

Editorial

Advances in Science, Technology and Engineering Journal (ASTESJ) continues to provide a multidisciplinary platform for disseminating innovative research that addresses contemporary scientific, technological, and engineering challenges. The papers featured in this issue reflect the breadth of current research, ranging from advanced sensing systems, artificial intelligence, and cybersecurity to healthcare, sustainable materials, privacy-preserving data analytics, and bioinformatics. Collectively, these contributions demonstrate how emerging technologies and interdisciplinary approaches are driving practical solutions with significant scientific, industrial, and societal impact.

The issue opens with a study on the development of an electromagnetically actuated PCB-based resonating scanning micro-mirror for LiDAR applications. By introducing FR4 and polyimide substrates as cost-effective alternatives to conventional silicon MEMS devices, the research addresses limitations associated with fabrication cost and structural fragility while achieving enhanced optical scanning performance. The integration of optimized electromagnetic actuation with embedded sensing circuitry further demonstrates the potential of PCB-compatible micro-mirror technology for next-generation LiDAR and real-time control applications, highlighting an important advancement in precision sensing systems [1].

Artificial intelligence continues to transform medical diagnostics, as demonstrated by the proposed hybrid cascading framework for automated skin cancer detection. The integration of deep learning, machine learning, optimization techniques, and explainable artificial intelligence achieves remarkable diagnostic performance while improving computational efficiency and model transparency. The incorporation of Grad-CAM++ and LIME strengthens clinical interpretability by identifying lesion regions influencing predictions, illustrating the growing importance of trustworthy AI in healthcare decision-making [2].

The growing adoption of service-oriented communication in modern vehicles has created new cybersecurity challenges that require efficient and practical solutions. A novel detection and mitigation approach for SOME/IP server spoofing attacks provides an effective defense mechanism capable of identifying malicious activities during service discovery while minimizing processing and communication overhead. Comprehensive evaluation across multiple attack scenarios demonstrates the feasibility of implementing robust intrusion detection within resource-constrained in-vehicle networks, contributing to the advancement of secure automotive communication systems [3].

Advances in computer vision and physiological signal processing are further illustrated through a non-contact heart rate monitoring framework that combines remote photoplethysmography with pose estimation for exercise tracking. By integrating motion analysis with signal enhancement techniques, the proposed system significantly improves heart rate estimation under movement conditions while enabling real-time monitoring during physical activity. Such developments represent meaningful progress toward intelligent fitness systems capable of personalized exercise guidance and early detection of cardiovascular abnormalities [4].

Efficient neural network design remains a fundamental challenge as intelligent systems become increasingly embedded within robotics, smart cities, and Internet of Things environments. The proposed ElHa Net architecture presents a resource-efficient framework that combines self-feature extraction with an optimized classification mechanism to achieve competitive pattern recognition performance while minimizing computational requirements. The work contributes to

ongoing efforts aimed at developing lightweight artificial intelligence models suitable for modern autonomous and embedded applications [5].

Privacy-preserving healthcare analytics remains essential for unlocking the value of large-scale medical datasets without compromising sensitive patient information. The proposed Multi Attribute Stratified Sampling (MASS) framework introduces an automated optimization strategy that eliminates the need for manual configuration of privacy parameters while maintaining an effective balance between data protection and analytical utility. Validation across datasets of varying sizes demonstrates strong scalability, high recall retention, and practical feasibility, offering an important contribution to secure healthcare data sharing and privacy-aware analytics [6].

Sustainability is a recurring theme throughout contemporary engineering research, and this issue includes an investigation into the use of rice husk as a biomass additive for fired-clay cook-stove liners. The incorporation of agricultural waste significantly improves porosity, thermal insulation, and combustion efficiency while simultaneously promoting environmentally responsible waste utilization and greenhouse gas mitigation. The findings illustrate how locally available renewable materials can enhance energy efficiency and support the development of sustainable household technologies [7].

The final contribution introduces GC4miRNA, a bioinformatics pipeline designed to analyze GC content signatures in cancer-associated microRNAs. By examining sequence characteristics that influence miRNA-mRNA binding affinity and implementing the analysis through an accessible R Shiny application, the study provides researchers with a valuable computational tool for investigating gene regulation and disease mechanisms. The framework strengthens bioinformatics research by facilitating systematic exploration of sequence features associated with cancer-related microRNA dysregulation [8].

The diversity of contributions presented in this issue highlights the dynamic nature of scientific and engineering research and underscores the increasing convergence of artificial intelligence, advanced materials, biomedical technologies, cybersecurity, and sustainable engineering. Together, these studies offer novel methodologies, practical implementations, and valuable insights that advance both theoretical understanding and real-world applications. It is anticipated that the findings reported in this collection will inspire further interdisciplinary collaboration and stimulate future innovations that address emerging global challenges across science, technology, and engineering.

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