existential AI risks to practical governance challenges, including algorithmic bias,

explainability, and transparency. Correlation analysis further indicates that ethical principles function as interconnected governance ecosystems rather than isolated values, with strong associations between transparency-accountability, privacy-safety, and fairness-human rights. Geographical variations highlight the influence of cultural, legal, and institutional contexts on ethical prioritization. The findings underscore the transition of AI ethics from abstract declarations toward operational, measurable governance frameworks, while emphasizing the need for interdisciplinary collaboration and globally coordinated approaches to develop trustworthy, socially responsible AI ecosystems.

Sl. No	Article	Author	Source	Year
3	Advanced Retail Analytics Using Market Basket Mining, Product Networks, and Time-Series Forecasting	<i>Dit Suthiwong</i>	Journal of Information & Systems Management Vol:16, No :2	2026

Abstract: The rapid expansion of digital retail has generated extensive transactional data, creating unprecedented opportunities for advanced, data-driven decision-making. Traditional Market Basket Analysis (MBA) and association rule mining frequently struggle with large, sparse datasets, often producing trivial rules while overlooking temporal and network-level purchasing dynamics. To address these limitations, this study introduces an integrated analytical framework that synergizes association rule mining, product network analytics, temporal modeling, clustering, and time-series forecasting. Leveraging a synthetic dataset of 30,000 grocery transactions spanning four months, the pipeline systematically extracts meaningful product affinities and visualizes complex purchasing pathways through association rule graphs and Sankey diagrams. A product co-occurrence network subsequently identifies structural purchasing communities and central hub items that drive strategic cross-selling opportunities.

Temporal trend analysis captures fluctuating customer transaction volumes, while a regression-based forecasting model extrapolates future demand trajectories to optimize inventory planning and workforce scheduling. By synthesizing these complementary analytical layers, the framework transcends conventional basket analysis to deliver a holistic understanding of retail ecosystems. The findings demonstrate how multi-dimensional analytics significantly enhance nextbasket recommendation engines, inform store layout optimization, and improve demand prediction accuracy. Ultimately, this unified approach equips retailers with actionable insights to personalize marketing strategies, streamline operational efficiency, and adapt proactively to evolving consumer behaviors in highly competitive market environments.

Sl. No	Article	Author	Source	Year
1	Temporal Bursts and Structural Persistence in Online Misinformation Networks	<i>Pit Pichappan</i>	International Journal of Computational Linguistics Research Vol:17, No :2	2026

Abstract: The rapid proliferation of online misinformation poses a critical challenge to digital information ecosystems, driven by coordinated communities and dynamic network interactions. While existing detection models often treat social networks as static or focus narrowly on content, this study investigates the complex interplay between temporal bursts, structural persistence, and community dynamics. Utilizing a novel Misinformation Dynamics Testbed, we analyze a longitudinal Reddit dataset (2015–2024, n=1,455) across multiple analytical dimensions. Statistical and network analyses reveal that misinformation engagement follows a heavily skewed, heavy-tailed distribution (Gini i , » 0.71), with a pronounced visibility credibility mismatch (Spearman $\hat{\epsilon}^{\text{TM}}$ s p i , » 0.32). Temporal patterns are non stationary and episodic, characterized by event driven activity surges rather than linear trends.

Structurally, the network exhibits scale free properties and densification driven growth, in which stable core communities show highly volatile interconnections. Cross community analysis uncovers a hybrid propagation mechanism: localized amplification within tightly knit echo chambers, coupled with controlled diffusion through strategic bridge nodes. These findings demonstrate that misinformation operates as a self reinforcing, temporally adaptive process rather than a purely contentdriven phenomenon. Consequently, effective mitigation requires a paradigm shift from static, post-level moderation to dynamic, system level interventions. Prioritizing high centrality hubs, monitoring bridge nodes, and deploying real time burst detection are essential for disrupting propagation pathways. This research underscores the necessity of integrated, network aware frameworks to address the evolving landscape of digital misinformation.

Sl. No	Article	Author	Source	Year
2	Modeling and Analyzing Engagement Dynamics of Misleading and Authentic Content on Reddit Using Linguistic and Machine Learning Approaches	<i>Hathairat Ketmaneechairat</i>	International Journal of Computational Linguistics Research Vol:17, No :2	2026

Abstract: The rapid proliferation of misleading information on social media poses significant challenges to digital ecosystems, driven by sensational narratives, emotional framing, and strategic engagement tactics. Existing research often examines linguistic patterns, user engagement, and propagation dynamics in isolation, limiting comprehensive understanding. This study introduces a unified analytical framework that integrates linguistic, behavioral, and contextual features to model and classify misleading versus authentic content on Reddit. Analyzing a dataset of 2,344 posts across twelve subreddits, we engineered 86 multidimensional

features encompassing linguistic structure, sentiment, stylistic markers, clickbait indicators, and TF-IDF representations. A Linear Support Vector Machine (LinearSVC) was employed for multi-class classification across true, satire, imposter, and misleading categories. Descriptive and statistical analyses revealed that authentic content attracts the highest average engagement, while misleading posts exhibit significantly greater verbosity and clickbait prevalence, strategically mimicking credible narratives. The baseline classifier achieved 88.7% weighted accuracy, effectively distinguishing satire and imposter content, yet struggled with misleading posts due to their deliberate lexical overlap with authentic news. Inferential tests confirmed statistically significant differences in engagement metrics, content length, and clickbait usage across categories. These findings demonstrate that virality is decoupled from factual accuracy and highlight the limitations of traditional machine learning in detecting nuanced deception. Future research should incorporate transformer-based architectures, temporal engagement modeling, and network propagation analysis to enhance robust misinformation detection in dynamic online communities.

Sl. No	Article	Author	Source	Year
3	The Double-Lock Framework: A Multi-Layered System for Grounded Retrieval-Augmented Generation and Hallucination Mitigation	Maleerat Sodanil	International Journal of Computational Linguistics Research Vol:17, No :2	2026

Abstract: Retrieval-Augmented Generation (RAG) systems have significantly improved the factual grounding of large language models (LLMs). However, challenges remain in ensuring both semantic correctness and transparent attribution, as models may still produce hallucinated or unverified outputs. This paper proposes the Double- Lock Framework, a multi-layered architecture that

integrates data engineering, linguistic attribution modeling, and dual validation mechanisms to mitigate hallucinations. A high-fidelity “Gold Standard” dataset is constructed using strict filtering criteria based on factual consistency and hallucination labels. The framework introduces attribution markers to enhance interpretability and employs both supervised finetuning and reward-based optimization for model training. A two-stage validation mechanism combining regex-based linguistic checks and predictive AI scoring ensures both transparency and factual accuracy. Experimental evaluation on a 6,000-sample dataset demonstrates that while regex-based validation alone results in a 7.72% hallucination leakage rate, the proposed Double-Lock mechanism achieves 0% leakage. The framework effectively bridges the gap between retrieval and human-understandable knowledge synthesis, enabling the development of reliable and trustworthy AI systems.

Sl. No	Article	Author	Source	Year
1	Elements of Sociological Naturalism in Thakazhi Sivasankara Pillai’s Chemmeen and Ernest Hemingway’s The Old Man and the Sea	N Maria Preeti Jose and Arnab Chatterjee	The IUP Journal of English Studies Vol: 21, No :2	2026

Abstract: Thakazhi Sivasankara Pillai’s Malayalam novel Chemmeen (prawns) details the lives of coastal fishermen of Kerala. Though on the surface a love tale of “star-crossed lovers”, the narrative recounts the uneasy relationship between the bountiful nature and human activity to control and dominate her. This is also the leitmotif of Ernest Hemingway’s novella The Old Man and the Sea that depicts the man-nature symbiosis. The paper argues that both the texts, separated across timeframes and locales, can be interpreted with recourse to what is termed the “sociological naturalist” approach. This term seeks to demonstrate that the

natural and the social worlds are governed by similar principles. The sea and the marlin in Hemingway’s novella are not merely natural forces, they also embody psychological aspects on an anthropocentric plane. Similarly, in Pillai’s narrative, the sea is both a bountiful mother (“Kadalamma”) and also a brute force which the people in the community have to negotiate with. She is both a provider of chemmeen, a bountiful source of food and a devourer of sin and negativity. Thus, this paper seeks to drive home the anthropocentric and sociological parameters in both the abovementioned works.

Sl. No	Article	Author	Source	Year
2	Reimagining Mother and Nature: An Ecofeminist Approach to Diane Cook’s <i>The New Wilderness</i>	<i>Anu Kumari and Yeddu Vijaya Babu</i>	The IUP Journal of English Studies Vol: 21, No :2	2026

Abstract: This paper highlights the profound connection between ecology and women in Diane Cook’s *The New Wilderness*. It also highlights the novel’s characters, plot and setting to understand the layers of ecofeminism and climate change. It assesses how far the ideal of a ‘New Woman’ is embedded in the book by critically examining the women characters. The New Woman in this narrative emerges as a symbol of aversion and transformation, offering hope for a future where the intertwined destiny of women and the environment are admitted and addressed. From an ecofeminist perspective, this paper observes that *The New Wilderness* offers critical views and promotes awareness of gender and ecological issues. Qualitative methodology is used to explore the ecofeminist premises. Textual analysis is applied to determine the concept of New Woman. To put it in the context of the development of themes in Cook’s *The New Wilderness*, the portrayal of Bea’s character can be a typical image of a New Woman whose primary concern is

not romance but the sustainability of her environment, because balancing development is a significant concern for the sustainability and existence of species on the Earth.

Sl. No	Article	Author	Source	Year
3	Journeys of Remembrance: Deciphering 'Traveling Memory' in Siddhartha Deb's The Point of Return	<i>Athira Baburaj, Dhishna Pannikot and Kiran Raveendran</i>	The IUP Journal of English Studies Vol: 21, No :2	2026

Abstract: Migration affects how and what is remembered, and displacement intensifies the investments in memory. Siddhartha Deb's The Point of Return (2002) depicts the “painful process of cartographic reconfigurations of state boundaries along ethnic lines and the resultant violence, uprootedness, alienation” and persistent memory of displacement (Sarma, 2016, p. 130). It is a story of archival research where the protagonist seeks memories in personal archives. Memories are immediately linked with the surrounding space of the environment. This study examines ‘memory’ that has migrated or has been exiled from its local habitations. It focuses on how memory travels, archiving itself rhizomatically for the internally displaced in Northeast India through the novel The Point of Return. It also analyzes how mnemonic archives influence traveling memory and the possibility of localizing traveling memory for the internally displaced population.

Sl. No	Article	Author	Source	Year
4	A K Ramanujan's Conceptualization of Poetry and Poetics in the Light of Theory of Embodiment	<i>Sreenidhi S and Maitali Khanna</i>	The IUP Journal of English Studies Vol: 21, No :2	2026

Abstract: According to the Theory of Embodiment, individuals process their and others' emotional experience (real and fictional) using their own bodily experience and sensations. This paper explores A K Ramanujan's works in the light of the Theory of Embodiment developed within the discipline of cognitive linguistics and cognitive psychology. Ramanujan's poetry was shaped by his view that the mind and the body come together to cognize the world. This view aligns with the Theory of Embodiment. Therefore, the paper analyzes Ramanujan's poetics by juxtaposing it with the three fundamental concepts that make the Theory of Embodiment—mind-body connection, process of categorization, simulation and projection— and examines how the poems of Ramanujan are exemplars of the fundamentals of this theory. A study of this kind is essential to form a strong theoretical base for further cognitive linguistic studies of not only Ramanujan's works but also other Indian writings in English.

Sl. No	Article	Author	Source	Year
5	Insidious and Transgenerational Trauma in Nitasha Kaul's Future Tense	<i>Swati Patil and Sukanya Saha</i>	The IUP Journal of English Studies Vol: 21, No :2	2026

Abstract: Trauma, an unprepossessing phenomenon, would require exploring and understanding the pathology of the wounded and listening to the story voiced by the psyche. Early propagators of psychoanalysis and the trauma theory have always embarked on language and narrative to churn out the developments of the wounded mind. For the inhabitants of Kashmir, trauma is a set

entity enveloping generations with such magnitude that it remains with the traumatized and passes on to the next generation to create a mitosis of traumatic symptoms. This paper addresses the trauma environment in Kashmir and the consequent insidious trauma mirrored in the characters of Nitasha Kaul's *Future Tense*. The novel is an embankment between the fictional characters in *Future Tense* and the actual incidents that had haunted the people of Kashmir for many years. Focus has also been laid on the psychological and physiological aspects of trauma and its corresponding neurosis by drawing a congruence between the psychoanalysis theories and the narrative of *Future Tense*.

Sl. No	Article	Author	Source	Year
6	Identity Fluidity, Hybridity, and Third Space in H M Naqvi's <i>Home Boy</i>	<i>Yasir Ahmed and Shahila Zafar</i>	The IUP Journal of English Studies Vol: 21, No :2	2026

Abstract: Although the notion of identity has sociopolitical and historical aspects of life embedded in it, it is not fixed; it fluctuates in response to variables like location and culture, as the identity of an individual or a group is closely associated with different sociopolitical aspects. This paper explores the process of formation and transformation of the identity of diasporic characters in H M Naqvi's novel *Home Boy*, which recounts the lives of Muslim migrants in the US in the aftermath of the 9/11 attacks. The formation and transformation of identity takes place both at the physical and psychological levels. The consequences of the 9/11 attacks on the Twin Towers, while exposing these characters' hybrid identities, also transform them from New Yorkers to their indigenous identity, implying remigration.

Sl. No	Article	Author	Source	Year
7	Intertextual and Metafictional Elements in Shashi Tharoor's The Great Indian Novel	<i>Aremanda Tushara and Baiju Krishnan</i>	The IUP Journal of English Studies Vol: 21, No :2	2026

Abstract: This paper explores the connections between mythological characters and Indian freedom fighters in Shashi Tharoor's The Great Indian Novel, examining how this intertextuality contributes to the novel's narrative complexity and postmodernist approach. It also investigates the narrative strategies Tharoor employs to convey themes related to Indian history and mythology. For this purpose, the study adopts a qualitative approach, focusing on detailed textual analysis and interpretation to understand the intertextual and metafictional elements in Tharoor's novel. By analyzing these elements, the study throws light on how Tharoor engages with postmodern literary theories and constructs a unique literary landscape. The findings of this paper illustrate how Tharoor re-imagines mythological characters as Indian freedom fighters like Mahatma Gandhi, Jawaharlal Nehru, Subhash Chandra Bose, and Indira Gandhi, and how these reinterpretations create multiple layers of meaning, subverting conventional narrative frameworks in line with postmodernist ethos.

Sl. No	Article	Author	Source	Year
8	Reading the Ritualistic Mime in Act Without Words I Through the Lens of Artaudian Cruelty	<i>Daniel Dabitlang M Cajee and Nabamita Das</i>	The IUP Journal of English Studies Vol: 21, No :2	2026

Abstract: This paper presents a critical reevaluation of Samuel Beckett's debut mime, Act Without Words I (1956), through the theoretical lens of Antonin Artaud's "Theater of Cruelty". While Beckett's works are frequently categorized within the "Theater of

the Absurd”, this study argues that the play’s radical reduction of drama to its primal elements—movement, objects, and silence—finds its deepest resonance in Artaudian ritual. By discarding the common medium of language, Beckett creates a ritualistic space where the protagonist is subjected to a series of physical and psychological constraints dictated by an indifferent, invisible force. The analysis explores the “geometry of the desert” and the “malice of objects”—specifically the carafe, cubes, and tree—as active agents of a cosmic cruelty that Artaud defined not as physical violence, but as a “rigorous necessity”. Through a close reading of the play’s rhythmic failures and sensory stimuli, such as the shrill whistle and “dazzling light”, this paper demonstrates how Beckett’s mime functions as an Artaudian laboratory of human suffering. Ultimately, the study posits that Beckett utilizes these techniques to bypass the intellect and strike directly at the spectator’s nervous system, forcing a raw confrontation with the “cruelty” of being alive.

Sl. No	Article	Author	Source	Year
9	An Absurd Odyssey: Exploring Sankara Pillai’s Karutha Daivathe Thedi Through the Lens of ‘Theater of the Absurd’	<i>Manu Mohan and Smriti Singh</i>	The IUP Journal of English Studies Vol: 21, No :2	2026

Abstract: This paper delves into G. Sankara Pillai’s natakam¹, Karutha Daivathe Thedi (In Search of the Black God), positioning it within the generic framework of the Theater of the Absurd. The narrative follows the Pandavas as they undertake a profound quest in search of an enigmatic God. This pursuit is marked by existential undertones, immersing the characters in a world characterized by uncertainty, absurdity, and a ceaseless pursuit of meaning and truth. The five brothers’ search for God, their act of sacrifice, and the subsequent revelation underscore the existential quandaries that have preoccupied the genre of Theater of the Absurd. By

catapulting Karutha Daivathe Thedi into the generic framework of Theater of the Absurd, this analysis offers a comprehensive exploration of G Sankara Pillai's natakam, shedding light on the characters' existential struggles and their confrontation with the absurd. The paper invites reflection on the fundamental nature of human existence, and the pursuit of the ineffable, thereby challenging the audience to grapple with the enigma of their own existence in the presence of the unknown.

Sl. No	Article	Author	Source	Year
10	Shared and Unshared Verb Phrase-Based Bundles Between L2 and L1 Novice, and Expert Academic Writing	<i>Radika Subramaniam</i>	The IUP Journal of English Studies Vol: 21, No :2	2026

Abstract: This study unveils the shared and unshared verb phrase (VP)-based bundles across three groups' academic writing. Sketch Engine is employed as the corpus tool to generate the list of lexical bundles from three corpora (i.e., Malaysian Polytechnic Electronic Engineering Learner Corpus [MyPolyEELC], British Academic Written English [BAWE] Sub-Corpus, and Electrical and Electronic Engineering Research Articles Corpus [3ERAC]). The findings reveal that can be used to, can be seen in, and as shown in fig./figure are among the shared bundles across the three corpora, with each as the most frequently occurring verb-based lexical bundle in the respective corpus (MyPolyEELC, BAWE Sub-Corpus, and 3ERAC). More shared bundles are found between native novice and expert writing in the list of the top 100 most frequently occurring VP-based bundles in all three corpora. The unshared bundles, which are unique to native and expert writing, are apt for pedagogical recommendations in English for Academic Purposes (EAP) classrooms for second-language learners. The analyses have also uncovered variations across the corpora, demonstrating

more conversation-like registers in the use of VP-based bundles in L2 learner writing, compared to academic prose, unlike the other two groups of writings.

Sl. No	Article	Author	Source	Year
1	Transactional Leadership and Knowledge Management Among Administrative Staff: Lessons from Uganda's Public Universities	<i>Mary B Muhenda and Everest Turyahikayo</i>	The IUP Journal of Knowledge Management Vol: 24, No :2	2026

Abstract: This study examines the influence of transactional leadership on knowledge transfer in Uganda's public universities. Using a cross-sectional survey design, based on a sample of 66 respondents, the study investigates how a structured, performance-driven leadership style shapes employees' engagement in knowledge sharing, storage, and application. Regression analysis is applied and a regression model is developed, which yields an adjusted R^2 of 0.580. This implies that transactional leadership explains 58.0% of the variation in knowledge management practices. The findings indicate that leaders' emphasis on performance monitoring and structured incentives significantly enhance participation in knowledge management activities. This approach supports both tacit knowledge, derived from experience and informal interactions, and explicit knowledge, which is documented and codified. The study proposes a model demonstrating how transactional leadership facilitates effective knowledge transfer by aligning employee actions with institutional expectations. These findings offer both theoretical and practical insights into how reward-based leadership approaches can strengthen knowledge management in formal organizational settings.

Sl. No	Article	Author	Source	Year
2	Indigenous Knowledge-Driven Climate-Smart Agriculture: Farmers' Adaptive Strategies in Bangladesh	<i>Prabal Barua</i>	The IUP Journal of Knowledge Management Vol: 24, No :2	2026

Abstract: Agricultural systems in drought-prone regions of Bangladesh face increasing vulnerability due to erratic rainfall, groundwater depletion, and rising temperature stress. While climate-smart agriculture (CSA) has been promoted as a strategic response to climate variability, limited attention is being paid to the foundational role of indigenous knowledge (IK) in shaping adaptive agricultural practices. This study investigates how indigenous farming knowledge systems contribute to climate-smart adaptation in drought-affected northwest Bangladesh. Using a mixed-methods approach comprising household surveys (n = 300+), focus group discussions, participatory rural appraisal, and key informant interviews, the study identifies locally-embedded practices, viz., soil moisture conservation techniques, traditional seed preservation, mixed cropping, seasonal forecasting based on ecological indicators, and community based water management. The findings reveal that indigenous practices significantly enhance adaptive capacity, stabilize yields under water stress, and reduce dependency on external inputs. The indigenous knowledge management (IKM) matrix developed in this study reveals strong alignment between traditional practices and the three pillars of CSA—productivity, adaptation, and environmental sustainability. Rather than functioning as isolated coping strategies, these practices represent structured resilience building systems embedded within local socioecological networks. The study argues that integrating IK with formal climate adaptation policies, extension services, and agricultural innovation platforms is essential for sustainable climate resilience in Bangladesh’s drought hotspots. Recognizing and institutionalizing local knowledge systems can strengthen long-term adaptive capacity while preserving sociocultural legitimacy in agricultural transformation processes.

Sl. No	Article	Author	Source	Year
3	The Imperative of Documenting Organizational Knowledge Through Blockchain Technologies	<i>Hassan Torabi, Mohammad Reza Zahedi*and Masoud Haghi</i>	The IUP Journal of Knowledge Management Vol: 24, No :2	2026

Abstract: Knowledge documentation is essential for safeguarding an organization’s intellectual capital; however, conventional documentation approaches are often hindered by concerns related to data integrity, security, and traceability. To address these challenges, this study proposes a blockchain-enabled framework for knowledge documentation within Amnpardaz Software Company, Tehran, Iran. Adopting a qualitative case study design, data were collected through semi-structured interviews with 15 domain experts, while the proposed architecture was assessed using the Architecture Tradeoff Analysis Method (ATAM). The results indicate that integrating the InterPlanetary File System (IPFS) with blockchain-based smart contracts for hash registration significantly strengthens document authenticity, enhances security, improves traceability, and supports long-term system sustainability. The proposed framework provides a practical foundation for implementing secure, transparent, and dependable knowledge documentation systems in technology-oriented organizations.

Sl. No	Article	Author	Source	Year
1	China's South Asia Policy: Geopolitical Overtures in India's Immediate Neighborhood	<i>Madan Yadav</i>	The IUP Journal of International Relations Vol: 24, No :2	2026

Abstract: The paper critically examines China's evolving geopolitical strategy in South Asia and its implications for regional stability, power dynamics, and India's strategic interests. It analyzes the key instruments of Chinese foreign policy, particularly the Belt and Road Initiative (BRI), military diplomacy, soft power diplomacy and bilateral relations with countries of South Asia and their critical views on the geopolitical environment of South Asia and the regional policies of China. During Indian military's "Operation Sindoor" in 2025, global media reported that China strategically favored Pakistan against India. This underscores the need for India to be more active in terms of multilateral relations and create global and regional discourses on strategic sovereignty and sustainability to counter China.

Sl. No	Article	Author	Source	Year
2	Pakistan's Strategic Alignment with China and the Western Himalayan Security Environment: Implications for India	<i>Sachin Jaggi and Parmjit Singh Kang</i>	The IUP Journal of International Relations Vol: 24, No :2	2026

Abstract: Pakistan's growing strategic partnership with China has become a key element in the evolving security situation in the Western Himalayas and India's threat assessment. This paper analyzes the development and strengthening of the China-Pakistan partnership, encompassing military collaboration, nuclear and missile cooperation, and economic integration via the China-

Pakistan Economic Corridor (CPEC), and the alleged presence of the People’s Liberation Army (PLA) in Pakistan-occupied Kashmir (PoK). It contends that Pakistan serves not just as China’s regional partner but also as a strategic enabler for Beijing’s expansive geopolitical aspirations in South Asia and the Himalayan frontier. The paper examines how these changes exacerbate India’s security concerns, encompassing the hazards of a two-front contingency, the erosion of territorial sovereignty, and the formation of new strategic chokepoints along vital high-altitude borders. Utilizing a diverse array of primary and secondary sources, the paper analyzes India’s military, infrastructural, and diplomatic responses and the adequacy of these measures in addressing the increasing balance of power. The analysis indicates that the China-Pakistan axis presents a long-term structural challenge for India, necessitating ongoing strategic adaptation, improved deterrence, and a measured diplomatic stance.

Sl. No	Article	Author	Source	Year
3	Shifting Global Order: The New Normal?	<i>Sangit Sarita Dwivedi and Shikha Gupta</i>	The IUP Journal of International Relations Vol: 24, No :2	2026

Abstract: The concept of ‘New World Order’ has evolved significantly over time, reflecting the shifts in global power dynamics, economic structures and geopolitical alliances. The paper assesses the role of predominant nations, such as the US, China, Russia, the European Union (EU), and India, in shaping the evolving geopolitical framework. It is an attempt to understand the cause-and-effect relationship of current global events to have a crystal-clear understanding of the pattern of global order and the shift. The paper concludes that the gamut of global shift is vast and yet to take its final shape. It is in its transformative phase, which is very

complex in itself. The factors behind the shift are many, which corroborates the fact that the global order is not in order and is in its churning phase.

Sl. No	Article	Author	Source	Year
1	Forecasting Analysis of Online Learning Activity Using Machine Learning Models	<i>Ricardo Rodr��-uez Jorge</i>	International Journal of Web Applications Vol: 18, No :2	2026

Abstract: The rapid expansion of digital learning ecosystems and online educational platforms has generated substantial educational interaction data that can be utilized for intelligent forecasting and educational decision making. The COVID-19 pandemic further accelerated global dependence on online learning systems, thereby increasing the need for predictive analytical frameworks capable of understanding temporal educational behavior evolution. This study presents a machine learning based forecasting framework for predicting online learning activity trends using the dataset, ‘  A....Covid-19   . Dataset on Online Learning based Web Behavior from Different Countries Before and After COVID-19. The proposed framework integrates Random Forest Regression, Extreme Gradient Boosting (XGBoost), and Support Vector Regression (SVR) for both single-country and simultaneous multi country forecasting. Comparative benchmarking was conducted using Root Mean Square Error (RMSE), Mean Absolute Error (MAE), and Mean Absolute Percentage Error (MAPE). The results demonstrate that XGBoost achieved superior forecasting performance because of its gradient-boosting optimization capability and nonlinear feature-learning efficiency. The developed framework further demonstrates the feasibility of AI-driven educational forecasting for large scale educational trend

monitoring, digital infrastructure planning, and intelligent online learning analytics. The study also identifies several research directions involving explainable AI, deep learning forecasting architectures, and ethical educational intelligence systems.

Sl. No	Article	Author	Source	Year
2	Requirement Traceability and Intelligent Test Selection for Industrial IoT Systems	<i>Pit Pichappan</i>	International Journal of Web Applications Vol: 18, No :2	2026

Abstract: Industrial Internet of Things (IIoT) systems underpin modern smart manufacturing, yet their heterogeneous, interconnected architectures pose significant challenges for regression testing and software validation. This study proposes a requirement-aware intelligent regression test prioritization framework designed to enhance fault detection efficiency and testing scalability in IIoT environments. The framework integrates requirement traceability analysis, multi-factor prioritization scoring, and optimization-driven test selection to dynamically order regression test cases based on fault detection capability, execution time, requirement criticality, and interface complexity. Empirical evaluation using a GSM2017 Mobile IoT dataset comprising 51 requirements and 41 test cases demonstrates that the proposed Dynamic Prioritization strategy achieves superior performance across multiple metrics: Average Percentage of Fault Detection (APFD) of 0.92, runtime reduction of 44.14%, fault coverage of 96%, and requirement coverage retention of 98.04%. Statistical validation via Wilcoxon Signed-Rank and Friedman tests confirms the significance of observed improvements. Convergence analysis indicates that Genetic Algorithm and Simulated Annealing metaheuristics effectively balance exploration and exploitation in large-scale test suite optimization. Feature importance analysis reveals fault detection capability as the dominant prioritization factor, while Pareto optimization demonstrates achievable trade-

offs between execution efficiency and verification completeness. Machine learning classification using XGBoost and Neural Networks further validates the framework’s capacity for autonomous, AI-driven test prioritization. Collectively, these findings establish a robust, scalable methodology for intelligent IIoT regression testing that supports requirement traceability, adaptive prioritization, and statistically verified performance gains, advancing the state of software validation in Industry 4.0 ecosystems.

Sl. No	Article	Author	Source	Year
3	Predictive AI Frameworks for Digital Inclusion, Infrastructure Maturity, Data Accessibility, and Identity System Effectiveness: A Unified Framework	<i>Hathairat Ketmaneechairat</i>	International Journal of Web Applications Vol: 18, No :2	2026

Abstract: Digital transformation has become a fundamental requirement for socioeconomic development, governance modernization, and inclusive service delivery across nations. However, substantial disparities remain in digital inclusion, infrastructure maturity, data accessibility, and the effectiveness of identity systems between developed and developing economies. This paper presents a unified, journal-ready predictive artificial intelligence (AI) framework that integrates machine learning, deep learning, explainable AI, federated learning, and multi-criteria decision analysis (MCDA) techniques to enable a comprehensive assessment of digital transformation. The proposed framework consolidates ten interconnected predictive architectures into a coherent analytical pipeline that forecasts digital inclusion trends, infrastructure readiness, accessibility inequalities, and the effectiveness of national digital identity. The study utilizes cross-country panel data spanning multiple years and integrates predictive modeling techniques such as Random Forest, XGBoost, CatBoost, Long Short-Term Memory (LSTM) networks, Temporal

Fusion Transformers, Graph Neural Networks, and federated optimization methods. In addition, the framework incorporates AHP-TOPSIS-VIKOR decision mechanisms for global digital readiness ranking and explainable AI modules using SHAP and LIME for transparent policy interpretation. The proposed system enables country-level forecasting, inequality detection, infrastructure maturity classification, governance optimization, and long-term strategic policy simulation. The paper further discusses statistical analyses, visualization strategies, geospatial mapping, and dashboard architectures that can be generated from the framework. The integrated methodology provides a scalable and interpretable foundation for AI-assisted smart governance, sustainable digital transformation, and evidence-based digital policy planning.

Sl. No	Article	Author	Source	Year
1	Statistical and Predictive Evaluation of Cybersecurity Threat Dynamics and System Response Latency	<i>Martin Lopez Nores</i>	Journal of Information Security Research Vol: 17, No :2	2026

Abstract: The rapid evolution of cyber threats has exposed the limitations of traditional, reactive cybersecurity frameworks, necessitating data driven and adaptive defense mechanisms. This study investigates the dynamics between threat characteristics and system response latency through a comprehensive statistical and predictive analysis of 1,000 cybersecurity incident records. Employing chi-square tests, correlation analyses, effect size measurements, and Ridge regression modeling, the research evaluates how variables such as threat severity, access level, and detection status influence breach occurrence and response time. Results reveal that threat severity and privilege levels exhibit negligible associations with breach likelihood and response latency, challenging conventional risk prioritization assumptions. Instead, threat detection status emerges as the dominant predictor of

response time ($n\hat{A}^2 i, \gg 0.76$), indicating that current systems operate primarily on reactive, event triggered paradigms rather than proactive, severity aware mechanisms. Furthermore, the analysis identifies critical data quality challenges, including zero inflated response time distributions and timestamp induced feature leakage, which artificially inflate predictive metrics and compromise model generalizability. These findings underscore a significant gap between theoretical cybersecurity frameworks and practical system behavior. The study concludes that enhancing threatdetection accuracy, implementing rigorous data-preprocessing protocols, and integrating meaningful temporal and contextual features are essential for developing robust, proactive cybersecurity architectures. Future research should prioritize real world dataset validation and advanced machine learning techniques to overcome current analytical constraints.

Sl. No	Article	Author	Source	Year
2	Beyond the Mean: Quantile-Based Statistical Characterization of Network Response Time for Cyber Threat Severity Assessment and Intrusion Detection	Duong Van Hieu	Journal of Information Security Research Vol: 17, No :2	2026

Abstract: Traditional cyber risk assessment and intrusion detection systems frequently rely on mean based statistical summaries, which inadequately capture the extreme events and heavy tailed distributions inherent in network traffic. This study introduces a quantile based analytical framework to characterize network response time as a robust indicator of cyber threat severity. Utilizing a comprehensive real world dataset comprising over 211,000 network flows, we evaluate response time distributions across threat severity levels, detection statuses, attack categories, and temporal dynamics. The analysis reveals pronounced rightskewness, zero

inflation, and substantial variance in response times, rendering average-based metrics insufficient. Quantile based comparisons demonstrate that high severity threats are distinguished not by typical interaction durations but by significantly elevated upper quantiles, reflecting prolonged, complex attack behaviors. Furthermore, detection systems exhibit higher efficacy against long duration sessions, highlighting potential blind spots for transient or stealthy attacks. Temporal analysis further confirms the bursty, clustered nature of malicious activity. By shifting focus from central tendency to distributional tail behavior, this quantile driven approach provides a more nuanced and accurate foundation for severity assessment and anomaly detection. The findings underscore the necessity of integrating robust statistical modeling with machine learning frameworks to enhance cyber defense capabilities. Future research will prioritize real time implementation, model interpretability, and validation across diverse operational networks to ensure scalable and practical deployment in dynamic threat landscapes.

Sl. No	Article	Author	Source	Year
3	Performance-Based Clustering of Android Devices Through Cryptographic Benchmark Profiling: An Unsupervised Learning Approach to Security-Aware Device Characterization	<i>Simon James Fong</i>	Journal of Information Security Research Vol: 17, No :2	2026

Abstract: The proliferation of Android devices across diverse hardware architectures and software configurations introduces significant variability in cryptographic execution performance, directly impacting security readiness and protocol optimization. Despite extensive research on cloud security and malware detection, device-level computational heterogeneity remains

underexplored. This study presents an unsupervised learning framework to characterize Android devices based on their intrinsic cryptographic benchmark profiles. Analyzing a curated dataset of 17 devices across 140 cryptographic timing features, we apply log transformation, standardization, and Principal Component Analysis (PCA), which captures 77.4% of variance in two dimensions. Three clustering algorithms K-means, hierarchical clustering, and DBSCAN are systematically evaluated. Results reveal a natural three-tier performance stratification, with K-means providing the most interpretable partition (Silhouette score: 0.325). Feature importance analysis demonstrates that public-key operations, particularly ECDSA and large-key RSA benchmarks, are the primary performance differentiators due to their computational intensity and sensitivity to hardware acceleration. Hierarchical analysis confirms this macro-structure and highlights gradual performance transitions among boundary devices, while DBSCAN effectively identifies tight local similarities. These findings establish a methodological foundation for performance-aware security assessment, enabling dynamic cryptographic parameter selection, optimized resource allocation, and targeted threat modeling. Furthermore, the framework is extended with proposed anomaly detection techniques for fine grained security monitoring. Ultimately, this research underscores the critical need for hardware aware intelligence in mobile cybersecurity, bridging device-level performance profiling with adaptive security analytics across heterogeneous Android ecosystems.

Sl. No	Article	Author	Source	Year
1	Effect Of Naphthalene-Based Superplasticizer Addition Time On The Flowability And Early-Age Strength Of Cement Mortar- A Technical Note	<i>Rameez Ali Khan, Harshini. Shankar, Poojasri. P, Vigneshwaran. R</i>	I-manager's Journal on Chemical Sciences Vol: 6, No :1	2026

Abstract: The performance of cementitious materials is strongly influenced by the effectiveness of chemical admixtures during hydration. Among these, naphthalene-based superplasticizers are widely used to improve workability without increasing water content. While considerable research has focused on optimizing admixture dosage, the influence of the timing of superplasticizer addition has received comparatively less attention. This study investigates the effect of delayed addition of a naphthalene-based superplasticizer on the workability and early-age compressive strength of cement mortar. Mortar mixes were prepared using OPC 43 grade cement, M-sand, water, and a naphthalene-based superplasticizer, which was introduced at delay periods of 0, 2, 4, 6, 8, 10, and 12 min after the commencement of mixing. Workability was evaluated using flow table tests, while 5-day compressive strength was determined for selected mixtures. The results showed that flowability increased from 120 mm for immediate addition to a maximum of 145 mm at an addition time of 8 min, followed by a decline to 105 mm at 12 min. Similarly, the 5-day compressive strength increased from 20.0 MPa for immediate addition to 24.2 MPa at a 10 min delay, representing an improvement of approximately 21%. The observed behaviour is attributed to enhanced cement particle dispersion and improved hydration efficiency resulting from delayed admixture addition. The findings demonstrate that the timing of superplasticizer incorporation is an important parameter influencing both the fresh and hardened properties of cement mortar and should be considered alongside admixture dosage in mix design and production practices.

Sl. No	Article	Author	Source	Year
2	Enhancing Grade Ix Students' Proficiency In Iupac Nomenclature Of Basic Organic Compounds Through Puzzle-Based Learning At Sarpang Middle Secondary School	<i>Sonam Choden</i>	I-manager's Journal on Chemical Sciences Vol: 6, No :1	2026

Abstract: Grade IX students at Sarpang Middle Secondary School often struggle with the abstract rules of International Union of Pure and Applied Chemistry (IUPAC) nomenclature in organic chemistry, leading to low proficiency and motivation. This action research aims to enhance students' understanding and skills to provide IUPAC names to basic organic compounds by implementing Puzzle-Based Learning (PBL). A mixed method approach was used, collecting quantitative data from pre-and post-test scores and Likert-scale surveys, and qualitative data from open-ended surveys and classroom observations. The findings showed that PBL was effective in improving students' proficiency in naming organic compounds according to IUPAC rules. Furthermore, the qualitative data revealed that students were more engaged, motivated, and confident in learning through puzzles compared to traditional lecture methods. The study concludes that using puzzles as a teaching strategy can make learning chemistry more interesting and meaningful. Therefore, it is recommended that chemistry teachers incorporate PBL in teaching IUPAC nomenclature to help students develop better understanding and gaining skills to name basic organic compounds by following IUPAC rules.

Sl. No	Article	Author	Source	Year
3	Biodiesel Synthesis and Fuel Property Analysis of Produced Biodiesel		I-manager's Journal on Chemical Sciences Vol: 6, No :1	2026

Abstract: The growing demand for energy and the rapid depletion of fossil fuel reserves have intensified the search for renewable and sustainable alternative fuels. Biodiesel has emerged as a promising substitute for conventional diesel due to its biodegradability, non-toxicity, and lower exhaust emissions. In the present work, biodiesel was produced from non-edible oil extracted from *Thevetia peruviana* (yellow oleander) seeds, which are abundantly available in tropical and subtropical India and do not compete with food resources. Oil extraction was carried out using the solvent extraction method with hexane (AR Grade), yielding an average oil extraction of approximately 38% from multiple experimental runs. The extracted oil exhibited a free fatty acid (FFA) value of 11.7 mgKOH/g and a moisture content below 0.5%. Biodiesel production followed a two-step process: acid esterification (Step 1) using methanol and sulphuric acid (99% pure) as acid catalyst to reduce FFA to 0.36 mgKOH/g, followed by alkaline transesterification (Step 2) using sodium methoxide (99% pure) as catalyst. The main advantage of sodium methoxide over sodium hydroxide or potassium hydroxide is its virtually water-free character, which avoids saponification side reactions. An overall biodiesel yield of 93% was achieved after systematic optimization of molar ratio, catalyst concentration, reaction temperature, and reaction time. The process was repeated three times to confirm repeatability. Key fuel properties evaluated include density, kinematic viscosity, flash point, cloud point, pour point, carbon residue, copper strip corrosion, acid value, free glycerin, total glycerin, and calorific value. The ester yield was calculated by dividing the ester mass by the mass of pretreated oil. All measured properties were found to be within the limits of ASTM D6751 and IS 15607:2005 specifications, demonstrating the viability of *Thevetia peruviana* biodiesel as an alternative fuel for compression ignition engines.

Sl. No	Article	Author	Source	Year
4	The Era Of Synthesis Of Metallic Nanoparticles Using Medicinal Plants	<i>Neha Prakash Sase, Jidnyasa Jaywant Durge, Shanmukh Sunil Joshi, Prathmesh Sunil Joshi</i>	I-manager's Journal on Chemical Sciences Vol: 6, No :1	2026

Abstract: Nanotechnology has emerged as one of the most rapidly advancing fields in modern science, offering significant opportunities in biomedical research and the development of innovative therapeutic strategies. This review focuses on the utilization of medicinal plants as natural and eco-friendly resources for the green synthesis of metallic nanoparticles and highlights their diverse biomedical applications. The increasing prevalence of multidrug-resistant (MDR) pathogens and the declining effectiveness of conventional antibiotics have created an urgent need for safer, sustainable, and more efficient alternatives. In this regard, plant-mediated nanoparticle synthesis has attracted considerable attention due to its simplicity, low cost, biocompatibility, and environmentally benign nature. Various nanoparticle synthesis techniques, including sol–gel, polyol, microemulsion, and hydrothermal methods, are discussed with emphasis on their principles, advantages, and limitations. Among these approaches, green synthesis using plant extracts has emerged as a promising strategy because naturally occurring phytochemicals act as reducing and stabilizing agents, eliminating the requirement for toxic chemicals. Several medicinal plants, such as *Tribulus terrestris*, *Mentha piperita*, *Cissus quadrangularis*, and *Rosmarinus officinalis*, have demonstrated remarkable potential in synthesizing nanoparticles possessing significant antimicrobial, antioxidant, anticancer, and anti-inflammatory activities. Furthermore, the integration of traditional medicinal systems, particularly Ayurveda, with advanced nanotechnology provides a novel and holistic approach for addressing current healthcare challenges and developing next-generation therapeutic solutions. This review emphasizes the pivotal role of medicinal plants in sustainable nanoparticle synthesis and underscores their immense potential in enhancing biomedical

applications, combating antimicrobial resistance, and contributing to the development of safe, effective, and environmentally responsible healthcare technologies for the future.

Sl. No	Article	Author	Source	Year
5	From Molecules to Medicines: Structure, Manufacturing Technologies, and Global Evolution of the Pharmaceutical Industry	<i>Bondili Sadhana</i>	I-manager's Journal on Chemical Sciences Vol: 6, No :1	2026

Abstract: The pharmaceutical industry represents one of the most research-intensive and technologically advanced sectors of modern healthcare, playing a pivotal role in the discovery, development, manufacturing, regulation, and global distribution of medicines. Over the past century, the industry has evolved from traditional plant-based remedies and small-scale chemical production into a highly sophisticated ecosystem integrating pharmaceutical sciences, biotechnology, artificial intelligence (AI), data analytics, advanced manufacturing, and regulatory science. Major scientific milestones, including the discovery of antibiotics, vaccines, recombinant DNA technology, monoclonal antibodies, and nanotechnology-based drug delivery systems, have significantly transformed therapeutic practices and improved global health outcomes. The pharmaceutical industry has also undergone substantial organizational and technological changes, driven by increasing healthcare demands, stringent regulatory requirements, globalization of supply chains, and rapid digital transformation. Emerging innovations such as AI-assisted drug discovery, messenger RNA (mRNA) therapeutics, gene editing technologies, digital therapeutics, continuous manufacturing, and personalized medicine are reshaping traditional pharmaceutical development paradigms and accelerating the transition toward precision healthcare. India has emerged as a major global pharmaceutical hub, supplying a significant proportion of generic

medicines and vaccines worldwide. The growth of the Indian pharmaceutical sector has been supported by favorable policy reforms, strong manufacturing capabilities, scientific expertise, and increasing investments in research and development. This review critically examines the historical evolution, organizational structure, manufacturing technologies, regulatory frameworks, emerging innovations, and future directions of the pharmaceutical industry. Furthermore, current challenges including rising research costs, regulatory complexity, supply-chain vulnerabilities, counterfeit medicines, and technological adoption barriers are discussed. Understanding these developments is essential for guiding future pharmaceutical innovation and ensuring equitable global access to safe, effective, and affordable medicines.

Sl. No	Article	Author	Source	Year
1	Development and Comprehensive Analysis of a Synthetic Power Thermal Dataset for AI-Driven ECU Design Optimization and Risk Classification	<i>Ricardo Rodr��-guez Jorge</i>	Journal of Electronics System Vol: 16, No :3	2026

Abstract: The increasing complexity of automotive Electronic Control Units (ECUs) demands integrated design approaches that simultaneously address electrical performance, thermal reliability, functional safety, and real time validation. However, the scarcity of public multi-physics datasets has hindered the development of AI-driven optimization frameworks capable of unifying these competing objectives. This study presents the development and comprehensive analysis of a synthetic power thermal dataset for AI-driven ECU design optimization and risk classification. The dataset, generated through physics-informed simulations, comprises over 15 electrical, thermal, and composite variables representing realistic ECU operating conditions. Through extensive statistical

testing, regression modeling, and correlation analysis including Pearson and Spearman correlations, linear and polynomial regression, and multi-collinearity assessment we identify the dominant physical drivers of thermal stress and risk behavior. Results reveal that while voltage and electrical resistance exhibit negligible influence on current variation and IR drop ($R^2 = 0.000461$, $p = 0.0205$), Power Density, Current, and total Power are the paramount factors dictating temperature rise and thermal stress, with Current exhibiting a very strong correlation with Thermal Stress ($r = 0.810$). The proposed closed loop Hardware in the Loop (HIL) integrated AI pipeline incorporating multi-task learning, FPGA accelerated inference, and physics informed neural networks enables simultaneous multi class risk classification and predictive thermal modeling. This work provides a foundational benchmark for next generation ECU design, indicating that physics aware synthetic datasets, combined with hybrid AI architectures, can effectively support real time, safety compliant optimization while reducing development costs and physical prototyping requirements.

Sl. No	Article	Author	Source	Year
2	Empirical Noise Profiling and Dimensionality Reduction of Raw Triaxial Acceleration Data in Consumer-Grade MEMS Sensors	<i>Hajar Ait Lamkademe</i>	Journal of Electronics System Vol: 16, No :3	2026

Abstract: Consumer grade Micro Electro Mechanical Systems (MEMS) accelerometers are ubiquitous in autonomous navigation platforms but remain susceptible to inherent stochastic noise and deterministic biases. This study presents a comprehensive empirical noise profiling and dimensionality reduction analysis of raw, high-frequency triaxial acceleration data acquired from an MPU-6050 sensor under controlled, static conditions. A continuous dataset comprising 37,459 samples was captured using a

Raspberry Pi Pico microcontroller. The analytical framework employed descriptive statistics, dual method anomaly detection (Interquartile Range and Z-score), and Principal Component Analysis (PCA) to rigorously evaluate signal integrity and multivariate covariance structures. Statistical profiling revealed a significant factory bias offset along the X axis (approximately 1,432 LSB) and an elevated, independent noise floor along the Z-axis (standard deviation of 493.2 LSB), in contrast to the stable, gravity aligned Y-axis. Furthermore, anomaly detection highlighted transient data corruption events, likely stemming from IÂ²C communication glitches or power fluctuations. Crucially, PCA demonstrated that 75.1% of the total dataset variance is captured by the first two components: PC1 captures shared systemic noise across the X and Y axes and magnitude error, while PC2 isolates the distinct, orthogonal dynamics of the Z-axis. These findings validate the efficacy of PCA-based dimensionality reduction and targeted, axis specific filtering. By projecting high dimensional sensor streams onto principal components, resource constrained embedded systems can achieve substantial computational savings while preserving essential signal characteristics, ultimately facilitating the development of resilient, self calibrating inertial navigation algorithms.

Sl. No	Article	Author	Source	Year
3	High-Resolution Smart Meter Load Forecasting in Morocco: Model Performance, Diagnostics, and Interpretability Analysis for LaÃŸyoune Zone 1	<i>Hajar Ait Lamkademe</i>	Journal of Electronics System Vol: 16, No :3	2026

Abstract: Accurate short-term load forecasting is essential for the efficient and reliable operation of modern smart grids. This study develops and comprehensively evaluates a high-resolution, interpretable load forecasting framework using 10-minute smart meter

data from Laâ€œyoune Zone 1, Morocco. To capture complex temporal dependencies, we engineered advanced features, including lag variables, rolling statistics, and cyclical time encodings. Multiple machine learning models were systematically compared, with the Random Forest (RF) ensemble achieving the best overall performance (RMSE: 5.42, R^2 : 0.87), effectively capturing nonlinear demand dynamics. Notably, the unexpectedly strong performance of the Persistence baseline highlighted the significant short-term autocorrelation inherent in high-frequency residential and industrial load data. Multi-step forecast horizon analysis revealed exceptional accuracy for 10 to 60 minute predictions, making the models highly suitable for real-time grid balancing and transformer management, although uncertainty gradually accumulates beyond two hours. Residual diagnostics further confirmed minimal systematic bias and stable model behavior across varying demand conditions. Furthermore, SHAP-based interpretability analysis confirmed that recent lagged load measurements and temporal indicators are the primary drivers of predictions, overcoming the traditional “black-box” limitations of machine learning. Ultimately, this explainable ensemble framework provides a robust, transparent, and computationally efficient tool for utility operators, facilitating demand response, anomaly detection, and sustainable energy management in modern smart grid environments.

Sl. No	Article	Author	Source	Year
1	Latency and Factual Accuracy in Generative AI: An Empirical Analysis of Model Performance, User Satisfaction, and the Role of Prompt Complexity	<i>Pit Pichappan</i>	Journal of Data Processing Vol: 16, No :3	2026

Abstract: The rapid deployment of Generative Artificial Intelligence (GenAI) and Large Language Models (LLMs) necessitates a careful balance between computational efficiency, factual accuracy, and user satisfaction. While existing research often evaluates these dimensions in isolation, this study proposes an integrated empirical framework to analyze their combined influence on overall GenAI performance. Utilizing a dataset of 1,000 simulated AI usage sessions across six state of the art models (e.g., Claude 3.7, GPT-4o, Llama 3.1) and diverse application domains, we conducted correlation analyses, Ordinary Least Squares (OLS) regression, and statistical validation tests. Results indicate that prompt length is the dominant positive predictor of response latency, significantly outweighing the impact of decoding hyperparameters like temperature and Top-P. Among the evaluated models, Claude 3.7 demonstrated the optimal balance, achieving the highest success rate and user satisfaction alongside a comparatively low hallucination rate. Notably, task-specific analysis revealed that while translation tasks yielded the highest reliability, Retrieval-Augmented Generation (RAG) tasks exhibited unexpectedly high hallucination rates, suggesting that retrieval augmentation alone does not guarantee factual grounding. Furthermore, statistical validation confirmed the superiority of a proposed multi-layered “Double Lock” guardrail framework over baseline regex methods. Ultimately, this study indicated that concise prompt engineering and task specific model selection are more critical for optimizing LLM deployment than model identity alone, providing actionable insights for developing reliable, user centric AI systems.

Sl. No	Article	Author	Source	Year
2	Clinical Symptom Profiles and Phenotypic Clusters in Familial vs. Sporadic Neurofibromatosis Type 1: A Comprehensive Exploratory Analysis of the UCI NF1 Dataset	<i>Hsing-Cheng Liu, Yao-Liang Chung</i>	Journal of Data Processing Vol: 16, No :3	2026

Abstract: Neurofibromatosis type 1 (NF1) exhibits significant phenotypic heterogeneity, yet comprehensive exploratory analyses comparing familial and sporadic forms remain limited. This study investigated clinical symptom distributions and identified latent phenotypic clusters using the UCI NF1 dataset comprising 331 probands. We employed descriptive statistics, correlation analyses, symptom co-occurrence networks, UpSet plots, and hierarchical clustering to characterize phenotypic variability. Results revealed that café au lait spots, freckling, and Lisch nodules are the most prevalent and interconnected core manifestations. While familial (n=135) and sporadic (n=161) cases demonstrated substantial phenotypic overlap, familial cases exhibited modestly higher rates of optic glioma, skeletal dysplasia, plexiform neurofibromas, and overall tumor burden. Hierarchical clustering successfully delineated robust, biologically plausible symptom modules, including a core pigmented cluster, a neuro ophthalmic and tumor related cluster, and a skeletal and developmental cluster. These findings underscore that NF1 manifestations form distinct, highly interconnected phenotypic clusters rather than occurring randomly. Recognizing these latent subtypes can significantly enhance diagnostic stratification, optimize longitudinal surveillance, and facilitate the early identification of highrisk patients. Furthermore, we propose a conceptual multi layer clinical decision support framework integrating machine learning and explainable artificial intelligence to translate these exploratory insights into personalized precision medicine. Future prospective validation incorporating multimodal data is warranted to refine these predictive models and ultimately improve long term clinical outcomes for NF1 patients.

Sl. No	Article	Author	Source	Year
3	A Statistically Validated Large Scale Mathematical Chain of Thought Dataset for Symbolic Reasoning and Large Language Model Benchmarking	<i>Hathairat Ketmaneechairat</i>	Journal of Data Processing Vol: 16, No :3	2026

Abstract: Mathematical reasoning poses a significant challenge for Large Language Models (LLMs) due to the necessity for structured symbolic manipulation, multi step deduction, and logically consistent inference. While Chainof Thought (CoT) prompting has substantially advanced reasoning capabilities, existing datasets often lack transparent, verifiable reasoning trajectories and rigorous statistical validation. This study presents a statistically validated, large scale mathematical CoT dataset comprising approximately 100,000 samples spanning six core mathematical domains (Algebra, Geometry, Trigonometry, Matrices, Derivatives, and Integrals) and three predefined difficulty levels. The dataset preserves complete intermediate reasoning traces and final solutions in standardized LaTeX notation. We conducted comprehensive structural, descriptive, and inferential statistical analyses including Chi-square tests, Spearman's rank correlation, two-way ANOVA, and Tukey's HSD post hoc comparisons to validate the dataset's internal consistency. Results demonstrate a perfectly balanced distribution across topics and difficulties, with the mathematical topic emerging as the dominant determinant of reasoning complexity (partial $\eta^2 = 0.995$). Furthermore, the corpus exhibits rich symbolic diversity, authentic mathematical syntax, and structured command cooccurrence networks. This statistically validated corpus provides a reliable and robust benchmark for supervised fine tuning, curriculum learning, process supervision, explainable AI, and evaluating nextgeneration mathematical LLMs.

Sl. No	Article	Author	Source	Year
1	Impact of Covid-19 on Entrepreneurial Potential of Nascent Entrepreneurs: Gender-Based Evidence	<i>Chivukula Venkata Ramana and Gaurav Ashesh</i>	The IUP Journal of Entrepreneurship Development Vol: 23, No: 2	2026

Abstract: The study adopts a quantitative approach to explore how the Covid-19 pandemic affected the entrepreneurial potential and journey of nascent entrepreneurs, while examining whether the impact varied according to gender (male vs. female) and level of entrepreneurial potential (high vs. low). The study operationalizes the impact of Covid-19 across three dimensions: psychological, physiological, and professional. The key takeaways from the study are threefold. First, psychological factors have a strong impact on nascent entrepreneurs with respect to the development of entrepreneurial potential. Second, support systems and gender equality play an important role in the promotion of entrepreneurship. Third, educators and policymakers need to focus on entrepreneurial readiness, which is important in effectively tackling the challenges faced by nascent entrepreneurs.

Sl. No	Article	Author	Source	Year
2	Evolution of Literature on Entrepreneurial Intention: A Bibliometric Analysis	<i>Richa Gupta</i>	The IUP Journal of Entrepreneurship Development Vol: 23, No: 2	2026

Abstract: Entrepreneurship is preceded by entrepreneurial intention (EI). The purpose of the study is to examine the broad spectrum of research on EI and how it has evolved over a period of time. The study employs bibliometric analysis and content analysis. VOS Viewer software is used for analysis. The study considers the time period from 1972 to April, 2024 and uses Preferred

Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) review methodology. A total of 2,435 articles are used for analysis. Vos Viewer software is used to conduct the analysis. The findings of the study highlight leading authors, documents, countries, journals, universities in the field of EI. Further, overlay visualization depicts the evolution of keywords related to EI over a period of time. Moreover, five clusters are identified through network visualization. This enables the identification of key areas of interest in the field as well as the analysis of the relationship between various keywords. While previous studies focused on a specific topic within EI, this paper provides a comprehensive overview of research in the domain of EI.

Sl. No	Article	Author	Source	Year
3	Emerging Trends in Entrepreneurial Intention: A Bibliometric and Systematic Review	<i>Sanika Shylla and Kailash C Kabra</i>	The IUP Journal of Entrepreneurship Development Vol: 23, No: 2	2026

Abstract: To map the intellectual structure and emerging trends in the field of entrepreneurial intention (EI), the study combines systematic literature review and bibliometric analysis to present both quantitative and qualitative insights into this expanding domain. Using a dataset of 2,155 papers extracted from the Scopus database (2000-2025), the study analyzes the most prominent journals, authors, countries, articles and themes. Bibliometric tools such as VOSviewer were employed to visualize co-authorship networks, keyword cooccurrence, and citation impact. Additionally, content analysis was conducted on the most recent four years of publication not covered in the co-citation analysis, to synthesize current knowledge on the antecedents of EI, evaluate the theoretical framework used, and identify the gap for future research, particularly in the context of sustainability and innovation.

The findings reveal a significant rise in EI literature after 2010, with thematic clusters forming around the Theory of Planned Behavior, entrepreneurship education, and youth entrepreneurship.

Sl. No	Article	Author	Source	Year
1	Hybrid Seas: State Fragmentation and Transformation of Maritime Security in Yemen's Red Sea Corridor	<i>Harini Sridhar and Shreya Upadhyay</i>	The IUP Journal of International Relations Vol: 20, No: 3	2026

Abstract: Maritime insecurity in the Red Sea corridor has undergone a significant transformation in recent years, particularly amid Yemen's prolonged political fragmentation. In most cases, maritime security studies and theories define piracy as an economically motivated criminal activity that occurs in the context of a poor governance situation. However, the Yemeni case is more complex in terms of security dynamics with the insurgent groups, transnational smuggling networks and the international naval forces interacting with each other within the maritime space. The paper uses an exploratory qualitative approach to view how state fragmentation reshapes maritime security dynamics in the Red Sea corridor. Based on secondary data from academic literature, maritime security research papers, and conflict analyses, the study mainly looks at the relationship and the interaction between governance vacuums, actor convergence, and evolving maritime threat patterns. A framework called Hybrid Maritime Insecurity Framework is developed, which is used to explain how fragmented states give rise to the convergence of political and criminal actors and facilitate the hybridization of maritime threats. The findings suggest that maritime insecurity in the Red Sea increasingly reflects a hybrid conflict environment in which piracy, insurgency, and geopolitical competition overlap.

Sl. No	Article	Author	Source	Year
2	Russia's Endorsement and Contestation of the Liberal Order	<i>Johnson Singh Chandam</i>	The IUP Journal of International Relations Vol: 20, No: 3	2026

Abstract: The concept of liberal order is Western-oriented. As such, the mainstream narrative creates a simplistic rhetoric of non-Western powers challenging the order. Contrary to such views, this paper argues that Russia has endorsed selective elements of the liberal order. The paper is methodologically grounded in interpretive research, in which the perspectives of Russian elites on international order vis-à-vis the liberal order are analyzed. Categorizing the components of the idea of liberal order into political liberalism, economic liberalism, institutional liberalism, American hegemony, and NATO, it can be substantiated that Russia contests merely the hegemony part and the universalization of Western political liberalism, while endorsing the others on reforms basis.

Sl. No	Article	Author	Source	Year
3	India-Indonesia Relations: From Civilizational Memories to Strategic Institutional Frameworks	<i>Km Pushpa Rani</i>	The IUP Journal of International Relations Vol: 20, No: 3	2026

Abstract: India and Indonesia share an ancient civilizational linkage shaped by centuries of cultural exchange, maritime trade and religious diffusion, leaving an indelible mark on Indonesian art, architecture, language and society as a whole. In the patently visible imprints of Indian epics like the Ramayana and the Mahabharata in Javanese and Balinese cultures, the story of India still holds

relevance in Indonesian society as well as in political arena. In the contemporary Indo-Pacific landscape, this shared heritage is significantly viewed through the lens of ‘soft-power’ diplomacy. The paper examines the role of India’s cultural influence, with a focus on the aforementioned epics and monumental heritage sites, as a non-coercive tool for strengthening bilateral trust between these two old civilizations. Further, moving beyond the historical descriptions, the study identifies a ‘utilization gap’ where India’s deep cultural goodwill is often overshadowed by the material and infrastructure-led statecraft of competing regional powers like China. While discussing the cooperation between the two countries in the fields of science and technology, more specifically space technology and national security, the paper argues that memories of civilizational imprints must be integrated into institutional frameworks and diplomatic policies to achieve long-term shared goals. Ultimately, the study suggests that for soft power policies to be effective, it must transition from symbolic invocation to practical and developmental collaboration.

Sl. No	Article	Author	Source	Year
4	The 2025 Alaska Summit and Resetting US-Russia Relations for a New Global Order	<i>Madan Yadav</i>	The IUP Journal of International Relations Vol: 20, No: 3	2026

Abstract: The Alaska Summit 2025 represented a pivotal moment in US-Russia relations, testing diplomatic strategies under President Donald Trump’s second term. It marked a turning point in the developing US-Russian relationship. The summit was intended to discuss ways to rebalance bilateral ties, tackle security issues, and redefine the US’s involvement with Russia and the international system in general, all framed within the larger framework of a new global order. While deep-rooted mistrust and competing objectives limited major breakthroughs, the summit established mechanisms for dialog, confidence-building, and

incremental cooperation. The findings underscore the importance of summit diplomacy in managing great-power rivalry, shaping international norms, and influencing the evolving multipolar global order.

Sl. No	Article	Author	Source	Year
1	AI for Cybersecurity Threat Detection: A Comprehensive Review	<i>Shivam Jaiswal, Shyam Patel, Vinod Kumar S, Sahil Patel, Sagar K G and Sunena Rose</i>	The IUP Journal of Computer Sciences Vol: 20, No: 3	2026

Abstract: The rapid growth of digital technology and Internet services has increased cybersecurity risks. Both individuals and organizations face numerous cyber threats, including phishing emails, malware attacks, and network intrusions. Traditional cybersecurity tools such as firewalls and signature-based intrusion detection systems often fail to detect advanced attacks like zero-day exploits and advanced persistent threats. This review examines more than forty-seven papers related to artificial intelligence (AI)-based cybersecurity threat detection, analyzing different AI methods, evaluating their effectiveness, and highlighting the contributions of existing research. It identifies the challenges, including disconnected security solutions, limited automated response mechanisms, poor explainability, and data privacy concerns. To overcome these issues, the review proposes a unified AI-based cybersecurity framework for intelligent threat detection, automatic response systems, explainable AI (XAI) models, and privacy-preserving technologies.

Sl. No	Article	Author	Source	Year
2	Legal Document Analyzer and Lawyer Connect: An Offline AI System for Legal Guidance	<i>Palli Bhaskara Rao and Ch Roopa Devi</i>	The IUP Journal of Computer Sciences Vol: 20, No: 3	2026

Abstract: The paper presents a legal document analyzer and lawyer connect system, an AI-powered platform designed to simplify legal document analysis and provide intelligent assistance. The system performs document summarization, clause extraction, risk assessment, and case type prediction using a retrieval-augmented generation (RAG) pipeline. It also integrates a document-aware chatbot and a basic lawyer recommendation module to improve usability. The proposed system leverages local large language models executed via Ollama and uses ChromaDB for semantic retrieval, ensuring that responses are grounded in document context while maintaining full data privacy. The system operates entirely offline, eliminating dependency on cloud services and reducing operational costs. Experimental results demonstrate that the system provides accurate and structured insights with practical response times on CPU-based hardware. This work contributes to improving legal literacy and accessibility by providing a cost-effective and privacy-preserving AI solution for legal document analysis.

Sl. No	Article	Author	Source	Year
3	Counterfactual Demand Forecasting for Retail Promotions Using Bayesian Causal Forests	<i>Kaushik Bar</i>	The IUP Journal of Computer Sciences Vol: 20, No: 3	2026

Abstract: The paper proposes a Bayesian causal forest (BCF) framework to estimate the heterogeneous treatment effects (HTEs) of promotions, enabling counterfactual demand forecasting that is both personalized and uncertainty-aware. Unlike deterministic machine learning (ML) models or fixed-effects regressions, the approach leverages a Bayesian treatment of uncertainty, allowing for credible interval estimation around individual uplift predictions. The model is benchmarked using three publicly available datasets (RetailHero sales uplift dataset, Rossmann store sales dataset, and Criteo uplift prediction dataset) against widely used baselines, including S-learner, T-learner, X-learner, causal forests, and standard demand forecasting models. The results show that the proposed BCF model consistently outperforms existing methods in uplift accuracy, Qini coefficient, and uncertainty calibration error, while also providing interpretable insights into segment-level responsiveness to marketing interventions. This study demonstrates the feasibility and value of integrating Bayesian causal inference into business analytics pipelines for targeted promotional optimization.

Sl. No	Article	Author	Source	Year
4	Multimodal Pilot Fatigue Detection: A Review of Physiological Signals, Deep Learning and Explainable Human-Centric AI	<i>Prateek Karna, Rohit Mahato, Pihu Priyansa, Jyotshna Shree, Sagar K G and Yeswanth Kumar S</i>	The IUP Journal of Computer Sciences Vol: 20, No: 3	2026

Abstract: The paper synthesizes 48 peer-reviewed studies (2015-2026) selected via a PRISMA-aligned protocol across IEEE Xplore, PubMed Central, Scopus, and Google Scholar, extending a prior corpus of 38 papers with ten new contributions. New additions include a Boeing B- 777 simulator study achieving per-pilot fatigue classification above 95% with multimodal machine learning (ML); a fuzzy-logic kinematic detection scheme requiring no on-body hardware; a deep sparse contractive autoencoder

(DCSAEN) achieving 81.5% EEG-based accuracy; a wearable multimodal framework on 27 subjects identifying differential physical and mental fatigue signatures; a rapid EEG-ECG fusion pipeline achieving 88.42% crosssubject accuracy in 39.3 s training time; a PSO-CNN facial feature model achieving 93.9% accuracy; a real-world fatigue management technology (FMT) field trial; and forensic speechacoustic analysis validating zero-hardware fatigue detection. Advanced architectures covered include STG-CLNet (95.6%), FatigueNet GNN-Transformer (90.2%), DRN-RF (93.1%), and the ASFT-Transformer (88.01%). Integration of explainable AI (XAI), generative AI (GAI), and human-centric artificial cognitive system (ACS) frameworks is discussed toward a trusted and real-time aviation safety ecosystem.

Sl. No	Article	Author	Source	Year
5	Design and Development of a Mobile-Based Emergency Vehicle Alert System	<i>Kaki Leela Prasad and Nadipalli Balaji Rao</i>	The IUP Journal of Computer Sciences Vol: 20, No: 3	2026

Abstract: Cities have major problems with their emergency response systems because of traffic congestion. There is a possibility of increased death rates due to traffic congestions on busy roads since emergency response is inefficient. The existing smart traffic control systems implement devices such as RFID, Internet-of-Things (IoT) traffic control, and V2X traffic communication systems. However, these methods are costly and not suitable for poorer areas due to lack of resources. This paper introduces FastLane, a

traffic clearance system on mobile platforms that can deliver emergency alerts on a fast basis. The system is based on the global positioning system (GPS) sensors, which identify nearby authorities and inform them in real-time via cloud-based communication platform. The authorities are police stations and tolls that are within specific distance ranges. It takes less than three seconds to send notifications due to the speed of communication and synchronization of the system. The cross-platform apps are developed using React Native and Node.js to powerfully deploy the system.

Sl. No	Article	Author	Source	Year
1	Impact of Leverage on Corporate Performance: A Sectoral Analysis of Nifty 100 Firms	<i>Narasing Seetaram Devi and A S Shiralashetti</i>	The IUP Journal of Accounting Research & Audit Practices Vol: 23, No: 3	2026

Abstract: The study examines the impact of leverage across sectors that account for a major chunk of the Nifty 100. For this purpose, five sectors that make up a significant portion of the Nifty 100 were chosen, and 10 companies from each sector were selected based on their market capitalization. The final sample comprises 600 observations of 50 companies observed over 12 years from 2014 to 2025. To evaluate the leverage-performance association, panel regression models with sectoral interaction dummies have been used. The study finds that leverage adversely affects performance in general, and its adverse effect varies across sectors, thus emphasizing the importance of sectoral characteristics in leverage-performance association and the need for sector-specific capital structure decisions. However, the question—Why does leverage have such an uneven impact across sectors?—is not supported by any empirical evidence in this study

Sl. No	Article	Author	Source	Year
2	Factors Affecting Profitability of Ethiopian Commercial Banks: A Dynamic Panel Data Approach Using System GMM	<i>Mikias Tesfaye Gugssa</i>	The IUP Journal of Accounting Research & Audit Practices Vol: 23, No: 3	2026

Abstract: The paper investigates the determinants of profitability in Ethiopia’s commercial banking sector using a balanced panel of 11 banks over 2010-2019, incorporating both public and private institutions. Unlike previous studies, it examines income diversification and funding cost, while explicitly addressing the persistence of profitability and potential endogeneity using a dynamic panel model (System Generalized Method of Moments; System GMM). The analysis reveals that bank-specific factors, size, capital adequacy, operational efficiency, and income diversification are the primary drivers of profitability, whereas liquidity risk negatively affects performance. Among macroeconomic variables, real GDP growth positively influences profitability, while inflation and exchange rate fluctuations are statistically insignificant, reflecting Ethiopia’s semi-regulated financial environment. Economic interpretation indicates that a 1% increase in GDP growth or bank capitalization produces meaningful improvements in return on assets (ROA), highlighting the practical implications for bank management. The findings underscore that internal management strategies, efficient operations, capital strengthening, and revenue diversification are more critical than external macroeconomic conditions for enhancing profitability. The study provides evidence-based guidance for bank managers and regulators to improve financial stability and performance in emerging, regulated banking systems.

Sl. No	Article	Author	Source	Year
3	Analyzing Stock Returns and Volatility Trends in Emerging Markets: Insights from India and China	<i>Satish Kumar, Devinder Sharma, Sunil Kumar and Vishal Kaushal</i>	The IUP Journal of Accounting Research & Audit Practices Vol: 23, No: 3	2026

Abstract: The study investigates the volatility characteristics in the Indian and Chinese stock markets, assesses the risk-return tradeoff, and determines the most suitable volatility model. It uses the daily closing prices of National Stock Exchange (NSE) and Shanghai Stock Exchange (SSE) from April 1, 2014 to March 31, 2025. The symmetric and asymmetric GARCH models are used to achieve the objectives. The results indicate that SSE has a lower mean return than NSE. Besides, the Indian market is more sensitive to bad news than the Chinese market, which is more responsive to good shocks. The findings also indicate that EGARCH (1,1) is most appropriate for NSE, whereas GARCH (1,1) is more appropriate for SSE. The implications of these findings for investors, policymakers, and researchers are significant, underscoring the need for market-specific investment plans, improved risk management practices, and policy responses to optimize long-term market stability and efficiency, thereby supporting economic growth.

Sl. No	Article	Author	Source	Year
4	Hedging to Arbitrage: Leveraging High-Accuracy Exchange Rate Forecasts	<i>Bishal Routh and Joy Sarkar</i>	The IUP Journal of Accounting Research & Audit Practices Vol: 23, No: 3	2026

Abstract: Exchange rate fluctuations are a significant concern for multinational companies (MNCs). Although financial reports provide adequate provisions to mitigate this issue under IAS 21, the actual effects become apparent through cash inflows and outflows. A firm that is involved in any kind of foreign transaction may suffer this fate. It can be negated using financial derivatives; however, sole dependence on forward/future market might not be the optimal strategy. Several economic, univariate econometric, and machine learning (ML) models have been used to provide accurate forecasting; however, they do not have high accuracy in out-of-sample. Hence, the paper introduces a new framework that provides high-level accuracy; it was tested across 6 alternative periods that encompass almost entire floating. The proposed model was used to forecast the rupee-dollar exchange, and the forecasting was compared to the benchmark models, ARIMA and ANN. The proposed model completely outperformed ARIMA, while ANN was able to topple the proposed model in one period. Overall, ARIMA generates lower error compared to ANN. The proposed model provides accuracy above 99% for 3 periods and 98% for 2. The success and high accuracy of the model open many ways for participant-optimized positioning in spot and forward markets.

Sl. No	Article	Author	Source	Year
5	Impact of Robo-Advisors on Investment Strategies and Financial Stability: A Quantitative Study	<i>Rekha Kumar, Dipak Umbarkar and Ranu Gupta</i>	The IUP Journal of Accounting Research & Audit Practices Vol: 23, No: 3	2026

Abstract: AI-powered personal financial advisors, also called robo-advisors, are revolutionizing finance with more efficient, customized, and cost-effective solutions. This paper uses mixed-methods approach to examine how they affect investing strategies, financial stability, and wellbeing. Quantitative surveys and financial performance measurements compare AI advisors to conventional approaches. Population diversity is ensured via stratified selection of 250 individuals. Regression methods highlight correlations between independent and dependent variables, offering a complete picture of AI-driven financial advice systems. The findings suggest that the use of AI-powered personal financial advisors significantly improves the efficiency and effectiveness of financial advice systems compared to conventional methods. This enhances financial stability, security, and overall wellbeing. User adoption and trust are crucial for the acceptance of AI-driven systems. Ethical and privacy concerns impact responsible behavior, emphasizing the need for stringent norms and privacy safeguards. The study highlights the transformational potential of AI in personal finance.

Sl. No	Article	Author	Source	Year
6	AI-powered personal financial advisors, Robo-advisors, financial stability, User adoption and trust, Ethical and privacy concerns	<i>Satish Kumar, Neevia Thalyari and Vishal Kaushal</i>	The IUP Journal of Accounting Research & Audit Practices Vol: 23, No: 3	2026

Abstract: The paper investigates stock market dynamics by examining mean reversion and volatility transmission between BRICS economies and four advanced Western nations. The analysis employs GARCH model to estimate volatility persistence, half-life method to measure the speed of mean reversion, and DCC-GARCH model to capture time-varying volatility spillovers. The empirical findings reveal significant heterogeneity across markets. Canada exhibits weak mean reversion alongside high volatility persistence, indicating prolonged market instability, whereas the UK demonstrates the fastest mean reversion with comparatively lower volatility. Furthermore, the results indicate the strong bidirectional long-term volatility spillovers between BRICS and four advanced Western nations, highlighting deep financial integration and interdependence. In contrast, short-term spillovers are relatively limited, suggesting that immediate shock transmission is less pronounced. These findings emphasize the complex structure of global financial linkages and provide important implications for portfolio diversification, risk management, and policy formulation in an increasingly globalized financial system.

Sl. No	Article	Author	Source	Year
7	Trust as a Key Driver in Robo-Advisory Adoption: A Systematic Literature Review	<i>Neenu Bala and Saloni Raheja</i>	The IUP Journal of Accounting Research & Audit Practices Vol: 23, No: 3	2026

Abstract: Robo-advisory services have emerged as a revolutionary innovation in the wealthtech industry, presenting automated, algorithm-driven financial advice to customers. The rise of robo-advisors reflects the increasing demand for cost-efficient, accessible, and personalized investment solutions. This paper presents a systematic literature review, focusing on the adoption of robo-advisory services in India, with a special emphasis on the critical role of trust. The study highlights the important elements that affect the development of trust, such as behavioral biases, subjective norms, and innovativeness, and investigates their effects on adoption intention through a thorough review of previous research. The analysis also emphasizes the special opportunities and challenges brought about by the Indian environment, which is marked by a range of financial literacy levels. In order to further investigate and improve the uptake of robo-advisory services in India, the study suggests future research paths.

Sl. No	Article	Author	Source	Year
8	Determinants of Bank Productivity and Performance: A Bibliometric Study	<i>Nirali J Kantharia and Jivan Biradar</i>	The IUP Journal of Accounting Research & Audit Practices Vol: 23, No: 3	2026

Abstract: The paper analyzes the conceptual and thematic evolution of research on bank productivity and performance from 1972 to 2023, highlighting its implications for accounting, auditing, and regulatory frameworks. A bibliometric study of 1896 publications

was performed using the Scopus database and the Biblioshiny (Bibliometrix R-package) software. The findings indicate that banking research has significantly expanded since 2008, with the majority of activity occurring in 2020-21. Four primary issues were identified: banking efficiency; risk management and Basel regulations; diversity and performance; and corporate governance. These clusters align with established frameworks such as CAMELS, Basel standards, and agency theory, merging bibliometric insights with the practical dimensions of auditing, financial reporting, and regulation. The study indicates that research on Basel, efficiency metrics, and diversification can assist auditors, regulators, and financial analysts in determining the requisite capital, assessing risk levels, evaluating operational productivity, and analyzing reported financial figures. The analysis relies exclusively on Scopus data, potentially excluding specific geographical and practitioner-oriented studies. Future research may integrate many databases, employ advanced analytical methods, and expand into emerging industries to improve bibliometric insights.

Sl. No	Article	Author	Source	Year
9	Investor Attention and Trading Behavior in Stock Markets: A Bibliometric Perspective	<i>Leena Chhabra and Niti Nandini Chatnani</i>	The IUP Journal of Accounting Research & Audit Practices Vol: 23, No: 3	2026

Abstract: The paper uses bibliometric analysis to map the research landscape of investor attention, stock selection, trading decisions and their market implications. Based on the bibliographic details of 305 papers published from 1973 to 2025, the study provides key insights on influential authors, journals, countries, articles, collaboration structure and research themes. It is found that investor attention is a significant factor affecting stock volatility, liquidity and price crash risk. Individual investors, being naïve, are driven by various attention-grabbing events and easily accessible information. They often indulge in excessive buying or noise

trading, resulting in increased volatility. However, access to accounting information improves the informativeness of trades and reduces crash risk. An integrated framework and future research recommendations conclude the study.

Sl. No	Article	Author	Source	Year
10	Behavioral Biases and Green Finance Adoption Across Generational Cohorts: Insights from Urban Investors	<i>A Charles Ambrose and K Alex</i>	The IUP Journal of Accounting Research & Audit Practices Vol: 23, No: 3	2026

Abstract: The growing importance of green finance as a mechanism for promoting sustainable development has intensified interest in understanding the behavioral factors influencing investors' adoption of environmentally responsible financial products. This paper examines the role of behavioral biases in shaping green finance adoption across generational cohorts among urban investors in Bengaluru, India. Using a quantitative, cross-sectional research design, primary data were collected from 412 retail investors representing Generation Z, Millennials, and Generation X through a structured questionnaire. Reliability and validity analysis, multiple regression, analysis of variance, and multi-group structural equation modeling were employed for data analysis. The findings reveal that loss aversion, status quo bias, and familiarity bias significantly impede green finance adoption, while herding behavior positively influences adoption, particularly among younger cohorts. The study contributes to behavioral finance literature by integrating generational cohort theory with green finance adoption in an emerging market context and offers actionable managerial and policy insights.

Sl. No	Article	Author	Source	Year
11	Education and Training Services in India: GST Issues	<i>C A Peeyush Sharma</i>	The IUP Journal of Accounting Research & Audit Practices Vol: 23, No: 3	2026

Abstract: The introduction of Goods and Services Tax (GST) on July 1, 2017 unified India's indirect tax architecture, but the education and training sector has remained one of its most contested domains. Constitutionally, education is a fundamental right under Article 21-A, and the sector is widely characterized in economic literature as a merit good—a service whose social benefits exceed its private benefits, justifying public subsidization and fiscal preference (Musgrave, 1959). Against this backdrop, the GST law exempts services delivered by recognized 'educational institutions', while imposing an 18% standard rate on coaching, commercial training, and ed-tech platforms.

Sl. No	Article	Author	Source	Year
12	Digital Banking Preferences and Service Quality Perceptions of Private and Small Finance Banks	<i>Krishna Ashutoshbhai Vyas</i>	The IUP Journal of Accounting Research & Audit Practices Vol: 23, No: 3	2026

Abstract: Digital banking innovations have transformed customer access to financial services, making banking faster, more convenient, and more customercentric. In India, private and small finance banks play a key role in providing diversified financial services. Despite national-level research on digital banking adoption (DBA), limited attention has been given to regional differences, particularly in Gujarat, where demographic patterns, income levels, and digital literacy may differ from metropolitan areas.

Understanding customer preferences, service quality (SQ) perceptions, and adoption behaviors in this region is crucial for banks seeking to tailor strategies for local population. This study addresses this gap by examining differences in DBA, SQ, and banking preferences between private and small finance bank customers in Gujarat.

Sl. No	Article	Author	Source	Year
1	An Optimization and Machine Learning Framework for Energy-Efficient Clustering and Adaptive Routing in IoT-Enabled WSN	<i>A. Aarthi, K. Gopika, D. Sridharan</i>	I-manager's Journal on Wireless Communication Networks Vol: 14, No: 2	2026

Abstract: Wireless sensor networks constitute a core component of Internet of Things (IoT) systems, enabling real-time data collection for applications such as smart agriculture, environmental monitoring, and industrial automation. However, wireless sensor networks often face a crucial challenge: sensor nodes near the data sink drain energy faster, leading to an energy hole, reduced network lifetime, and unbalanced energy consumption, which can cause early network failure. However, conventional WSN-based IoT deployments suffer from energy imbalance, inefficient clustering, static routing, and the energy hole problem, which significantly reduce network lifetime and data reliability. To address these challenges, this paper proposes an intelligent IoT-enabled framework that integrates metaheuristic optimization o sailfish optimization (SFO)-based clustering and double deep Q network (DDQN)-based adaptive learning with routing and a mobile sink for efficient data collection. The proposed MO-SFO algorithm optimizes cluster head selection by simultaneously addressing multiple objectives, including residual energy, node coverage, and communication latency. This ensures balanced energy consumption and stable cluster formation across IoT sensor nodes. For inter-cluster communication and routing, DDQN employs deep reinforcement learning to dynamically learn energy-aware routing paths

under varying network conditions, thereby reducing Q-value estimation errors and improving routing reliability. The mobile sink further mitigates the energy holes problem by reducing long-distance transmission and evenly distributing it across the network. Simulation results demonstrate that the proposed SFO-DDQN mobile sink framework significantly outperforms the existing methods of MOBGWO, MODRL, and FQA in terms of network lifetime, packet delivery ratio, throughput, and energy efficiency.

Sl. No	Article	Author	Source	Year
2	Non-dominated Sorting Genetic Algorithm II based Multi-Objective White space aware Clustering for Spectrum-Aggregated CRAHNs	<i>Rajendra Prasad Babu Boda, Rajeswara Rao Ramiseti</i>	I-manager's Journal on Wireless Communication Networks Vol: 14, No: 2	2026

Abstract: Cognitive radio ad hoc networks (CRAHNs) demand effective topology control algorithms that can cope with the dynamic nature of spectrum availability and balance competing objectives. Current clustering algorithms often focus on a single objective (spectrum awareness, energy, or connectivity) and consider spectrum aggregation as an independent process. In this paper, we present a multi-objective clustering algorithm, based on NSGA-II, for simultaneous optimization of spectrum awareness, energy, and cluster stability, while allowing spectrum aggregation at cluster heads. We define the clustering problem with three objectives: maximizing the common idle channels in a cluster (spectrum commonality), maximizing the residual energy of cluster heads, and minimizing the intra-cluster communication distance. The approach also integrates a simple yet powerful spectrum aggregation method where cluster heads perform spectrum aggregation to increase throughput. Simulation results using MATLAB show that the proposed algorithm offers 35-42% longer network lifetime, 28-45% greater aggregate throughput, and 40-55% fewer re-

clustering events compared to representative spectrum-aware and energy-based clustering schemes in multi-channel CRAHN environments with different primary user traffic loads.

Sl. No	Article	Author	Source	Year
3	Energy Efficient Routing Protocol of Wireless Sensor Network on Hybrid Bacterial Foraging and Artificial BEE Colony Optimization (HBFABCO)	<i>Dr.N.Pushpalatha, Dr.B.Anuradha</i>	I-manager's Journal on Wireless Communication Networks Vol: 14, No: 2	2026

Abstract: Wireless sensor networks (WSN) are deployed in both indoor and outdoor environments for intrusion detection and environmental monitoring. Energy efficiency remains a critical focus in this field, which has seen significant research and development. Bacterial Foraging Optimization (BFO) is often used for local exploitation, while the Artificial Bee Colony (ABC) algorithm provides effective global exploration. However, both algorithms exhibit slow convergence and are sensitive to parameter settings. To overcome these limitations, proposed a HBFABCO algorithm that operates efficiently in both global and local environments, achieving faster convergence. This approach is well-suited for dynamic, energyconstrained wireless sensor network environments. Using NS-3, evaluated the proposed method and compared it to existed methods using metrics such as RMSE, coverage, total energy, energy per fix, latency, message exchange, tracking error, robustness to noise, packet delivery ratio, convergence time, and computation time per fix. Conducted analyses with varying node counts 50 to 1000. Simulation results show that the proposed approach outperforms existing algorithms by achieving lower RMSE, higher coverage, reduced total energy consumption, lower tracking error, and shorter convergence time.

Sl. No	Article	Author	Source	Year
4	Energy Efficient Routing Protocol of Wireless Sensor Network on Hybrid Bacterial Foraging and Artificial BEE Colony Optimization (HBFABCO)	<i>Mandyam Hema, Dr.N.Pushpalatha, Dr.B.Anuradha</i>	I-manager's Journal on Wireless Communication Networks Vol: 14, No: 2	2026

Abstract: Wireless sensor networks (WSN) are deployed in both indoor and outdoor environments for intrusion detection and environmental monitoring. Energy efficiency remains a critical focus in this field, which has seen significant research and development. Bacterial Foraging Optimization (BFO) is often used for local exploitation, while the Artificial Bee Colony (ABC) algorithm provides effective global exploration. However, both algorithms exhibit slow convergence and are sensitive to parameter settings. To overcome these limitations, proposed a HBFABCO algorithm that operates efficiently in both global and local environments, achieving faster convergence. This approach is well-suited for dynamic, energyconstrained wireless sensor network environments. Using NS-3, evaluated the proposed method and compared it to existed methods using metrics such as RMSE, coverage, total energy, energy per fix, latency, message exchange, tracking error, robustness to noise, packet delivery ratio, convergence time, and computation time per fix. Conducted analyses with varying node counts 50 to 1000. Simulation results show that the proposed approach outperforms existing algorithms by achieving lower RMSE, higher coverage, reduced total energy consumption, lower tracking error, and shorter convergence time.

Sl. No	Article	Author	Source	Year
5	SEEDTRP: A Lightweight CNN-based Secure and Energy-Efficient Routing Protocol for Black Hole Attack Detection and Mitigation in WSN	Ms. C B Banupriya, Dr S. Uma	I-manager's Journal on Wireless Communication Networks Vol: 14, No: 2	2026

Abstract: Wireless Sensor Networks (WSNs) play a vital role in numerous mission-critical domains, including environmental surveillance, healthcare systems, industrial control and smart infrastructures. However, their limited energy, processing capability and reliance on open wireless channels make them particularly susceptible to routing-based security attacks. One of the most damaging threats is the black hole attack, in which malicious nodes intentionally discard transmitted data, leading to severe degradation in network reliability and performance. To address this challenge, this paper presents a Secure Energy-Efficient Data Transmission Routing Protocol (SEEDTRP) that employs a Lightweight Convolutional Neural Network (LWCNN) to accurately detect and mitigate black hole attacks in WSNs. The proposed framework combines energy- conscious routing decisions with intelligent attack identification while ensuring minimal computational complexity appropriate for resource-constrained sensor nodes. Experimental simulations indicate that the proposed protocol significantly enhances packet delivery ratio, detection accuracy and overall network lifetime, while simultaneously reducing energy consumption and routing overhead compared to existing secure routing solutions.

	Article	Author	Source	Year
1	Design of an IoT-Enabled PLC Framework for Efficient Water Management and Crop Optimization in Agrivoltaic Systems	<i>Dr.Alugonda Rajani</i>	I-manager’s Journal on Power Systems Engineering Vol: 13, No: 4	2026

Abstract: In this study, an improved Agri-voltaic framework combining LoRaWAN-based Internet of Things (IoT) and Power Line Communication (PLC) technologies is proposed to increase precision agriculture and sustainable energy consumption. Agri-voltaic systems are designed to increase land-use efficiency by enabling the simultaneous production of solar power and agricultural crops. Even though earlier agri-voltaic strategies have produced encouraging outcomes, their overall performance is often hindered by ineffective water management techniques, inefficient energy use, inconsistent communication between system components, and the limited ability of traditional crop models to adapt to changing climate conditions. To overcome these limitations, an IoT-driven system for intelligent water resource management and adaptive crop modeling in agri-voltaic settings is given. The proposed framework uses PLC to ensure fast, reliable, and stable data transfer over the existing electrical infrastructure, hence eliminating the need for additional communication cables. As a result, system resilience is increased and deployment complexity is decreased. Additionally, LoRaWAN technology enables low-power, long-range wireless communication between geographically separated agricultural sensors, significantly increasing network scalability while reducing installation and operational costs. Using real-time data analytics enables the system to adjust to changing climatic and environmental conditions. Soil moisture, crop status, and environmental data are continuously monitored to assist climate-adaptive crop modeling, optimal irrigation scheduling, enhanced crop health assessment, and enhanced energy management. An essential part of the proposed system is the nutrient optimization module, which dynamically regulates fertilizer supply based on information from soil nutrient sensor readings and crop growth phases. This customized nitrogen delivery approach increases crop yield and irrigation water productivity while reducing fertilizer

waste and environmental effect, so promoting long-term agricultural sustainability. The effectiveness of the proposed PLC and LoRaWAN-enabled agri-voltaic architecture is confirmed by MATLAB-based simulations and real-world practical case studies. Agricultural productivity, irrigation supply efficiency, and energy system voltage-current characteristics are some of the metrics used to assess performance. The results demonstrate that the recommended approach outperforms conventional agri-voltaic and agricultural management practices by a significant margin. When PLC, LoRaWAN, and nutrient optimization are combined, the system's enormous potential to support sustainable agriculture, efficient resource utilization, and dual land use for simultaneous food production and renewable energy generation is demonstrated.

Sl. No	Article	Author	Source	Year
2	Sensible HVAC Device control the Usage of Fuzzy Good Judgment and IoT	<i>Amit Kumar Meshram</i>	I-manager's Journal on Power Systems Engineering Vol: 13, No: 4	2026

Abstract: Heating, air flow, and aircon (HVAC) systems are many of the maximum power-extensive components in residential and business buildings. With developing emphasis on electricity performance and consumer consolation, the integration of internet of factors (IoT) technologies and synthetic Intelligence (AI)—mainly Fuzzy common sense manipulate (FLC)—gives an intelligent approach to dynamic environmental manipulate. This paper gives a complete take a look at of IoT-enabled shrewd HVAC manipulate the usage of fuzzy logic for adaptive thermal comfort control and energy optimization. We review the applicable literature, propose a multi-layer IoT structure integrated with fuzzy control algorithms, define a simulation framework, and compare gadget performance thru consultant case research. effects show that the proposed gadget achieves substantial discounts in power

consumption (10–25%), progressed consolation stability, and superior responsiveness compared to standard PID or rule-based totally manipulate. realistic deployment troubles together with scalability, interoperability, cybersecurity, and occupant consolation change-offs also are discussed. The look at concludes with future studies guidelines for integrating predictive manage, renewable strength coordination, and huge-scale constructing management structures (BMS).

Sl. No	Article	Author	Source	Year
3	Development of AI Driven Energy Optimization System	<i>Atharva Shinde, Soham Papinwar, Mahima, Srushti Mohadikar, Ved Rao</i>	I-manager's Journal on Power Systems Engineering Vol: 13, No: 4	2026

Abstract: As data centers continue to grow in size and complexity, optimizing their energy usage has become essential for both cost savings and environmental sustainability. This project introduces a data-driven energy optimization system that analyzes real-time power consumption patterns and suggests efficient usage strategies. The system begins by preprocessing energy data, removing noise and outliers, and generating useful features such as hour of the day, day of the week, and peak usage indicators. A linear regression model is trained to predict power consumption based on electrical parameters and time-based features. The model's accuracy is validated using time-series cross-validation techniques. To enhance efficiency, several energy-saving strategies are tested, including controlled voltage reductions and peak-hour load balancing. A combined approach—15% voltage reduction along with load shifting—emerges as the most effective, showing significant reductions in power usage and overall energy cost. Visualization tools further illustrate consumption trends and the impact of these optimizations. This approach enables data center

operators to make informed, data-backed decisions that lower energy consumption while maintaining performance. The proposed framework offers a practical, AI-enhanced solution for sustainable and efficient data center management.

Sl. No	Article	Author	Source	Year
4	A Hybrid Metaheuristic Optimization Algorithm for Distributed Generation Placement in Distribution Systems	<i>Chandra Rao U., Rama Rao P. V. V, Sumathi N.</i>	I-manager's Journal on Power Systems Engineering Vol: 13, No: 4	2026

Abstract: Due to increased demand for energy and a growing concern for the environment, Distributed Generation (DG) is now a very important element of many modern Power Systems. The objective of this research paper is to determine the Optimal Location(s) at which DG can be placed in Radial Distribution Networks (RDN) so as to minimize losses and improve voltage performance in the presence of the uncertainties associated with load variation and generation variability. Loss Sensitivity Factors (LSFs) are typically used to assist with the identification of buses suitable for the placement of DG, but they are limited by the linear approximation underlying LSFs and do not guarantee a global optimal solution. To supplement and improve the use of LSFs, a hybrid metaheuristic optimization for distributed generation placement in distribution systems has been developed by integrating the Gravitational Search Algorithm with the Sine Cosine Levy Flight Algorithm (GSA-SCLFA). This hybrid approach provides both a global exploration and a local exploitation capability which leads to a more effective way of placing DG. In addition to producing significant reductions in losses and improved voltage profiles, the hybrid approach produces a validation of the GSA-SCLFA approach through IEEE 33 and IEEE 69 bus Radial Distribution Networks, and thus demonstrates its superiority over the conventional and state-of-the-art optimization techniques. The performance results obtained through the use of the

MATLAB/Simulink software package confirm the greater effectiveness of the proposed GSA-SCLFA approach compared to the other optimization techniques.

Sl. No	Article	Author	Source	Year
5	Blockchain-enabled Generative Ai Models For Real-time Brainwave Signal Interpretation	<i>Siraj Ahmed, Harsha Kumar H. S, Vandana M, Raje Siddiraju Upendra</i>	I-manager's Journal on Power Systems Engineering Vol: 13, No: 4	2026

Abstract: Brain-Computer Interface (BCI) systems have emerged as a transformative technology for enabling direct communication between the human brain and external devices. However, real-time brainwave signal interpretation faces challenges in accuracy, scalability, and data security. This paper proposes a novel framework integrating Generative Artificial Intelligence (GenAI) with blockchain technology for secure and realtime electroencephalogram (EEG) signal interpretation. The proposed system utilizes deep generative models to translate brainwave patterns into meaningful outputs, while blockchain ensures secure, tamper- proof data transmission and storage. Experimental analysis demonstrates improved accuracy, robustness, and data integrity compared to conventional methods. The system is particularly suitable for assistive communication in paralyzed patients and neuro-security applications.

Sl. No	Article	Author	Source	Year
1	Rationale of interbasin water transfer in India in the broad context of long-distance transfers	<i>Sharad K. Jain</i>	Current Science Vol: 130, No: 12	2026

Abstract: Nothing is static in nature. All ecosystem components, organisms, and elements are in a perpetual state of motion and evolution. A number of processes (natural as well as anthropogenic) operating on the Earth move large volumes of natural resources over long distances. Water is also transferred over long distances physically and virtually by natural forces as well as by human-engineered systems. A comprehensive appraisal of all transfers and their interactions would offer a holistic understanding of their impacts. In many regions of India, water availability has large spatial and temporal mismatches with demands, and water transfers are one of the techniques to overcome the mismatches. Since water has a critical role in the evolution and sustenance of social and natural ecosystems, special care is needed to understand the impacts of water transfers and design the systems that minimise any adverse outcomes.

Sl. No	Article	Author	Source	Year
2	Seasonal hydrogeochemical dynamics and leachate influence on peri-urban groundwater	<i>M. Bamini and R. K. Somashekar</i>	Current Science Vol: 130, No: 12	2026

Abstract: The present study presents results on temporal hydrochemical facies shifts in groundwater around a municipal solid waste processing plant with a dumpsite in Doddabidarakallu, Bengaluru, India. Over two hydrological cycles (2022–2024), 120

groundwater samples were collected seasonally and analysed for physicochemical parameters, major ions, and heavy metals to assess contamination patterns. Ca–Mg–Cl–SO₄ facies dominated during post-monsoon periods (61.3% in 2022 and 75% in 2023), while Ca–Mg–HCO₃ facies was prominent in the pre-monsoon period of 2023 (45.7%). In pre-monsoon 2024, Ca–Mg–Cl–SO₄ remained dominant (71.4%), indicating contamination pathways influenced by leachate migration and anthropogenic activities. Water quality index classification showed seasonal deterioration, particularly during pre-monsoon periods. Irrigation suitability, assessed via sodium absorption ratio and United States Salinity Laboratory diagrams, indicated high salinity but low sodium hazard. Groundwater composition near the Doddabidarakallu landfill contains many constituents that exceed the World Health Organisation/Bureau of Indian Standards drinking water standards, confirming persistent contamination from legacy waste. Implementing on-site processing at dumping sites can demonstrably prevent, to a significant extent, future contamination by removing and stabilising hazardous materials. Concurrently, continuous groundwater monitoring and adaptive, localised remediation strategies are indispensable for managing the pre-existing contaminant plume and achieving complete environmental restoration.

Sl. No	Article	Author	Source	Year
3	A satellite-derived re-analysis of surface-ocean pH variability in the coastal waters of India	<i>Vinaya Kumar Vase*</i> <i>, Rajan Kumar, Shikha Rahangdale, Sanjana Kartu, Harshad Solanki, Jayasankar Jayaraman, Ratheesh Kumar and Grinson George</i>	Current Science Vol: 130, No: 12	2026

Abstract: Monitoring pH variations in coastal waters is essential for maintaining marine life and developing strategies to combat ocean acidification caused by climate change. The present study examines pH changes on interannual and seasonal scales along the northwest (NW), southwest (SW), southeast (SE), and northeast (NE) coasts of India over 30 years (1993–2022) using satellite data. Results reveal a significant decline in pH levels ($R^2 = 0.727$) across Indian coastal waters, with notable regional differences. The northeastern coast showed the greatest pH stability and the smallest decrease ($R^2 = 0.798$), while the southwestern coast experienced the highest variability ($R^2 = 0.490$). These regional pH fluctuations suggest varying resilience to ocean acidification. The NE and SW coasts, with higher variability, may be more susceptible to environmental changes, underscoring the importance of targeted monitoring and mitigation measures. In contrast, the more stable trends along the SE and NW coasts present opportunities to explore long-term resilience mechanisms. Seasonal fluctuations were evident everywhere, with winter consistently showing higher pH values and monsoon seasons the lowest. Principal component analysis indicated that the first two components accounted for 85.7% of the variance, highlighting factors such as seasonal river inflows, biological activity, and monsoonal freshwater input. Overall, these findings emphasise the importance of region-specific coastal management strategies to address climate change impacts and human pressures, while also providing a baseline for tracking future ocean acidification trends and assessing their effects on marine biodiversity and ecosystem services.

Sl. No	Article	Author	Source	Year
4	Correlation of collagen formation related genes expression with the healing process of thermal injury to skin and subcutaneous tissue	<i>Pengzhan Xu¹, Lexuan Bi^{1,2}, Yayun Wang³, Xiaoli Zhang², Qingxin Shang¹ and Dong Wang</i>	Current Science Vol: 130, No: 12	2026

Abstract: The present study delineates the extracellular matrix (ECM) remodelling dynamics during thermal injury repair through integrated transcriptomic and histopathological analysis. The gene expression dataset GSE8056 was analysed via GEO2R, identifying 306 differentially expressed genes between early (0–3 days) and late (> 7 days) healing phases, with significant enrichment in collagen-centric pathways (e.g., ECM-receptor interaction). Protein-protein interaction network analysis (STRING database; Cytoscape Cytohubba plugin) revealed 10 hub genes (COL1A1, COL1A2, COL3A1, COL4A1, COL5A1/2, COL6A1, COL11A1, COL12A1, and COL14A1) governing collagen assembly. In a rat thermal injury model, histopathology (haematoxylin-eosin staining, Masson’s trichrome) demonstrated progressive tissue regeneration: acute epidermal necrosis (0d), inflammatory scab formation with nascent epidermis (3d), and collagen deposition increasing significantly by day 7 ($P < 0.05$). Immunohistochemistry validated stage-specific collagen isoform expression: COL1A1, COL1A2, and COL3A1 were elevated at both 3d and 7d, while COL4A1 peaked at 7d—aligning with basement membrane reconstruction during re-epithelialisation. Transcriptomic data corroborated upregulation of all four collagens in late-phase human wounds. These results establish collagen isoforms as temporal regulators of ECM remodelling; COL1A1, COL1A2, COL3A1 and COL4A1 can be used as target genes for clinical thermal injury wound repair intervention.

Sl. No	Article	Author	Source	Year
5	The performance improvement of modular multi-level inverter using deer hunting optimization algorithm and three-dimensional SVPWM technique	<i>M. Darsana¹ and K. Sekar</i>	Current Science Vol: 130, No: 12	2026

Abstract: A modular multi-level inverter (MMI) is a popular topology in medium- and high-power industrial applications because it is modular, scalable, and has better power quality. Nevertheless, practical implementations are still faced with problems like circulating current suppression and capacitor voltage balancing. The present study suggests a superior control method based on the deer hunting optimization (DHO) algorithm to tune the fractional order proportional-integral-derivative (FOPID) controller optimally to minimise the circulating current. Also, a three-dimensional space vector pulse width modulation (3D-SVPWM) method with capacitor voltage sorting is applied to provide a uniform distribution of capacitor voltages and improved control of the output current. Simulation experiments in MATLAB/R2022a indicate that the proposed control scheme can provide an output voltage of 305 V and a total harmonic distortion (THD) of 3.78%, and an output current of 3.5 A and 4.2% THD with a 7-level MMI. The circulating current is reduced to 0.3 A with a ripple of 1.12 per cent and settling time of 0.102 s. Similar results are obtained by experimental validation with a 0.5 kW hardware prototype, which proves the robustness and practical feasibility of the proposed method. The capacitor voltage is kept at 110 V +/- 5% with better performance in voltage balancing. These findings affirm that the combined DHO-FOPID and 3D-SVPWM approach is very effective in improving the dynamic and steady-state behaviour of the MMI.