

Foreword

Welcome to the first issue of 2026 of the *Pertanika Journal of Science and Technology (PJST)*!

PJST is an open-access journal for studies in Science and Technology published by Universiti Putra Malaysia Press. It is independently owned and managed by the university for the benefit of the world-wide science community.

This issue contains 25 articles: one short communication article; four review articles; and the rest are regular articles. The authors of these articles come from different countries namely China, India, Indonesia, Iraq, Kazakhstan, Malaysia, Nigeria, Saudi Arabia, South Africa, Thailand, United Kingdom, and Vietnam.

The regular article entitled “*Characterisation of BaFe_{12-2x}Cu_xNi_xO₁₉ as Microwave Absorbing Materials on Radar Systems*” reports on the synthesis and characterisation of copper-nickel-doped barium M-hexaferrite as a potential microwave-absorbing material for radar applications. The study employed the coprecipitation method with varying dopant concentrations and calcination temperatures to investigate the structural, magnetic, electrical, and microwave absorption properties of the material. Characterisation using X-ray diffraction, Fourier transform infrared spectroscopy, transmission electron microscopy, vibrating sample magnetometry, and vector network analysis demonstrated that Cu-Ni doping and high-temperature calcination promoted nanoparticle formation, reduced coercivity, enhanced magnetic saturation, and improved microwave absorption behaviour. The optimised sample exhibited a reflection loss of -22.456 dB with an absorption efficiency of 99.62%, indicating its suitability for application as a radar-absorbing material. Further details of this study can be found on page 21.

A selected article titled “*An Improved Anomaly-based Intrusion Detection System for IoT Applications using Machine Learning Methods*” presents a hybrid intrusion detection framework designed for heterogeneous Internet of Things (IoT) environments. The proposed system integrates decision tree, k-nearest neighbour, random forest, and stacking classifier algorithms to improve anomaly detection accuracy while maintaining computational efficiency suitable for resource-constrained IoT devices. The system was trained and evaluated using the integrated NetFlow-University of Queensland-Network Intrusion Detection System dataset, which combines multiple benchmark intrusion datasets. The proposed framework achieved accuracy rates of 99.9% for binary classification and 96% for multi-class classification, outperforming several existing approaches. The

study demonstrates that lightweight machine learning models can provide effective and practical solutions for securing real-world IoT networks. Further detailed information can be found on page 401.

The article entitled *“Digital Innovation in Vocational Training: Utilising Mobile Augmented Reality to Enhance Learning Experiences”* focuses on the development and evaluation of a mobile augmented reality (mART) instructional tool for Technical and Vocational Education and Training (TVET), with particular emphasis on microcontroller education. The study describes the design of a marker-based augmented reality application developed using Blender, Unity 3D, and Vuforia, enabling trainees to visualise, assemble, and test microcontroller components and circuits interactively. Evaluation was conducted using the Technology Acceptance Model and the ARCS motivation framework, supported by Rasch analysis. The findings showed high levels of usability, learner engagement, and motivation, with 97.4% of trainees reporting improved understanding of the microcontroller module. The results highlight the potential of mobile augmented reality as an effective instructional approach to enhance technical competencies and industry readiness among TVET trainees. Full details of this study are available on page 499.

We anticipate that you will find the evidence presented in this issue to be intriguing, thought-provoking and useful in reaching new milestones in your own research. Please recommend the journal to your colleagues and students to make this endeavour meaningful.

All the papers published in this edition underwent Pertanika’s stringent peer-review process involving a minimum of two reviewers comprising internal as well as external referees. This was to ensure that the quality of the papers justified the high ranking of the journal, which is renowned as a heavily-cited journal not only by authors and researchers in Malaysia but by those in other countries around the world as well.

We would also like to express our gratitude to all the contributors, namely the authors, reviewers and Editorial Board Members of PJST, who have made this issue possible.

PJST is currently accepting manuscripts for upcoming issues based on original qualitative or quantitative research that opens new areas of inquiry and investigation.

Editor-in-Chief

Mohamed Thariq Hameed Sultan