Foreword

Welcome to the third issue of 2025 for 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: six review articles; and the rest are regular articles. The authors of these articles come from different countries namely India, Indonesia, Japan, Malaysia and Thailand.

A regular article titled "AI-Driven Vision-Based Pothole Detection for Improved Road Safety" was written by Muhammad Aizat Rasee and co-researchers from Malaysia. Their research developed a pothole detection system using convolutional neural networks (CNN) and YOLO algorithms to improve road safety and infrastructure maintenance. The system, trained on 4,681 images, achieved a 92.85% accuracy rate, detecting potholes and providing real-time warnings to drivers. This enhances safety, reduces vehicle damage, and optimizes government spending on repairs. The project aligns with Malaysia's sustainable development goals (SDG), particularly SDG 3 (Good Health and Well-being), SDG 9 (Industry, Innovation, and Infrastructure), and SDG 11 (Sustainable Cities and Communities). Detailed information on this study can be found on page 1535.

Nurfarah Aini Mocktar et al. from Universiti Malaysia Terengganu investigated the metabolite profiles of different age classes of Marphysa moribidii, a marine polychaete, using proton nuclear magnetic resonance (1H NMR) and liquid chromatography-tandem mass spectrometry (LC-MS/MS). Thirty-five metabolites were identified via NMR, while LC-MS/MS detected 36, including amino acids, carbohydrates, fatty acids, and organic acids. The middle-aged class showed the highest concentration of metabolites, particularly amino and fatty acids, suggesting it was the ideal stage for harvesting. These metabolites may offer biological activities such as antioxidant, anti-inflammatory, and antibacterial properties. The findings highlight age-related metabolic variability and lay the groundwork for future studies on the genetic and biochemical mechanisms behind these changes, enhancing our understanding of M. moribidii's physiology and ecology. Further details of the article are available on page 1563.

Another article that we wish to highlight is "Enhanced White Blood Cell and Platelet Segmentation: A Particle Swarm Optimization-based Chromaticity approach" by Aiswarya Senthilvel, Krishnaveni Marimuthu, and Subashini Parthasarathy from India. This study proposed a novel approach for accurately segmenting white blood cells (WBCs) and platelets in blood smear images to enhance the detection of sickle cell disease (SCD). By leveraging the RG chromaticity, the method

identifies regions with high pixel chromatic variance to differentiate WBCs and platelets from red blood cells (RBCs). Using particle swarm optimization (PSO), the optimal threshold values for segmentation were determined, achieving a high accuracy of 96.32%, a sensitivity of 96.97%, a precision of 96.96%, and an F-score of 97.46%. This approach improves upon traditional methods by considering chromaticity as a feature for segmentation, offering better precision than previous techniques. The method's future potential includes automating segmentation using convolutional neural networks (CNNs) to enhance diagnostic accuracy and efficiency in detecting conditions like leukemia. Comprehensive details about this study can be found on page 1633.

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
Luqman Chuah Abdullah