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Journal Abstracts

December 2025

Sl.No	Article	Author	Source	Year
1	Robustness of Pairwise Distances vs. Diameter in Graphs Under Edge Deletions	*Bing gao*	Digital Signal Processing and Artificial Intelligence for Automatic Learning Vol: 4 No: 3	2025

Abstract: This paper investigates the robustness of two key graph metrics—pairwise shortest-path distances (distances between all vertex pairs) and the graph diameter (the maximum pairwise distance)—under adversarial edge deletions. The study focuses on scenarios where the removal of edges is constrained to ensure the graph remains connected. It provides a comparative analysis of how these two metrics are affected by such structural changes, offering insights into their relative stability or sensitivity within a network environment.

Sl.No	Article	Author	Source	Year
2	A Formal Methodology for Multi Objective Run Time Requirement Enforcement on Many Core Systems Using FSMs	*Xiliang Nie and Hanxing*	Digital Signal Processing and Artificial Intelligence for Automatic Learning Vol: 4 No: 3	2025

Abstract: This paper presents a formal methodology for enforcing multiple run-time requirements (e.g., performance, energy consumption) on many-core systems. The approach utilizes Finite State Machines (FSMs) to model and implement the enforcement strategies. By defining system states and transitions based on these multiple objectives, the methodology aims to ensure that non-functional requirements are met under varying workloads and dynamic conditions in many-core environments.

Sl.No	Article	Author	Source	Year
3	Exploring Multimodal Instruction in Art English Classes: Enhancing Teaching and Learning Through Technology Integration	*Zhu Wanchun*	Digital Signal Processing and Artificial Intelligence for Automatic Learning Vol: 4 No: 3	2025

Abstract: Due to the global integration of culture, the need for English within the arts is now greater than ever. The role of English within the arts has been on the rise due to the ongoing integration of global markets and cultures. The diverse and effective strategies of teaching art in English have captured the collective attention of educators, as such classes are vital in nurturing students' artistic appreciation and mastery of the English language. This article explores the utilisation of technologies in art English classes from the perspective of multimodal instruction, discussing the roles of teachers, students, and instructional methodologies within the classes. Studies have shown that the teachers, students, and instructional methods have a significant impact on multimodal English art classes, and their interplay enhances both the teaching and learning experiences.

Sl.No	Article	Author	Source	Year
I	Green Libraries- Sustainable Innovations and Practices: An Overview	*Harihararao Mojjada*	International Journal of Information Studies Vol: 17 No: 4	2025

Abstract: Sustainable principles are an integral part of green libraries, encompassing green technology, energy conservation, and environmental considerations. Firms with higher levels of green innovation have a positive impact on green firm performance, as evidenced by energy-saving or waste-reduction practices. These libraries demonstrate how they lower their eco-centric footprint using dynamic renewable energy sources, water conservation systems, and sustainable materials, with a focus on community and resource preservation, aiming to create places that reduce environmental impact and spark a vision of a sustainable future. This paper examines the future of green libraries by exploring emerging trends, innovations, and best sustainability practices. A spontaneous solution is what this is all about, as discussed at the tech talk on 'Ingenuity, sustainability and the future library', covering everything from architectural innovations to energy sustainability, from digital transformation to global proposals for policy changes that can inspire every effort to green libraries.

Sl.No	Article	Author	Source	Year
2	Reengineering the Libraries with Artificial Intelligence	*Mahesh M. Dalvi*	International Journal of Information Studies Vol: 17 No: 4	2025

Abstract: Artificial Intelligence (AI) is transforming various sectors worldwide, and libraries are no exception. From automating cataloguing to enhancing user experience through personalised services, AI is redefining the way libraries operate. This article explores the multifaceted applications of AI in library systems, examines its benefits and challenges, and discusses its implications for the future of librarianship

Sl.No	Article	Author	Source	Year
3	Artificial Intelligence and Applications in Library and Information Science (LIS): Transforming the Future of Libraries	*Deepak Singh*	International Journal of Information Studies Vol: 17 No: 4	2025

Abstract: Artificial Intelligence (AI) is revolutionising various sectors, and Library and Information Science (LIS) is no exception. By leveraging AI technologies, libraries can enhance their services, streamline operations, and improve user experiences. This paper explores the various applications of AI in LIS, the benefits of integrating AI technologies in libraries, and AI tools currently in use within the field. The adoption of AI in libraries signifies a significant evolution in the way these institutions operate and interact with their communities. Through the integration of AI technologies, libraries enhance multiple facets of their operations, such as information organisation, user services, research support, and accessibility. This technological advancement not only boosts the efficiency of library services but also enables personalised user experiences, ultimately promoting increased community engagement and digital literacy. [1][2] AI applications in libraries include automated cataloguing and recommendation systems, as well as chatbots that offer immediate assistance to patrons. These innovations empower libraries to customise their services according to individual user preferences, greatly improving the overall experience. Furthermore, AI is essential in the digitisation and preservation of delicate materials, making historical documents more accessible and ensuring that cultural heritage is safeguarded for future generations. [3][4] Nevertheless, the incorporation of AI in libraries presents its own set of challenges and controversies. Concerns regarding privacy, algorithmic bias, and ethical implications are vital considerations for library professionals as they navigate the intricacies of AI technology. For example, there are apprehensions about the potential for AI systems to reinforce existing inequalities and widen the digital divide, especially among marginalised communities. [5][6] Consequently, libraries must embrace responsible AI practices that emphasise transparency, inclusivity, and ethical use. Libraries must consequently embrace responsible AI practices that emphasise transparency, inclusivity, and user education to

alleviate these risks. [7] As libraries progress in the digital era, their function as knowledge facilitators is becoming ever more significant. By adopting AI, libraries not only improve their services but also strengthen their dedication to ensuring equitable access to information, thereby establishing themselves as essential resources in nurturing informed and engaged communities.

Sl.No	Article	Author	Source	Year
I	Deep Learning based Detection of AI generated Synthetic Images for Digital Forensics	*Sonal Lakade, Shyam Khairkar, Praveen Kokane, Amol Kale, Rajivkumar Mente*	Journal of Multimedia Processing and Technologies Vol: 16 No: 3	2025

Abstract: The rapid advancement of developments in artificial intelligence (AI), particularly in Generative Adversarial Networks (GANs), has paved the way for the creation of extremely realistic synthetic images that pose a challenge for digital forensics. Traditional image authentication techniques lack the pace to catch up with the growing sophistication of AI-synthesised images, calling for more innovative detection methods. This review examines the potential application of deep learning technologies, specifically Convolutional Neural Networks (CNNs), in detecting AI-generated synthetic images. The paper discusses several conventional and deep learning-based approaches, compares their performance, and indicates the significance of lightweight CNN models in maintaining computational efficiency without sacrificing accuracy. In addition, it elaborates on the implications of explainable AI in bringing transparency to detection models. The review also explores the importance of synthetic image data in computer vision tasks, as well as its challenges, including domain gaps and biases. Lastly, the application of digital forensics in preventing misinformation and malicious acts involving synthetic images is discussed. The results underscore the importance of reliable and interpretable deep learning-based detection methods in preserving the integrity of digital forensic examinations.

Sl.No	Article	Author	Source	Year
2	Fixed-Parameter Tractability of Successor-Invariant First- Order Logic on Graphs Excluding Topological Subgraphs	*Hongbin yuan, Chenyao yuan, Huiqun cao*	Journal of Multimedia Processing and Technologies Vol: 16 No: 3	2025

Abstract: This paper establishes that model checking for successor invariant first order logic (FO) is fixed parameter tractable on graph classes that exclude a fixed graph H as a topological subgraph. While model checking for plain FO is well understood on sparse graph classes, extending these tractability results to successor invariant FO where a successor relation is added but formulas must be invariant under its choice has been challenging. The authors extend prior results on planar and minor excluded graphs by proving tractability for the broader class of graphs excluding a topological subgraph. The proof utilises a decomposition theorem by Grohe and Marx, which constructs Ak walk in a super graph while preserving structural sparsity, thereby enabling the simulation of the successor relation via FO interpretation. This allows application of existing FO model checking algorithms on bounded expansion classes. The work narrows the gap between plain and successor invariant FO and also shows that model checking for order invariant FO is tractable on coloured posits of bounded width. The results contribute to algorithmic meta theorems, highlighting how structural graph properties can be leveraged in logic-based algorithm design

Sl.No	Article	Author	Source	Year
3	Multimedia Design of an Eco-Friendly Plan for the Landscape Environ ment in the Rural Region	*Shuo Wang*	Journal of Multimedia Processing and Technologies Vol: 16 No: 3	2025

Abstract: This work centres on the optimization design of the green architectural landscape environment in traditional villages, utilizing the niche genetic algorithm. The aim is to investigate how optimization design techniques can enhance the green architectural landscape environment in these villages. By examining the cultural traits and environmental challenges faced by traditional villages and integrating both domestic and international research advancements, a method grounded in the niche genetic algorithm is introduced. The results from experiments indicate that this approach significantly improves the green architectural landscape environment in traditional villages, thus elevating the quality of life for residents and their adaptability to the environment. This study offers a novel method and strategy for the sustainable development of traditional villages.

Sl.No	Article	Author	Source	Year
1	Climate resilient development for sustainable water security for India	*Sharad K. Jain, Manabendra Saharia, S. Murty Bhallamudi and Ligy Philip*	Current Science Vol: 128 No: 10	2025

Abstract: Much of the impact of climate change on humanity will be through changes in the quality and quantity of water. Impacts will be exacerbated due to increasing population, land-use and land-cover changes, high economic growth and the inherent nexus between water, food, and energy security. Current water development pathways in India are not resilient since, at times, hydro-projects are unable to provide reliable services and water security in extreme events. In the event of a failure, the system may take a long time to recover. Further, the reliabilities of the systems are likely to degrade in the future when the magnitude, intensity and variability of hydro-climatic processes will be higher. The present article describes current and future challenges in water resources management in India. Considering the current scenario and threats to water security, the present study suggests climate-resilient development (CRD) to create water infrastructure and sustainable management. A resilient system rapidly recovers after failure and tends to be more sustainable. The study also emphasises that CRD requires enabling laws, policies, and plans, good water governance at different scales, proper pricing, better data collection and analysis, institutional strengthening, resilient infrastructure, recycling and reuse, environmental protection, and integrated water resources management. Since the current state of the environments unhealthy, due care is needed to rejuvenate the environment and biodiversity. CRD pathways can be evaluated using sustainable development goals and their indicators for India.

Sl.No	Article	Author	Source	Year
2	Soil moisture estimation from Landsat-8 imagery using triangle method in Imphal–Iril river catchment, Manipur, India	*Ngangom Robertson and Oinam Bakimchandra*	Current Science Vol: 128 No: 10	2025

Abstract: Soil moisture is an essential indicator for long-term sustainable agriculture. Crop growth and production are highly dependent on cropland soil moisture conditions. The primary goal of this study is to assess surface soil moisture indirectly using satellite-derived temperature vegetation dryness index (TVDI) based on the triangle approach within the Imphal-Iril river catchment. TVDI was derived from the Landsat-8 imagery dataset for three different periods based on normalised difference vegetation index (NDVI) and land surface temperature (LST). Maximum and minimum LST values were calculated to compute TVDI using LST and NDVI. According to the results, NDVI and minimum LST showed a positive correlation, whereas NDVI and maximum LST showed a negative correlation. The TVDI was correlated with in situ soil moisture measurements using a regression analysis. Fifty in situ soil moisture measurement data were collected for three different periods over the catchment using time

domain reflectometry (TDR-300). These ground observation data were used to compute regression parameters and validate the study. The computed soil moisture values were validated against in situ volumetric soil moisture measurements. The results were statistically significant, with R 2 values of 0.83, 0.85 and 0.86 for 22 November 2018, 8 December 2018 and 9 January 2019, respectively. The results of this study revealed that TVDI can depict soil moisture variation under various land uses in a region. The study found that settlement areas and higher-elevated hilly regions have lower soil moisture content, whereas agricultural zones in the valley and densely vegetated areas show significantly higher soil moisture levels.

Sl.No	Article	Author	Source	Year
3	Antioxidant activities and biochemical analysis of Capsicum annuum L. varieties at different ripening stages	*Pooja Oli , Purnima Rawat, Shailaja Punetha, and Shivani Shukla*	Current Science Vol: 128 No: 10	2025

Abstract: Capsicum (Capsicum annuum L.) is a high-demand crop due to its versatility, which adds flavour, colour and nutritional value to various culinary products. Besides this, capsicum contains a significant number of biochemicals, including carotenoids, phenols, ascorbic acid, capsaicinoids and anthocyanins that impart various medicinal properties like antimicrobial, anticancer, pain reliever, and also help in the prevention of obesity, hypertension, dyslipidemia, diabetes and atherosclerosis. This crop demonstrates an array of vibrant colours reflecting different ripening stages that correspond to various biochemicals and nutritional activity. Hence, the objective of the present study was to examine the effect of ripening stages, i.e., green and red (mature stage), on the secondary metabolites and protein content of ten different varieties of Capsicum annuum. Across the study, all green and red capsicum varieties were studied and the highest total phenol content (TPC) (97.23 ± 0.14 mg GAE/g fw) was observed in Sita variety at red mature stage, total flavonoid content (TFC) from JF-3 variety at red stage (47.47 ± 0.24 mg QE/g fw), tannin content in NS-82 at red stage (34.32 ± 0.18 mg TAE/g fw). Similarly, the highest DPPH activity was observed in the Queen variety at green (132.42 ± 0.35 mg AAE/g fw) and red stage (158.30 ± 0.30 mg AAE/g fw). The maximum protein content was recorded in the Dolly variety at the green stage (20.5 ± 0.34%). The TPC, TFC, tannin, and protein contents of the Queen, Dolly, Rosy-400, and Durga varieties at red stages and Durga, KSP-1070, JF-3, and KSP-160 varieties at green stages are at par, which makes them ideal as alternatives for each other. Therefore, the findings of the study offer a basis for encouraging the utilisation of capsicum at both stages, as they contribute to a well-rounded nutritional profile and play a significant role in disease prevention

Sl.No	Article	Author	Source	Year
4	A report of Sulcolithos variabilis trace-fossils in India	*V. S. Parihar, Abhimanyu Singh, V. K. Meghwal and Anshul Harsh*	Current Science Vol: 128 No: 10	2025

Abstract: The burrowing or boring traces of polychaetes ascribed to Sulcolithos variabilis have been recorded in the Fort Member of the Jaisalmer Formation, Jaisalmer Basin, exposed near the Jethwai village area of Jaisalmer district, western Rajasthan, India. These traces are superficial and occur on firm calcareous grounds of yellowish medium- to fine-grained calcareous sandstone of the Fort Member as elongated, straight, or curved grooves, such as burrows or borings. They are mostly found with rounded ends, but sometimes these grooves are tapered at both ends. The Sulcolithos variabilis grooves range from 42 to 92 mm in length, 4 to 6 mm in width and 3 to 6 mm in depth. These trace-fossils in the Fort Member of the Jaisalmer Formation are interpreted as combined burrowing and boring behaviour traces, probably produced by polychaete worms. However, no in situ remains of polychaete worms have been found yet in the presently identified Sulcolithos variabilis grooves. This report represents the first documented instance of Sulcolithos variabilis burrowing and/or boring in India.

Sl. No	Article	Author	Source	Year
5	Assessing the impact of the pile-driven signal on the selected marine species from Indian waters	*N. X. Elizabeth Shani, Nimmi R. Nair and R. Sajeev*	Current Science Vol: 128 No: 10	2025

Abstract: Rising anthropogenic activities in the ocean have caused underwater noise pollution, which affects marine habitats in many ways. The present study assessed the impact of impulsive signals generated by a piling station on a few selected marine fishes in the Arabian Sea. A modelling approach has been employed to simulate the propagation of pile-driven signals in the low-frequency band. The present study found that pile driving had a significant impact on the hearing thresholds of selected marine fishes. The impact area of pile driving, estimated through the acoustic transmission loss model, was found to vary with environmental conditions and frequency. The study emphasises the need to establish mitigation techniques to lessen the impact of noise pollution on the maritime ecosystem.

Sl. No	Article	Author	Source	Year
6	Preserving breeding habitats in socio-ecological systems: insights from the stenotopic toad species Duttaphrynus hololius	*Saneesh Cherapurath Soman, Anil Sarsavan, S. R. Ganesh.*	Current Science Vol: 128 No: 10	2025

Abstract: Amphibians that depend on both aquatic and terrestrial environments for their life cycle (lentic water breeders) utilise lentic water systems across diverse habitats like rivers, rocks, farms and forests. Successful breeding in these sites relies on natural water regimes, but anthropogenic alterations pose a significant threat. In the present study, we examined the impact of agricultural practices, small-scale granite mining and silt accumulation on the breeding cycle of the range–restricted and stenotopic Duttaphrynus hololius. We hypothesised that alterations to breeding pools, such as siltation and reduced water availability, would negatively impact the breeding success of this toad species. Our findings indicate that agriculture and grazing did not have a negative impact on breeding activities. Nevertheless, silt accumulation and granite mining were identified as major factors leading to unsuccessful breeding cycles. These results highlight the importance of conserving breeding habitats within socio-ecological landscapes for the persistence of this amphibian. Sustainable management practices are crucial to ensure the survival of D. hololius, particularly those that mitigate the negative impacts of silt accumulation and small-scale granite mining.

Sl. No	Article	Author	Source	Year
7	The magma-mixed granitoid system, Eastern Dharwar Craton, India: evidence from the mafic enclaves and syn-plutonic dykes from Madugulapalli	*J. Nagamma, Ch. Ashok, and J. Ratnakar*	Current Science Vol: 128 No: 10	2025

Abstract: To understand the fundamental processes for the generation of granites, associated rock types and compositional diversity, we studied the Madugulapalli granitoids that constitute a part of the Eastern Dharwar Craton (EDC) of southern India. The Madugulapalli area consists of three rock types, including a host granitic rock (GN, syeno-monzogranite), mafic microgranular enclaves (MME) and syn-plutonic dykes (SPD). The MME and SPD are characterised by (a) spherical and ellipsoidal shapes with associated chilled margins, (b) the presence of megacrysts of K-feldspar and plagioclase and (c) the presence of acicular apatite, ocellar quartz and plagioclase with oscillatory zoning and resorption surfaces, all suggesting that they are globules of mafic magma derived from the mantle sources and SPD are injected into the crystal mush of the felsic host. Geochemical analyses suggest that MME and SPD are derived from the mixing of a partial melt from heterogeneous mantle and crustal source. The MME and SPD

exhibit colinear compositions with the host GN, suggesting that they are the products generated by magma mixing in different proportions of injected mafic melts and the host granite. During various stages of crystallisation, granitic magma interacted with a smaller amount of mafic magma. Based on mixing calculations, a mass fraction of felsic magma (xA = 0.71) mingled with mafic magma to generate hybrid rocks in the Madugulapalli region. Field, petrographic and geochemical evidence suggests that they are generated in a subduction environment in which large-scale mantle and crustal-derived magmas are produced and mixed at the crustal emplacement level. Hence, the Madugulapalli rocks represent a magma-mixed granitoid system from the EDC.

Sl. No	Article	Author	Source	Year
1	Rethinking science and mathematics pedagogy in Indian higher education	*Aahana Ganguly, Divya Uma, Proteep Mallik, Sravanti Uppaluri and Tulsi Srinivasan*	Current Science Vol: 128 No: 9	2025

Abstract: Undergraduate science and mathematics curricula in India are still mostly centred around content, and the pedagogy on delivering this content. This does not serve the needs of a diverse student body, nor the needs of these disciplines. Keeping in mind the multiple constraints that undergraduate teachers face, we provide some pedagogical principles for student-centred learning, and some examples illustrating these principles that we believe can be carried out in different contexts.

Sl. No	Article	Author	Source	Year
2	Indian beamline at Photon Factory, high-energy accelerator research organization (KEK), Tsukuba, Japan	*Poonam Yadav and Sebastian C. Peter*	Current Science Vol: 128 No: 9	2025

Abstract: Synchrotron X-ray sources play a vital role in the detailed structural characterisation of new materials and in advancing our understanding of structure–property relationships in advanced materials. Recognising the absence of intense X-ray synchrotron sources and the pressing nationwide demand for access to radiation sources to propel nanoscience and materials research forward, a national program was launched by Nano Mission, Department of Science and Technology, India. As part of this initiative, the Indian Beamline was established at the High-

Energy Accelerator Research Organization (KEK) in Tsukuba, Japan, representing a flagship cooperative endeavour. This facility operates at 2.5 GeV with a storage ring current of 450 mA, providing around 4000 hours of user time annually across six different experiment types. The operational efficiency of this synchrotron facility, with an impressive ratio of actual user time to scheduled user time maintained at 96–98%, stands as a critical benchmark for the planning and execution of synchrotron-related experiments.

Sl.No	Article	Author	Source	Year
3	Plant growth promoting bacteria as source of secondary metabolites: an emergent principle in plant science	*Amandeep Singh Sidhu, Charanjit Singh Aulakh, Sukhveer Singh Bhullar, Harmanjot Kaur3, Gulab Pandove, Amanpreet Singh and Anuj Choudhary*	Current Science Vol: 128 No: 9	2025

Abstract: The biological phenomena of soil consist of life, macro and microfauna and flora which make a big contribution to soil health and fertility. Soil, plant and rhizosphere microorganisms have a strong relationship to sustain plant growth and development. Bacteria and fungi constitute the most abundant groups in the rhizosphere. The beneficial rhizobacteria have several positive effects on the environment, soil conditions, and plant growth and are known as plant growth promoting rhizobacteria (PGPR). PGPR have positive effects on plant physiology and growth when used as biofertilizer and biocontrol, root colonization, induced systemic resistance, phytopathogen biocontrol, etc. The use of PGPR or other microbial-based products is increasing as the most suitable option for reducing the use of chemicals and to sustain productivity as well as soil health. However, there are a few bottlenecks such as biotic and abiotic stresses and commercialization of PGPR. In this review, we have therefore discussed the mechanisms of PGPR, different secondary metabolites that are being produced by Bacillus and Pseudomonas, their synthesis pathways and ecological interactions in nature.

Sl. No	Article	Author	Source	Year
4	Automatic extraction of economically important forest tree species using deep learning and image processing techniques	*Anju Bajpai, A. O. Varghese, T. P. Girish Kumar and G. Sreenivasan*	Current Science Vol: 128 No: 9	2025

Abstract: Trees are crucial for the structure and functioning of forests and play a significant ecological and economic role. Certain tree species in forests have a key economic impact by providing timber and non-timber forest products (NTFPs) and contributing to the economic productivity and the livelihood of forest-dependent communities. Therefore, it is vital to accurately identify and quantify these economically important species to prioritise resource allocation and support rural livelihoods. While previous studies have focused on identifying tree species in more uniform temperate forest regions, few studies have concentrated on tropical, heterogeneous forests. Trees like Madhuca longifolia (Mahua), Dendrocalamus strictus (Bamboo), Tectona grandis (Teak), and Hardwickia binata (Anjan) are widely found in the Central regions of India. This study aimed to automatically identify economically important tree species using object-based image processing techniques, such as segmentation, object-based image classification, graphic analysis of spectral reflectance curve, and deep learning methods applied to Pléiades Neo Satellite data. Trees possess specific crown characteristics, tone, texture, pattern and shadows, which produce distinctive spectral and spatial signatures. The study automatically extracted the targeted trees from India's highly diverse tropical forests, achieving an intersection over union (IoU) of 0.806. The Kappa coefficient turned out to be 0.81321, with omission error of 3% and commission error of 8%.

Sl. No	Article	Author	Source	Year
5	Structural, thermal, dielectric and modulus studies on magnesium-doped tamarind seed polysaccharide based biopolymer electrolytes	*P. V. N. M. Kaushik, N. Krishna Jyothi, M. Gnana Kiran, Mahantappa S. Jogad,and K. Vijaya Kumar*	Current Science Vol: 128 No: 9	2025

Abstract: We report the X-ray diffraction (XRD) profile, differential scanning calorimetry (DSC) plots and measurements of ionic conductivity, dielectric parameters and electric modulus parameters for different compositions of magnesium chloride (MgCl2)-doped tamarind seed polysaccharide (TSP) biopolymer electrolyte films. Different compositions of the biopolymer and dopant salt were used in the ratios of TSP: MgCl2 (90: 10, 80: 20, 70: 30 and 60: 40 wt.%). The XRD and DSC plots confirmed the highest amorphous nature for the optimum composition TSP: MgCl2 (70: 30 wt.%). AC impedance spectroscopy was used to determine the ionic conductivities of the prepared films. For TSP: MgCl2 (70: 30 wt.%), a maximum conductivity of 1.27 × 10–5 S cm–1 was reported at 303 K and 2.09 × 10–5 S cm–1 at 363 K. The values of the dielectric constant and dielectric loss were higher at lower frequencies and gradually declined with the frequency for all the films. The highest values of the dielectric

constant and dielectric loss for the composition TSP: MgCl2 (70: 30 wt.%) were reported to be 3.87 × 104 and 2.08 × 105 respectively. Studies of the electric modulus spectra revealed the relaxation process that occurs in biopolymer electrolyte systems.

Sl. No	Article	Author	Source	Year
6	Long-term rainfall trend analysis for six homogeneous monsoon regions of India	*Meenakshi Ramola, Prabhash K. Mishra, Purna C. Nayak,and Aradhana Thakur*	Current Science Vol: 128 No: 9	2025

Abstract: Rainfall recharges natural sources of water, which directly or indirectly impacts India's economy. Rainfall-induced natural calamities coupled with climate change have a vast impact on water resources. The present study attempts to examine the spatial and temporal variability of rainfall across six homogeneous monsoon regions of India, viz. Central Northeast, Northeast, Northwest, South Peninsular, West Central and Hilly. In this study, the non-parametric Mann Kendall (MK) test, Sen's slope estimator (SSE) and entropy method have been used for trend analysis of 100-year gridded rainfall data. Here, monthly, seasonal and annual trends were analysed with the help of Statistics, Sen's slope, marginal disorder index (MDI) values, and for visualisation of results, box plot and GIS-based Kriging approaches were used. Rainy-day trends were also considered in the analyses. Thus, Central Northeast, West Central and Hilly regions showed decreasing annual and monsoon trends, whereas Northeast, Northwest, South Peninsular regions showed increasing annual and monsoon trends. The Central Northeast region was the only region that showed a significant decreasing rainfall trend at a 5% level of significance, with a Z-statistics of –3.31. Trends of remaining regions were not significant. The Northwest region, comprising dry, arid region, showed an increasing rainy-day trend with a Z-statistics of corrected as 0.89. Entropy-based variability analysis indicated the Northwest region with maximum variability with an MDI value of 0.04 each, for monsoon and annual rainfall series. The maximum MDI value was found for Northwest region, indicating highest variability in the rainy-day series.

Sl. No	Article	Author	Source	Year
1	The Influence of Story-Based Video Games on Enhancing Players Motivation in Developing Vocabulary	*John Paolo L. Etrata, Francis Gabriel L. Magno, Chrys Allayne T. Resurreccion, Camilla J. Vizconde*	I-Manager's Journal on English Language Teaching Vol: 15 No: 3	2025

Abstract: This study examines the influence of story-based video games on players' motivation to enhance vocabulary development. It investigates how gameplay elements, such as character dialogue, plot progression, and contextual language use, contribute to language learning and proficiency among players. The qualitative data collected from Reddit and YouTube posts and comments indicated how gameplay elements, including character dialogue, plot progression, and contextual language use, contribute to language learning and proficiency. The study focused on categorizing and graphically analyzing player interactions and discussions related to language learning behaviours within the context of story-driven games. The research findings provide insights into the potential benefits of incorporating video games into language learning programs. Results indicated a strong interest among players in using video games as materials for language learning, with particular emphasis on genres such as role-playing games (RPGs), open-world games, and simulation games. The findings emphasized the potential of interactive storytelling in fostering language skills and motivation among players, suggesting implications for integrating video games in language learning.

Sl. No	Article	Author	Source	Year
2	Teachers Perceptions of the Impact of Technological and Cultural Modernization on Politeness among Iranian EFL Students	*Hadi Heidari, Hadi Sadeghi*	I-Manager's Journal on English Language Teaching Vol: 15 No: 3	2025

Abstract: The current study explored teachers' perceptions of the impact of technological and cultural modernization on politeness among Iranian EFL students. The study followed a qualitative design in the form of semi-structured interviews to gather the necessary data from the language teachers. The participants in this study were 30 teachers in TEFL. They were chosen based on convenience sampling. The main instrument used in this study was a semi-structured interview to gather the necessary data from the language teachers. In this study, the necessary data were evaluated through thematic analysis and thick description by two coders. The results were presented in the form of the main themes emergent in the study. The study ended in several conclusions; initially it was concluded that the new generations of Iranian students are immensely influenced by modernization and the spread of Western culture; therefore, they have different views and ways of handling generational and cultural differences in English language education. Secondly, it was found that communication between teachers and new-generation students in Iran would reveal politeness problems. Moreover, it was concluded that the experiences and views of Iranian teachers, based on their interactions with different

generations in English language education, would give helpful information. It was suggested that since the new generation has its own needs and priorities and even jargon that may not be fully understandable to the previous generation of teachers and instructors, it is better to think and research more about this generation and their needs.

Sl. No	Article	Author	Source	Year
3	Effectiveness of Delegator Teaching Method on Self efficacy and Achievement in English among Secondary School Students	*Ismail Thamarasseri, Jemy Antony*	I-Manager's Journal on English Language Teaching Vol: 15 No: 3	2025

Abstract: This study examines the impact of the delegator teaching method on self-efficacy and academic achievement in English among secondary school students. Unlike traditional activity-oriented methods, which limit student autonomy, the Delegator Teaching Method emphasizes learner-cantered strategies, fostering autonomy, collaboration, and critical thinking. Employing a non-equivalent group design, the study involved two groups: an experimental group taught using the Delegator Teaching Method and a control group using activity-oriented methods. Self-efficacy was measured and the academic achievement in English was assessed through standardized tests focusing on writing, speaking, reading, and grammar. Results indicated that students in the experimental group exhibited significant improvements in self-efficacy and academic performance compared to the control group. Writing and speaking skills showed the greatest gains, attributed to the interactive and participatory nature of the method. Reading and grammar also improved, albeit to a moderate extent. A positive correlation was identified between self-efficacy and achievement, highlighting the influence of confidence on academic success. The findings affirm the delegator teaching method as an effective approach to enhance self-efficacy and academic outcomes in English. Its learner-cantered framework fosters active engagement and critical thinking, offering a compelling alternative to traditional pedagogies. This research underscores the need for innovative teaching strategies to address diverse learner needs and prepare students for academic and real-world challenges. Future studies could explore its applicability across different subjects and educational contexts to further validate its effectiveness.

Sl. No	Article	Author	Source	Year
1	Beyond the Hook: Advanced Phishing Techniques and AI-Driven Defenses	*Kanteti Sri Sandhya , Uppe Nanaji Deepti , C. P. V. N. J. Mohan Rao*	I-Manager's Journal on Information Technology Vol: 14 No: 2	2025

Abstract: Phishing attacks are one of the most prevalent and dangerous forms of cybercrime today. These attacks exploit human psychology and technical vulnerabilities to steal sensitive information, including login credentials, financial data, and personal identification. This paper explores the anatomy of phishing attacks, common techniques employed by attackers, notable real-world cases, and advanced countermeasures using artificial intelligence (AI), machine learning (ML), and user education. A comprehensive analysis of phishing trends and defines strategies is provided to inform both technical and non-technical audiences about the importance of cybersecurity resilience.

Sl. No	Article	Author	Source	Year
2	Security Challenges in Smart IoT Systems and their Solutions	*Elavarasi Kesavan, Senduru Srinivasulu*	I-Manager's Journal on Information Technology Vol: 14 No: 2	2025

Abstract: The rapid spread of Smart Internet of Things (IoT) systems across healthcare, transportation, and smart homes has transformed human-technology interaction while introducing significant security vulnerabilities. This research identifies and analyses critical security challenges in Smart IoT ecosystems and proposes comprehensive mitigation strategies. The investigation reveals a diverse device landscape lacking standardized security protocols, leaving systems susceptible to malware, unauthorized access, and denial-of-service attacks, with many devices continuing to operate with unchanged default passwords. The study highlights the necessity for robust security measures including encryption, secure boot processes, and regular software updates. A multi-layered security approach is advocated, requiring collaboration among manufacturers, users, and regulatory bodies to establish industry-wide standards and enhance user awareness regarding security best practices. The research further examines how advanced technologies such as machine learning and blockchain can improve threat detection capabilities and data integrity in IoT environments. This paper underscores the urgency of addressing IoT security challenges to foster trust in these innovative technologies. As connected devices continue to proliferate, ongoing research and cooperative efforts across stakeholders are essential for developing effective security strategies. The findings contribute to the evolving discourse on IoT security by providing actionable insights for industry stakeholders seeking to protect increasingly interconnected digital ecosystems.

Sl. No	Article	Author	Source	Year
3	Secure Multi-Spectral Image Encryption using Chaos and Gravitational Diffusion	*Venkata Ganesh J., Joseph K., Yadidya K., Leeladhar Manikanta L., Sudhakar Putheti*	I-Manager's Journal on Information Technology Vol: 14 No: 2	2025

Abstract: This study introduces an advanced encryption technique for multi-spectral images that combines chaotic systems and a gravitational model to enhance security. The method tackles challenges like high dimensionality and inter-band correlations through a multi-layered approach. By using bit-plane decomposition, it achieves precise data manipulation, while a hybrid chaotic system combining 2D Logistic-Tent-Modulated Map and 1D Sine-Cosine-Sawtooth Map ensures high-quality randomness for pixel and spectral band scrambling. Additionally, a gravitational model-based diffusion process dynamically modifies pixel intensities, further strengthening encryption, dynamic image-dependent key generation ensures unique encryption keys for every image, enhancing resistance to brute-force attacks. The decryption process is fully reversible, ensuring accurate image reconstruction. Experimental results highlight the method's high sensitivity to initial conditions, strong defence against statistical and differential attacks, and efficient handling of multi-spectral data. This makes it a secure and scalable solution for applications like remote sensing, medical imaging, and defence.

Sl. No	Article	Author	Source	Year
4	Salesforce Classic as Well as Lightning Automation using TOSCA Automation and TOSCA AI-Powered Salesforce Engine	*Elavarasi Kesavan*	I-Manager's Journal on Information Technology Vol: 14 No: 2	2025

Abstract: This paper examines how TOSCA Automation and the TOSCA AI-driven Salesforce Engine function to enhance automation in Salesforce Classic and Lightning systems. It particularly looks at how these tools boost efficiency, accuracy, and user satisfaction in sales activities. By collecting both qualitative and quantitative data, including user surveys, performance statistics, and case studies from companies utilizing these automation tools, the research indicates notable improvements in work processes. User satisfaction increased by over 30%, and task completion time reduced by roughly 25%. These findings underscore TOSCA's effectiveness in streamlining sales workflows, not only in business contexts but also in healthcare, where proper service and data management are crucial. The research findings carry important implications for healthcare, indicating that using advanced automation tools can enhance productivity and resource management, subsequently improving patient outcomes and satisfaction levels. This study contributes to the current understanding of digital transformation in healthcare, demonstrating how robotic

process automation can assist with data-intensive tasks and foster an innovative environment aligned with the healthcare sector's growing technological emphasis.

Sl. No	Article	Author	Source	Year
5	Stress Level Prediction and Monitoring using CNN Model	*M. Kishore Babu, Pranathi Gunnam, Karavalla Munni, Tulasi Gurram, Yaswanth Sai Madala, Saikrishna Kancharlapalli*	I-Manager's Journal on Information Technology Vol: 14 No: 2	2025

Abstract: Stress at work has become a serious problem that affects worker health and business success. Traditional methods of measuring stress, such as self-reports and surveys, are unreliable and may not provide immediate feedback. To overcome these problems, this paper proposes a real-time stress monitoring system that analyses facial expressions and detects stress using CNNs. The system is suitable for modern workplaces because it uses MobileNetV2 for fast and scalable processing. It also features a chatbot powered by an artificial neural network (ANN) that provides customized stress reduction recommendations, including relaxation techniques and counselling materials. Based on the pilot test results, the system is accurate and efficient, making it a useful tool for managing stress in different work settings.

Sl. No	Article	Author	Source	Year
1	Trust, Intimacy, and Execution in Coaching Practice	*Adedayo Ogunleye*	I-Manager's Journal on Humanities & Social Sciences Vol: 5 No: 2	2025

Abstract: This study examines the roles of trust, intimacy, and execution in enhancing coaching effectiveness, based on insights from 15 professional coaches and 30 coaches. It aims to identify best practices that contribute to successful coaching relationships and outcomes. The main objectives are to understand how trust shapes coaching relationships and outcomes, exploring intimacy's impact on client engagement, assessing effective coaching execution strategies and barriers, and formulating best practices to enhance client satisfaction. Using a mixed-methods approach, qualitative data were gathered from semi-structured interviews and analysed thematically, highlighting trust as foundational to coaching

(moderately correlated with outcomes, r = 0.68, p < 0.01) and intimacy as crucial for engagement (strongly correlated with progress, r = 0.72, p < 0.01). Quantitative data from questionnaires showed that structured execution significantly outperformed barriers (t(44) = 4.13, p < 0.01). Findings recommend fostering trust through openness and feedback, enhancing focus and agency with structured plans, and building intimacy by creating a respectful, empathetic environment. These best practices align with principles in Primal Leadership by Daniel Goleman and Martin Seligman's positive psychology framework. Future research should further validate these findings across larger, diverse samples and varied coaching contexts.

Sl. No	Article	Author	Source	Year
2	Development of a Digital Repository to Enhance Competitive Skills in Malayalam among Undergraduate Students	*Ismail Thamarasseri, Vimala M. J.*	I-Manager's Journal on Humanities & Social Sciences Vol: 5 No: 2	2025

Abstract: This study focuses on the development of a digital repository to enhance competitive skills in Malayalam among undergraduate students. Recognizing the limited availability of high-quality digital resources in regional languages, the research aims to bridge this gap by creating an online platform tailored to Malayalam's linguistic and academic needs. The repository consolidates diverse educational materials, such as study guides, practice exercises, and model exams, fostering key competencies like knowledge acquisition, understanding, analysis, and application. Using a mixed- methods approach, the study involved 43 second-year undergraduate students who underwent pre- and post-tests to assess the repository's impact. Results demonstrated significant improvements across all tested components, validating the repository's effectiveness in enhancing language proficiency and competitive skills. The intervention also showcased the value of incorporating digital tools into traditional education to democratize learning opportunities, particularly for students in rural or underserved areas. Beyond its academic contributions, the repository also aims to preserve and promote Malayalam's rich literary and cultural heritage, ensuring accessibility for future generations. Recommendations include integrating such repositories into curricula, leveraging emerging technologies like artificial intelligence for personalized learning, and expanding the model to support other regional languages. This initiative exemplifies the potential of digital solutions in regional language education, contributing to both academic success and cultural preservation.

Sl. No	Article	Author	Source	Year
3	The Challenge of Copied TV Serials to Kannada Literature and Stories	*Sushmitha Kotian, Venkatesh S. Amin*	I-Manager's Journal on Humanities & Social Sciences Vol: 5 No: 2	2025

Abstract: Conversations concerning the effects of cloned TV shows on Kannada television on the originality and integrity of Kannada storytelling and literature have been triggered. This review of the literature investigates the phenomenon of TV serial adaptations and direct copies, looking at how it affects viewer choices, industry dynamics, and cultural authenticity. By synthesizing existing research and critical analyses, this study aims to delineate the challenges posed by copied serials and propose strategies to promote original Kannada narratives amidst commercial pressures. TV serials play a major role in entertainment, spreading happiness, the spread of culture, as well as time passing. People need entertainment, and people watch TV serials. Serials are a continuation of stories and plots. Women are excited and want to watch many more such serials. They discuss these stories with other women. In this process, they discuss the stories and the plots. This makes serials more attractive and entertaining. Indeed, women in general are interested in families, extramarital relationships, gossip, and they would be interested in knowing what is happening on the other side. Hence, stories and plots are written for a female audience. These stories attract more attention as the plot thickens and leads to another one. Thus, because of the viewership, TV serials are profitable. Total Rating Points (TRP) serve as the foundation for determining the cost of an advertisement series. Thus, the focus of this study is on the value of local stories and culture. To write better stories, authors need financial assistance and motivation. This paper also emphasizes Kannada literature and Kannada stories, as stories are copied from other languages like Marathi, Gujarati, or Hindi.

Sl. No	Article	Author	Source	Year
4	The Decline of Print Newspapers: Understanding the Shift to E-Papers and Strategies to Mitigate the Downslide	*Sushmitha Kotian, Prajna Odilnala, Venkatesh S. Amin, Padmanabha C. H.*	I-Manager's Journal on Humanities & Social Sciences Vol: 5 No: 2	2025

Abstract: In recent years, print newspapers have witnessed a significant decline in readership and revenue, largely due to the increasing popularity of digital news platforms and e-papers. This paper aims to explore the factors contributing to this shift, analyze the impact on traditional newspapers, and propose strategies to prevent further decline. The study will investigate the changing preferences of the current generation in terms of getting news and information. The authors of this paper "The Decline of Print Newspapers: Understanding the Shift to E-Papers and Strategies to Mitigate the Downslide" have explored this topic using news inputs, including images, reports, and analyses that reflect the thought process conveyed from

the field by journalists to the newsroom. Each news item makes a narrative and leads to form a group opinion in the minds of customers. Cluster analysis is the key to understanding how groups of people think and implement their thoughts in a direction for change or betterment.

Sl. No	Article	Author	Source	Year
5	Perceived Thwarted Psychological Needs and Suicidal Ideation among Selected Nigerian University Students: The Mediating Role of the Adversity Quotient	*Rotimi Oguntayo , Marisela Gutiérrez Vega*	I-Manager's Journal on Humanities & Social Sciences Vol: 5 No: 2	2025

Abstract: Suicide as a global health challenge has recently increased among university students, while studies focusing on developing countries are inadequate. The purpose of this study is to examine the mediating role of the adversity quotient in the relationship between thwarted psychological needs (belongingness, social-environmental control, and meaningful existence) and suicidal ideation. This cross-sectional survey used simple randomization where a sample of 501 students was taken at the University of Ibadan, Nigeria (mean age = 16.58 ± 30.7 years). A questionnaire pack containing the Columbia-Suicide Severity Rating Scale (C-SSRS), Primary Needs Questionnaire (PNQ), and Adversity Quotient Scale (AQS) was used for data collection. The results showed a negative correlation between age, AQ, and suicidal ideation. However, the three dimensions of thwarted psychological needs were positively associated with suicidal ideation. The mediational model showed that AQ mediated the relationships between thwarted belongingness, social environment control, meaningful existence, and suicidal ideation. This study concluded that there is a correlation between age, AQ, and suicidal ideation, while the dimension of thwarted psychological needs is positively associated with suicide. Also, the adversity quotient, directly and indirectly, mediated the relationship between thwarted psychological needs and suicidal ideation. Recommendations and limitations are discussed.

Sl. No	Article	Author	Source	Year
1	Control and Analysis of Compressed Air Energy Storage System Integrated with PV Solar System	*Ali Mohammed Abdela, Yeshitela Shifertaw Maru*	I-Manager's Journal on Power Systems Engineering Vol: 13 No: 1	2025

Abstract: This paper presents the modelling, control, and performance analysis of a hybrid energy system integrating a photovoltaic (PV) solar system with a Compressed Air Energy Storage (CAES) system. This integrated system aims to address the intermittency of solar energy by utilizing excess PV energy to compress and store air, which is later expanded to drive a turbine connected to an induction generator during periods of low solar irradiance. The generator output also supplies to the compressor motor for making a recycled CAES system and maintain it for a long duration. A comprehensive mathematical model is developed for the PV and CAES subsystem, incorporating maximum power point tracking (MPPT), DC-DC boost conversion, and power electronics interfacing. PID controllers are used for optimal pressure regulation and control of the CAES system cycle. The entire systems is simulated using MATLAB/Simulink. Results validate enhanced power reliability, improved load support during PV system intermittency, and overall system efficiency in a renewable energy system microgrid context.

Sl. No	Article	Author	Source	Year
2	Energy and Power Performance Analysis of a Hybrid Electric Two-Wheeler	*Balasaheb Annasaheb Kardile, Abhijeet Bhikashet Auti, Mahasidha Ramgonda Birajdar, Amol Bhimrao Ubale*	I-Manager's Journal on Power Systems Engineering Vol: 13 No: 1	2025

Abstract: This study presents a real-time energy management system for hybrid electric two-wheelers, leveraging Controller Area Network (CAN) data to optimize power distribution between the internal combustion engine and electric motor based on dynamic load inputs. The proposed EMS improves fuel efficiency, reduces emissions, and enhances battery utilization through adaptive energy flow strategies. Additionally, predictive maintenance and intelligent control algorithms ensure optimal hybrid operation. The findings highlight the advantages of real-time load-based energy management over conventional drive cycle-based methods. Future research will explore the integration of vehicle-to-everything (V2X) communication for traffic-aware energy optimization and AI-driven predictive diagnostics. This study contributes to the advancement of sustainable and efficient hybrid two-wheeler technology, addressing critical gaps in adaptive energy management and real-world validation.

Sl. No	Article	Author	Source	Year
3	Implementation of Charging Station for Electric Vehicle using Solar Panel with IoT	*Sanika Kadam, Shweta Kadam, Rameez Shamalik*	I-Manager's Journal on Power Systems Engineering Vol: 13 No: 1	2025

Abstract: The rise of electric vehicles (EVs) has intensified the need for reliable, sustainable, and intelligent charging infrastructure. Solar-powered EV charging stations, enhanced with Internet of Things (IoT) capabilities, offer a promising solution to meet this growing demand. This paper presents a comprehensive review of IoT-enabled solar charging systems, focusing on their architecture, key components, communication protocols, and technological integration. While these systems provide numerous environmental and operational benefits, they also pose challenges in areas such as cybersecurity, energy optimization, and system complexity. By examining existing research and technological developments, this paper highlights the transformative potential of combining solar energy and IoT technologies in EV charging stations, promoting cleaner, more connected, and efficient mobility solutions.

Sl. No	Article	Author	Source	Year
1	Development of an Edu-Blog in Biology for Class X Equivalency Programme Learners under the Kerala State Literacy Mission Authority	*Ismail Thamarasseri , Sheryl Varghese*	I-Manager's Journal on Life Sciences Vol: 4 No: 2	2025

Abstract: This study explores the development and effectiveness of an Edu-blog in biology tailored for learners enrolled in the Class X Equivalency Programme under the Kerala State Literacy Mission Authority (KSLMA). Recognizing the challenges faced by neo-literates and adult learners in grasping complex biological concepts through conventional pedagogies, the researchers employed a mixed-method approach combining survey and experimental methods. Difficult subtopics were identified through interviews with teachers and learners, followed by the creation of a customized Edu-blog (www.ucanlearneasy.com) using the Wix platform. The blog integrated multimedia tools such as videos, quizzes, and concept maps to enhance engagement and understanding. A single-group pre-test, post-test design was implemented to assess the impact of the Edu-blog. The results demonstrated a significant improvement in learners' achievement scores, indicating the Edu-blog's potential to enhance conceptual clarity and support inclusive, lifelong learning. The study advocates for the integration of digital tools in non-formal education settings and provides a model for scalable educational innovation.

Sl. No	Article	Author	Source	Year
2	Green Marketing for Environmental Sustainability: A Critical Review	*Dhason Antony*	I-Manager's Journal on Life Sciences Vol: 4 No: 2	2025

Abstract: This review-based article aims to provide knowledge about green marketing by critically examining key aspects such as green marketing and products, problems and challenges reported in the literature, consumer perspectives, factors influencing adoption, benefits, valuable suggestions, and selected organizational practices. Further, it says the green financing activities boost the functions of green business. Most of the contents of this article reflect the Indian firms' reflection. Higher costs, limited access to green technologies, limited incentives, low environmental awareness, resistance to change, and lack of consumer trust in green claims are the few challenges companies face while launching green products. From the consumers' points of view, environmental concern, price concern, product efficacy, brand image, available and accessible products, and education and awareness are the few factors influencing the consumers' behaviour. As far as the factors influencing the promotion of green products are concerned, the key elements such as environmental consciousness, product price, quality, availability, affordability, demographic and psychographic profiles, media exposure, green trust, and positive attitude collectively serve as drivers of green marketing activities. In order to strengthen the green marketing activities, the following are a few suggestions recommended: The following suggestions are recommended to strengthen green marketing activities: Environmental Studies, encouraging the sale of green products, targeting larger shops as well as smaller ones, imitating companies that actively promote green practices, being aware of the Environment Protection Act of 1986, promoting green behaviour, implementing green finance operations, and establishing a Green Award.

Sl. No	Article	Author	Source	Year
3	The Role of Awareness in Reducing Antinutrients for Enhanced Nutrient Absorption: A Review	*Anushree Khaire*	I-Manager's Journal on Life Sciences Vol: 4 No: 2	2025

Abstract: Antinutrients, naturally present in plant-based foods, can significantly hinder the bioavailability and absorption of essential nutrients such as iron, calcium, and zinc. These compounds include phytates, oxalates, tannins, and lectins, among others. While they serve protective roles for plants, their consumption in excess or in unprocessed forms may impair human nutrition. This review highlights the pivotal role of consumer awareness in reducing the intake of dietary antinutrients and improving nutrient absorption. It emphasizes the necessity of educating populations about antinutrients, their effects, and traditional and modern food processing methods that reduce their concentration. Awareness campaigns and

nutrition education programs have shown positive impacts on food choices and cooking practices, ultimately promoting better health outcomes. Enhanced knowledge can empower individuals to make informed dietary decisions, thereby mitigating the risk of malnutrition and micronutrient deficiencies.

Sl. No	Article	Author	Source	Year
4	Sustainable Engineering Approaches using Quantum Algorithms to Predict Oceanic Plastic Drift Patterns	*Xavier Nishanth P*	I-Manager's Journal on Life Sciences Vol: 4 No: 2	2025

Abstract: The proliferation of microplastics in marine environments poses a significant ecological threat, necessitating sophisticated modeling techniques to understand their distribution and transport mechanisms. Traditional computational methods typically struggle to capture the intricate dynamics of ocean currents and their interactions with microplastic particles due to the sheer complexity and variability of marine ecosystems. Considering these challenges, quantum computing emerges as a transformative technology capable of enhancing predictive accuracy and computational efficiency in environmental modelling.

Sl. No	Article	Author	Source	Year
I	Ernst Otto Fischer: An Architect, Influencer and Pioneer in Organometallic Chemistry	*Joyanta Choudhury*	Resonance Vol: 30 No: 10	2025

Abstract: Ernst Otto Fischer (1918–2007) was a German organometallic chemist, well-known for his seminal contribution to the field of organometallic ‘sandwich’ compounds. The 1973 Nobel Prize in Chemistry was awarded jointly to E. O. Fischer and Geoffrey Wilkinson (1921–1996) of the UK, “for their pioneering work, performed independently, on the chemistry of the organometallic sandwich compounds”. Other than the chemistry of sandwich complexes, Fischer also developed and pioneered the field of transition metal-alkylidene and -alkylidyne (known as Fischer carbene and Fischer carbyne) complexes. This article briefly highlights the work of E. O. Fisher and his legacy.

Sl. No	Article	Author	Source	Year
2	Sir Geoffrey Wilkinson: Architect of Modern Organometallic Chemistry	*Moumita Patra, Jitendra K Bera*	Resonance Vol: 30 No: 10	2025

Abstract: Sir Geoffrey Wilkinson (1921–1996) was a distinguished British chemist whose contributions fundamentally shaped modern inorganic and organometallic chemistry. The mid-20th century witnessed a period of rapid progress in the understanding of chemical bonding, especially in coordination and transition metal chemistry. Among the key figures driving this progress, Wilkinson emerged as one of the most influential chemists of his generation. His pivotal role in deciphering the structure of ferrocene, a discovery that challenged conventional bonding theories and ushered in a new era of sandwich compounds.

Sl. No	Article	Author	Source	Year
3	Revisiting the Concept of Macrostates and Microstates in a Degenerate System: Finite and Infinite Levels	*Anuradha Gupta, Deepak Jain*	Resonance Vol: 30 No: 10	2025

Abstract: The main objective of this article is to introduce a simple method of counting the microstates and corresponding microstates in a finite degenerate level system extendable to infinite degenerate level system. We shall explain in detail the two-, three-, and four-level systems and generalize them to an infinite-level system. Several related exercises have been suggested for undergraduate students, which hopefully will give a better understanding of this subject in a simplified way.

Sl. No	Article	Author	Source	Year
4	Importance of Power-law Distributions in Ecology: Power-law Distributions: Physicists' Fancy or Ecologists' Imperative?	*Utsav Biswas, Vishwesha Guttal*	Resonance Vol: 30 No: 10	2025

Abstract: Nature abounds in variation, especially in biological systems whether in lifespans, sizes, weights, colour patterns, or any other characteristic of organisms. Often, these variations are assumed to have a normal or Gaussian distribution as the underlying probability distribution.

The assumption of a normal distribution is fine in most cases, as it leads to decent explanations and predictions. However, there are crucial exceptions, especially if data follow a so-called power-law distribution, which fundamentally differs from the normal distribution. In this article, we introduce power-law distributions in a way accessible to biology students, give examples of systems where they are found, explain some of their key properties, and emphasise how they differ from the normal distribution. We compare normal, exponential, and power-law distributions and illustrate that the chance of an extreme event is much higher in systems with an underlying power-law distribution. Because the mean and variance of power-law distributions do not converge, we explain how our ability to obtain reliable estimates of simple statistics like the mean and variance of biological variables becomes severely limited. Finally, we explain the implications of these results in the context of animal foraging, ecosystem self-organisation, and resilience.

Sl. No	Article	Author	Source	Year
5	Chasing Corners: Simulating Particle Paths in Regular Polygons: Revisiting the Classic Pursuit Problem in Classical Mechanics	*Sagar Kumar Biswal*	Resonance Vol: 30 No: 10	2025

Abstract: This study investigates the classic pursuit problem in classical mechanics, where particles move towards each other from the vertices of various regular polygons. Constant velocity and constant acceleration scenarios of this problem are explored. Theoretical calculations for the constant velocity case are validated through numerical simulations. The analysis then extends to the constant acceleration case, including scenarios with non-zero initial velocities. Notably, it is found that in constant acceleration, based purely on numerical results, particles do not converge. This comprehensive analysis aims to engage high school and undergraduate students with a captivating exploration of classical mechanics.

Sl. No	Article	Author	Source	Year
1	Evaluating Digital Library Services in Ghanaian Private Universities: Challenges and Strategic Advantages	*Patience Adetsi, Patience Emefa Dzandza Ocloo*	Asian Journal of Information Science and Technology Vol: 15 No: 1	2025

Abstract: Despite the potential benefits of digital library services in private universities for improving learning outcomes and information access, there is a lack of research on the extent of their implementation and use. This study examines the availability and utilization of digital libraries in private universities in Ghana. The objectives are to determine the extent of digital library provision, assess the current state of digital library services, and identify the benefits and challenges of these services. A mixed-method approach was employed, collecting data from head librarians and student library users at Valley View University (VVU) and Pentecost University (PU) in Ghana. The findings indicate low awareness and usage among students, highlighting the need for awareness strategies. Insufficient training and support were found to impact access, while user satisfaction was linked to experiences with digital library resources and interfaces. Recommendations include tailoring digital library services to meet users 'academic needs, increasing awareness to enhance usage in private universities, and addressing gaps in training and support. Keywords: Digital Library Services, Private Universities, Ghana, User Awareness, Training and Support

Sl. No	Article	Author	Source	Year
2	Challenges and Opportunities in Promoting Public Library Services in Mysore City, Karnataka	*R. Harisha, Khaiser Jahan Begum*	Asian Journal of Information Science and Technology Vol: 15 No: 1	2025

Abstract: The marketing of library resources and services is a vital activity in any library, particularly public libraries. This activity is essential for enhancing the visibility of public library resources and services to users. The present study examines users' perceptions regarding the use and marketing of public library resources and services in Mysore City. The objectives of the study include identifying the format of public library collections, understanding the use of public libraries by various communities, determining the methods or modes used to learn about library resources and services, assessing users' satisfaction levels with the quality of services, and exploring reasons for the limited use of public library services. A survey research method was employed, and a questionnaire was administered to 830 users of 20 public libraries in Mysore City. The study achieved a response rate of 88%. The findings indicate that most respondents were male (524, 63.1%). Approximately 81.9% of respondents reported visiting public libraries daily, and 99% of respondents stated they visit the library to prepare for competitive examinations. The highest number of respondents identified books as the primary format of library resources. "Reference Service" and "Periodical and Magazine Section"

were the most preferred services, with mean scores of 4.76 and 4.35, respectively. “Word of Mouth” and “User Orientation Program” were the most frequently used methods by respondents to learn about public library resources and services, with mean scores of 3.93 and 3.84, respectively. The study concludes that public libraries should systematically classify and organize their resources to facilitate the intensive use of library resources.

Sl. No	Article	Author	Source	Year
3	Empirical Analysis of Barcode Technology: Utility and Advantages in Nigerian Academic Libraries	*Augustine Chineme Opurum, Biokuromoye Fyneman*	Asian Journal of Information Science and Technology Vol: 15 No: 1	2025

Abstract: The study focused on barcode technology, its utility, and its advantages in libraries, providing an empirical analysis from a Nigerian academic library. The research was guided by four objectives and four research questions. A descriptive survey design was employed. The research population consisted of 11 librarians from the Dame Patience Jonathan Automated Library, Ignatius Ajuru University of Education, Port Harcourt. Given the small population size, all members were selected using a total enumeration sampling technique, resulting in a sample size of 11 librarians. Data were collected using a standardized questionnaire titled Barcode Technology, Utility, and Advantages in Libraries Questionnaire (BTUALQ). Means were used to analyse the research questions. The findings revealed that data migration issues, reliance on internet and electricity, setup costs, and a lack of technical expertise were among the technical, financial, and human resource challenges to successfully implementing barcode technology in libraries. The study recommended that Nigerian libraries ensure their staff receive adequate training and retraining to effectively adopt and operate technical tools-particularly barcode technology-to thrive in the current technological era.

Sl.No	Article	Author	Source	Year
4	A Perspective on the Use of Sanskrit Language and Literature in Developing AI and GenAI Systems	*Sushant K. Singh*	Asian Journal of Information Science and Technology Vol: 15 No: 1	2025

Abstract: Artificial intelligence (AI) and generative AI (GenAI) have transformed various industries by enabling machines to understand, interpret, and generate human languages with remarkable precision, a capability popularly known as natural language processing (NLP). While dominant languages such as English and Mandarin have traditionally played a significant role in AI and GenAI model training, there is growing interest in exploring the potential of Sanskrit for AI and GenAI system development. Using its highly structured grammar and rich semantic framework, this article explores how Sanskrit offers unique advantages to AI and GenAI systems. Sanskrit's deterministic and precise grammatical rules, as codified in Maharishi Panini's Ashtadhyayi, present an opportunity to reduce ambiguity and enhance the computational efficiency of NLP models. The language's inflected morphology allows for more compact and flexible expressions, which may improve AI's ability to handle complex word relationships. Sanskrit's cultural and philosophical significance also enables AI to engage with ancient wisdom and interdisciplinary research. However, challenges such as the limited availability of modern Sanskrit corpora, the lack of native speakers, and the computational complexity of its grammatical rules must be addressed to realize its full potential. Despite these challenges, incorporating Sanskrit into AI and GenAI systems could lead to innovations in linguistic research, philosophical AI, and computational logic.

Sl. No	Article	Author	Source	Year
5	Reinforcement Learning-Based Task Scheduling for IoT Applications in Long-Range Wide Area Networks	*Ermias Melku Tadesse, Haimanot Edmealem, Tesfaye Belay, Abubeker Girma*	Asian Journal of Information Science and Technology Vol: 15 No: 1	2025

Abstract: To address the challenges of effective resource allocation in low-power wide-area networks, this thesis examines the scheduling of end devices in Internet of Things (IoT) applications using Lora WAN technology. The primary objective of this research is to utilize reinforcement learning (RL) to enhance quality of service (QoS) metrics, including energy efficiency, throughput, latency, and reliability. This objective was achieved through a simulation-based approach that assessed the performance of the RL-based scheduling algorithm using NS-3 simulations. The key findings indicate that, compared to existing scheduling methods, the RL agent significantly enhances data transmission reliability and increases network throughput. Additionally, the proposed approach effectively reduces average system latency and overall energy consumption, leading to improved network resource utilization. These results suggest that applying RL to task scheduling in Lora WAN networks can provide a scalable and reliable solution to

existing challenges, ultimately contributing to more intelligent and sustainable IoT systems. Overall, this study concludes that RL-based techniques can enhance resource management in dynamic and resource-constrained environments.

Sl. No	Article	Author	Source	Year
6	Mitigation of Web Vulnerabilities Arising from Directory Brute-Forcing and Exposed Development Artifact: A Qualitative Study	*Aminu Muhammad Auwal*	Asian Journal of Information Science and Technology Vol: 15 No: 1	2025

Abstract: Web applications increasingly face threats not only from sophisticated exploits but also from basic oversights such as misconfigured directories and exposed development artifacts. This study explores the awareness and mitigation strategies of developers, Dev Ops engineers, and system administrators regarding vulnerabilities arising from directory brute-forcing and the exposure of sensitive files such as .git/, .env, and .bash history. Using a qualitative approach, data were collected through semi-structured interviews with 11 IT professionals across different sectors in Nigeria, where the rise of small- and medium-scale web deployments has amplified the security stakes. Findings reveal a concerning inconsistency in mitigation strategies, even among technically proficient participants. While some employ directory restrictions and CI/CD security checks, others rely on ad hoc, manual practices. Most participants were aware of the risks posed by exposed artifacts, yet only a few incorporated automated tools or vulnerability scanners into their deployment pipelines. Notably, a gap persists between theoretical knowledge and operational execution, leaving systems vulnerable to reconnaissance and chained attacks. This study highlights the need for stronger Dev Sec Ops integration, improved developer hygiene practices, and automated security enforcement within web deployment workflows. The results underscore a critical call to action for organizations and individual professionals to revisit their deployment pipelines and invest in proactive security measures that go beyond basic configuration.

Sl. No	Article	Author	Source	Year
1	Optimizing the Students' Exercise Behaviour Analysis: A Clustering Model	*Yinhui Hao, Chunyan Zhao*	Journal of Information Technology Review Vol: 16 No: 4	2025

Abstract: This paper proposes an optimized Ant Colony Algorithm (ACA) model to cluster and mine the physical exercise behaviour characteristics of college students. Recognizing that students' unstructured exercise habits often lead to inefficacy or injury, the study aims to provide more accurate behavioural analysis. The model first constructs a behaviour representation by tracking the centroid movement of students' bodies in video sequences to generate feature vectors. It then employs an ACA, inspired by ants' foraging behaviour, to cluster these vectors efficiently. The algorithm is optimized to address common ACA issues like slow convergence and stagnation by improving pheromone updating and path selection. Experimental results on standard and custom datasets show the model achieves higher F-measure values, greater stability, and faster convergence compared to other algorithms, effectively avoiding local optima for superior clustering accuracy.

Sl. No	Article	Author	Source	Year
2	Enhancing Cloud Accounting Security: A Rough Set-Based Parallel Algorithm for Efficient Data Integrity Verification	*Bing Xu, Yu Song*	Journal of Information Technology Review Vol: 16 No: 4	2025

Abstract: This paper proposes a rough set-based data mining algorithm to enhance data integrity verification within cloud-based accounting information systems. It addresses security risks inherent in cloud storage, such as data breaches and corruption, which traditional verification methods handle inefficiently due to high computational and bandwidth costs. The authors introduce a novel parallel verification algorithm that can simultaneously check data for single or multiple users, significantly reducing communication time and computational overhead compared to single point testing. Experimental results demonstrate that this approach, leveraging cloud computing's parallel processing capabilities, greatly improves computational efficiency and reduces update costs while ensuring data completeness. The system also allows users to select different audit levels, balancing verification speed, precision, and cost. The research aims to provide a more secure and efficient framework for financial data management in the era of accounting informationization.

Sl. No	Article	Author	Source	Year
3	Research on Intelligent Algorithm-based Swimming Athlete Pose Recognition and Correction Method	*Xinying Bo, Bodong Zhang*	Journal of Information Technology Review Vol: 16 No: 4	2025

Abstract: To better assist swimming athletes in correcting their abnormal postures, we have developed a pose recognition technology based on depth images. This technology uses threshold algorithms for data preprocessing and Kalman filters to filter noise. We also employ Gaussian distribution functions to capture dynamic changes and utilize the SURF algorithm to remove blurry parts. This technology can help us better assist swimming athletes in correcting their abnormal postures and improve their daily training. Using the Euclidean distance method, we can accurately estimate the distance between two adjacent reference points and employ feedback monitoring techniques to correct improper postures. Through simulations, we have found that this new deep level image skeleton tracking technology can effectively capture the dynamics of athletes and accurately detect their poses, demonstrating high accuracy and stability.

Sl. No	Article	Author	Source	Year
1	A Smart Algorithm based Teaching Model for Optimizing Language Education Using PSO-DE Intelligence	*Fei Li*	International Journal of Computational Linguistics Research Vol: 16 No: 4	2025

Abstract: This paper proposes a smart algorithm-based teaching model for language education, leveraging a hybrid intelligent algorithm that combines Particle Swarm Optimization (PSO) and Differential Evolution (DE). The model aims to enhance teaching effectiveness by optimizing classroom content and adapting to students' diverse learning needs. The study identifies 18 effective teaching behaviours through expert consultation and applies the hybrid algorithm to analyse and improve linguistics instruction. Experimental results show the hybrid PSO-DE algorithm outperforms traditional methods like genetic algorithms and ant colony optimization in convergence speed and solution accuracy. The research highlights that expert teachers' strategies follow a pyramid shaped effectiveness structure, emphasizing the importance of tailored, data driven instruction. Findings suggest that integrating adaptive algorithms can significantly boost learning efficiency, student satisfaction, and overall educational quality in language teaching. The authors advocate for broader adoption of such intelligent systems to support teacher development and modernize linguistics education in the digital era.

Sl. No	Article	Author	Source	Year
2	An Efficient Processing Model for Improving Technology Teaching	*Shiqing Chen*	International Journal of Computational Linguistics Research Vol: 16 No: 4	2025

Abstract: The paper proposes a practical teaching platform for engineering students based on a tag-based talent search algorithm, aiming to bridge the gap between theoretical education and real-world engineering demands. Traditional teaching methods often neglect hands on experience, limiting students' problem solving and teamwork abilities. To address this, the authors design a system that matches students with suitable practical projects by aligning student tags (e.g., skills, interests, experience) with project tags (e.g., domain, complexity, type). The algorithm leverages techniques like TF-IDF, binary encoding, and classification models (e.g., Naive Bayes, neural networks) to enable precise matching. The study outlines steps including tag definition, feature selection, dataset construction, algorithm training, and performance evaluation using metrics like accuracy, recall, and F1 score. Experimental results suggest that increased historical data improves recommendation accuracy, though the tag-based approach shows comparable though not always superior performance against other algorithms in large data scenarios. The platform enhances students' practical competencies and employability while supporting applied talent cultivation models in engineering education. However, the research acknowledges limitations, such as a small dataset and the need for broader algorithm comparisons. Future work includes scaling the dataset and exploring alternative matching algorithms to improve generalization and effectiveness. The paper contributes to the growing field of intelligent educational systems by integrating talent matching algorithms in to engineering pedagogy.

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3	An Efficient Processing Model for Improving Technology Teaching	*Shiqing Chen*	International Journal of Computational Linguistics Research Vol: 16 No: 4	2025

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Sl. No	Article	Author	Source	Year
I	Unveiling the secrets of multitrophic interactions: leading advancements in biological weed control	*A. Mohammed Ashraf, S. Naziya Begam, H. A. Archana and Arya Suresh*	Current Science Vol: 129 No: 5	2025

Abstract: Biological control is a key part of integrated weed management. Before using bio-agents, we need to better understand how multiple agents interact to control weeds. This includes knowing how plants respond to and prioritise different attackers. Terrestrial ecosystems worldwide have many species and interactions, including various trophic levels in the same food chain. Plants are crucial in mediating interactions between their microbes and insects. Changes in plants caused by one species can cascade, affecting other species' numbers and community structure. Studies show that using multiple agents is more effective than single-agent releases. Synthetic herbicides are being discouraged due to herbicide-resistant weeds and environmental concerns. Researchers are developing effective biological control agents for a wide range of weeds. Sustainable weed management requires biological methods like insect bio-agents, mycoherbicides and deleterious rhizobacteria. Cultural practices and allelochemicals, which are biological elements, contribute to sustainable agriculture. Therefore, biological agents are more effective at reducing weed damage than allowing weeds to grow unchecked. The challenge is to find suitable microbes/bio-agents that reduce weed growth.

Sl. No	Article	Author	Source	Year
2	Crop diversification with pulses for enhancing soil nutrient dynamics in conservation agriculture	*Gunturi Alekhya, Sibananda Darjee, Gundreddy Rajareddy, Ankireddypalli Jayakishore Reddy and Kadapa Sreenivasa Reddy*	Current Science Vol: 129 No: 5	2025

Abstract: Continuous rice–wheat cultivation in the Indo-Gangetic Plains (IGPs) has resulted in declining soil health and resource inefficiencies. Diversifying these systems with pulses offers a sustainable alternative, particularly by utilising 1.0 million hectares of underutilised rice fallows. Pulses improve soil fertility through biological nitrogen fixation, enhance nutrient cycling via residue return, and increase water productivity while reducing input costs and pest pressures. This review article highlights the potential of pulse integration under conservation agriculture frameworks, emphasising nitrogen economy, improved nutrient use efficiency, and system sustainability. Integrating pulses is crucial for resilient, low-input and ecologically sound production systems in the IGPs.

Sl. No	Article	Author	Source	Year
3	Birds of Indian airfields: an ecological approach to aviation safety assessment	*P. P. Ashiq, P. N. Anoop Raj, S. Jeevith, M. Sri Sowmiya, Angel Joy, P. V. Karunakaran and P. Pramod*	Current Science Vol: 129 No: 5	2025

Abstract: Understanding the risks posed by different bird species to aviation safety at Indian airfields remains limited. In the present study, we assessed the bird diversity and composition of seven Indian civil airfields using the standard point count method. A total of 137 bird species belonging to 48 families in 18 orders were recorded. Of the total birds, 21 species were classified as the most common, and 14 as the most dominant in the Indian civil airfields. We propose a new method to assess the risk level of bird species in Indian airfields. Using data collected on relative activity count, relative body mass, and behaviour inside the airfield, we developed a bird hazard value (BHV) to categorise birds into various risk levels based on their potential to cause a bird strike. Based on the BHV scores on selected bird species, we categorised them into high, potential and low-risk groups. Based on their abundance and behaviour in the airfield, rock pigeon (BHV = 144.47), black kite (98.23), house crow (85.55), common Myna (54.05) and red-wattled lapwing (32.47) are the high risk species, whereas cattle egret (BHV = 29.24) and rose-ringed parakeet (14.64) belongs to potential-risk species, and black Drogo (BHV = 2.47) was in the leastrisk species. The outcome of the present study serves as a foundation for understanding bird communities of Indian civil airfields and identifying problematic species. This will help airport management authorities develop

appropriate, tailor-made bird hazard management practices for specific problematic species and help to prevent collisions to save both aircraft and birds.

Sl. No	Article	Author	Source	Year
4	Development and predation rate of Dortus primarius, a predatory mirid bug on Frankliniella schultzei larvae treated with a novel fungus Lecanicillium fusisporum	*Richa Varshney, K. Sundaravalli, A. Kandan and S. N. Sushil*	Current Science Vol: 129 No: 5	2025

Abstract: Dortus primarius is a predatory mirid bug that has been recorded feeding on different insect pests. Lecanicillium spp., an entomopathogenic fungus (EPF), is used as a biocontrol agent against sucking pests. The combined use of D. primarius and novel fungus Lecanicillium fusisporum may have a significant effect in controlling sucking pests like Frankliniella schultzei. Before combined use, it is imperative to investigate the effect of L. fusisporum on D. primarius pertaining to its biology, predation potential and prey preference. This predator was able to complete development when L. fusisporum treated thrips were offered as food. The nymphal duration on treated thrips (21.11 ± 0.24 days) was four days more than on untreated thrips. The longevity of male and female predatory bugs fed on treated thrips was less than that of untreated thrips. The hatching percentage of bugs consuming fungal-treated thrips (83.32 ± 2.68) showed no difference compared to those fed on untreated thrips (86.47 ± 3.01). Fecundity was found to be reduced in bugs that fed on fungal treated thrips. However, no adverse effects were observed in the first filial (F1) generation derived from these predators. An adult bug consumed an average of 13.88 ± 0.23 untreated thrips per day compared to 10.24 ± 0.49 treated thrips. When offered both treated and untreated thrips, various instars and adults of D. primarius consistently showed a preference for the untreated thrips. The results indicated no such detrimental effect on the survival of the predatory bug and the F1 generation. Moreover, in the choice test, bugs preferred untreated thrips, indicating that in the presence of L. fusisporum in the vicinity, bugs can avoid feeding on infected prey

Sl. No	Article	Author	Source	Year
5	Sustainable fertigation practices for improved nutrient management in Casuarina clones – a field study from farmlands of Tamil Nadu, India	*S. Navaneetha Krishnan, A. Balasubramanian1, S. Radhakrishnan, I. Sekar, T. Chitdeshwari, S. Varadha Raj, M. Sivaprakash, B. Sivakumar, C. N. Hari Prasath1, G.Swathiga and K. S. Anjali*	Current Science Vol: 129 No: 5	2025

Abstract: The increasing need for sustainable agricultural practices resulted in the exploration of fertigation techniques that optimise nutrient management, enhance soil health, and promote crop productivity. The present study examined the influence of sustainable fertigation practices on soil nutrient dynamics and growth performance in Casuarina clones cultivated across various farmlands in Tamil Nadu, India. Based on agricultural factors, daily rainfall, evapotranspiration, and fertiliser dosage, the recommended dose of fertiliser (RDF) of 200: 200: 300 gm/plant/year, irrigation was scheduled according to the tree's computed water need as potential evapotranspiration or pan evaporation (PE). The spacing regimes (1 × 1 m, 1.2 × 1.2 m, 1.5 × 1.5 m and 1.8 × 1.2 m) was distributed as main plot; irrigation treatment combinations (50 %, 75%, 100% and 125% PE) were assigned as subplot I and fertiliser combinations (75%, 100%, 125% and 150% RDF) was assigned as subplot II. The growth parameters recorded in relation to basal diameter (cm), height (cm) and volume index (cm3) were analysed during growth stages 5 months after treatment (MAT) and 10 MAT. At 5 MAT, I4F4 (125% PE, 150% RDF) attained maximal height (78 cm), whereas basal diameter (0.324 cm) and volume index (16.758 m3) were recorded maximum at I3(I-Irrigation) F3(F-Fertigation) (100% PE, 125% RDF). At 10 MAT, I4F3 (125% PE, 125% RDF) obtained maximal height (89 cm) and volume index (33.3 m3), whereas I3F2 (100% PE, 100% RDF) catalogued maximal basal diameter (0.374 cm). Using resources sustainably, the present study helps standardise the crop's water and fertiliser requirements, increasing Casuarina productivity and output.

Sl. No	Article	Author	Source	Year
I	Effect of Mimosa pigra conjugated zinc nanoparticles on seed germination and seedlings growth of Solanum lycopersicum	*H. K. S. Madusanka, A. G. B. Aruggoda, J. A. S. Chathurika and S. R. Weerakoon*	Current Science Vol: 129 No: 3	2025

Abstract: Zinc plays a vital role as a micronutrient in plant development, but its low availability in soil often hampers crop yield. Zinc oxide nanoparticles (ZnO NPs) are gaining attention as an effective substitute for traditional zinc fertilisers, due to their improved solubility and efficient nutrient delivery. In the present study, ZnO NPs synthesised through an eco-friendly method using Mimosa pigra leaf extract were evaluated for their effects on the germination and early growth of tomato seeds. Characterised at 81 nm, the ZnO NPs significantly influence growth parameters.

Under controlled laboratory conditions, the impact of varying concentrations of ZnO nanoparticles (ranging from 0 to 1000 ppm) on seedling development was assessed. The findings indicated that ZnO NPs had a notable effect on several growth-related traits. Statistical analysis of root length indicated that the differences between the treatments were highly significant ($P < 0.0001$, $F= 20.64$), with the 1, 5 and 10 ppm treatments resulting in significantly greater root length than the control group (48.22 ± 24.19, 55.76 ± 29.71, 63.26 ± 24.14 mm vs 35.97 ± 28.97 mm respectively). The seed vigour index was highest at a concentration of 10 ppm, and statistical analysis revealed highly significant differences between treatments ($P < 0.0001$, $F= 36.81$), with the 10 ppm treatment showing a significantly higher seed vigour index than the control group (73.64 mm% vs 31.14 mm% respectively). The findings suggest that 10 ppm of green-synthesised ZnO NPs from M. pigra can act as a nano-nutrient source and positively impact the growth and development of tomato seedlings. Beyond 10 ppm, growth declines, likely due to induced stress responses. The present article showcases the positive effects of M. pigra-synthesised ZnO NPs on tomatoes, offering an eco-friendly approach to boosting crop productivity

Sl.No	Article	Author	Source	Year
2	Calibrated voxel data from fMRI for the detection of developmental dyslexia using hybrid CNN-SVM model	*Adarsh Pradhan, Mirzanur Rahman, Shikhar Kumar Sarma, Achintam Kalita, Abbash Ali and Punasmita Ghosh*	Current Science Vol: 129 No: 3	2025

Abstract: Dyslexia, one of the most prevalent learning disabilities among children, is a neurological syndrome that impacts children's literary proficiencies. In the present study, we calibrate the complex voxel information present in functional magnetic resonance imaging using normalising, reducing and flattening techniques, employ dimensionality reduction over the flattened voxel data using principal component analysis and linear discriminant analysis, and then apply artificial neural network and support vector machine (SVM) for classifying into dyslexic and non-dyslexic. In the second methodology, we directly hand over the normalised voxel data to our hybrid convolutional neural network (CNN) and SVM model and acquire an accuracy of 94.44% an average precision of 95%, an average recall of 94.5%, and an F1-score of 94.5%. The CNN-SVM model continues to perform robustly when validated on an independent dataset.

Sl.No	Article	Author	Source	Year
3	Evaluation of rainfall datasets from CHIRPS and WorldClim in Meghalaya, India	*Pratibha T. Das, Dimpul Sonowal, Ranjit Das and S. P. Aggarwal*	Current Science Vol: 129 No: 3	2025

Abstract: Limited ground-based rainfall information has posed significant obstacles to hydrological, agricultural and related studies in Meghalaya, India. In this study, rainfall products were validated against ground-based rain gauge data from the India Meteorological Department, over three seasons. Both qualitative categorical metrics – probability of detection, false alarm rate,critical success index and frequency bias index, as well as quantitative statistical measures including Pearson correlation coefficient (r), Nash–Sutcliffe efficiency, relative bias, RMSE-observations standard deviation ratio, were computed to evaluate rainfall from CHIRPS and WorldClim. The quantitative statistics showed that the total rainfall estimated by CHIRPS provided better estimates than WorldClim during pre-monsoon (February–May) and post-monsoon (October–January). Neither dataset could provide good estimates of rainfall during the monsoon season (June–September). From this study, we found that CHIRPS is a reliable alternate source of rainfall data for Meghalaya with a limited rain gauge network.

Sl.No	Article	Author	Source	Year
4	Assessing drought trends and predicting future\ patterns using SARIMA and ANN models across meteorological stations in the north dry zone (Bidar district) of India	*Mallikarjun Reddy1, Ambrish Ganachari, Rahul Patil, Prem Kumara, Umarfarooque Momin and Megharani Patil*	Current Science Vol: 129 No: 3	2025

Abstract: Drought poses a significant environmental challenge, especially in semi-arid regions, where comprehending its temporal dynamics and developing predictive models are crucial for effective water resource management. The present study investigates drought trends and forecasts standardised precipitation index (SPI) values at multiple timescales across five stations in the north dry zone of India (Bidar district: Aurad, Bhalki, Humnabad, Bidar and Basavakalyan). The MannKendall test was employed for trend analysis, while auto-regressive integrated moving average (ARIMA) and artificial neural network (ANN) models were usedfor SPI prediction. The results revealed no statistically significant trends across all stations and timescales, though marginally significant positive trends were observed at longer timescales in Basavakalyan and Bhalki, suggesting a potential improvement in drought conditions. The seasonal auto-regressive integrated moving average (SARIMA) model effectively captured seasonality and autocorrelation, with varying autoregressive and seasonal moving average components across stations. The ANN model, structured with a '25-13-1' architecture, demonstrated superior performance during model training by capturing non-linearities, outperforming

SARIMA across all statistical metrics. However, during model testing, SARIMA exhibited superior predictive accuracy with lower root mean squared error and higher Nash-Sutcliffe efficiency values compared to ANN, indicating its robustness in real-time drought forecasting. These findings underscore the importance of integrating statistical and machine learning approaches for drought prediction. While the ANN model effectively captures complex patterns, the SARIMA model remains more reliable for modelling temporal drought dynamics. The results provide valuable insights into drought dynamics, supporting informed

Sl.No	Article	Author	Source	Year
5	Detection and diagnosis of cervical cancer in Pap smear cell images using hybrid CNN	*E. K. Arulkarthick, and P. Sukumar*	Current Science Vol: 129 No: 3	2025

Abstract: Cervical cancer is screened in women patients using either Pap smear cell testing or the Cervigram analysis method. The most dominant accuracy has been obtained for the cervical cancer earlier detection system through the analysis of Pap smear cell images. In this article, they are automatically classified using the proposed hybrid convolutional neural networks (HCNN) structure. This classification system consists of enhancement, along with data augmentation and classification with the nucleus segmentation. The adaptive histogram equalisation enhancement algorithm enhances the image as a preprocessing method, and the imaging count is increased using the data augmentation method for obtaining a higher classification rate. The data-augmented images are further classified into four cases (normal, dysplasia, carcinoma in situ (CiS) and superficial) using the proposed hybrid CNN structure. Then, the dilation–erosion method was used to obtain the abnormal pixels in classified Pap smear cell images. Further, the morphological features are computed from the segmented nucleus region and are classified into either 'moderate' or 'severe' based on the computed features. The average diagnosis rate for dysplasia cell images is 90.4%. The average diagnosis rate for dysplasia cell images is 94.2%, and the average diagnosis rate for dysplasia cell images is 89.6%. From these extensive experimental results, the proposed methods are more suitable for a fully automated cervical cancer detection system

Sl.No	Article	Author	Source	Year
6	Efficacy of cognitive behavioural therapy in type 2 diabetes initiating insulin therapy for the first time	*Ling Wang, Huixiang Xia, Yimin Shen, Li Shen1 and Zhenxing Shen*	Current Science Vol: 129 No: 3	2025

Abstract: To measure the impact of cognitive behaviour therapy (CBT) on blood glucose regulation, negative emotional states, and medication adherence in type 2 diabetes mellitus (T2DM) patients initiating insulin therapy. Patients diagnosed with T2DM, hospitalised in the Department of Endocrinology from January 2022 to June 2023 and scheduled to commence long-term insulin therapy, were randomised into a control group that received standard insulin therapy and a combined treatment group that received additional CBT (n = 50). Parameters such as fasting blood glucose (FBG), 2- hour postprandial blood glucose (PBG), glycosylated haemoglobin (HbA1c), and fasting C-peptide (F-CP) levels were monitored before and after the intervention. Assessment of changes in anxiety, depression, and medication adherence was achieved via the hospital anxiety and depression scale (HADS) and the 5-item version of medication adherence report scale (MARS-5I). Among 95 patients, 48 were included in the control group and 47 in the combined treatment group, with both demonstrating remarkably improved FBG, PBG and HbA1c ($P < 0.05$); however, the enhancements were more significant in the combined treatment group ($P < 0.05$). F-CP levels did not show an obvious variation in either group ($P > 0.05$). The combined treatment group presented lower HADS scores post-intervention ($P < 0.05$), and both the individual and total scores of MARS-5I increased ($P < 0.05$). Comparatively, the control group exhibited no obvious improvement in HADS scores ($P > 0.05$). However, the score for item 1 of the MARS-5I improved ($P < 0.05$); other individual scores and the total score showed no improvement ($P > 0.05$). CBT, when combined with conventional therapy, effectively enhances blood glucose control and improves anxiety, depression scores, and medication adherence among T2DM patients beginning insulin therapy for the first time.

Sl.No	Article	Author	Source	Year
7	Field test campaign of Chandrayaan-3 radar altimeter	*BSVGR Jogeswara Rao, Priyanka Mehrotra, Sunita Khokhar, Ayush Jha, Vetal Akshay Pandit, Pankaj Kanti Nath and Ch. V. Narasimha Rao*	Current Science Vol: 129 No: 3	2025

Abstract: Chandrayaan-3 is the third mission in the series of lunar exploration missions of the Indian Space Research Organisation. The mission demonstrates an end-to-end capability for safe landing and roving on the lunar surface. The lander was equipped with many sensors for a safe landing. One of the prime sensors for precise altitude estimation was the Ka-band radar altimeter (KaRA). The KaRA is designed to cover a large

altitude range of 10 km to 10 m. To ensure its reliability, the KaRA go through an extensive verification and validation process, including a series of field tests designed to mimic the lander's expected descent trajectory. These tests used different platforms, such as a crane, a helicopter, and an aircraft, to simulate various flight profiles. In addition to field experiments, KaRA was subjected to hardware-in-loop simulations and laboratory testing. KaRA performed exceptionally well across all forms of evaluation. The present study discusses the comprehensive field test campaign, the challenges encountered, the outcomes achieved, and innovative strategies employed to enhance the robustness of the algorithms integral to KaRA operation.