

Foreword

Welcome to the sixth issue of 2024 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: three review articles; one case study; and the rest are regular articles. The authors of these articles come from different countries namely Afghanistan, Brazil, China, Hungary, India, Indonesia, Iraq, Malaysia, Pakistan, South Korea and Thailand.

A regular article titled “Machine Learning and Remote Sensing Applications for Assessing Land Use and Land Cover (LULC) Changes for Under-Monitored Basin” was presented by Muhammad Amiruddin Zulkifli and co-researchers from Malaysia and China. A quantitative assessment of image classification schemes was examined using 2022 Sentinel-2 satellite imagery to measure its performance. Kappa coefficient and overall accuracy were used to determine the classification accuracy. Then, 32 years of LULC changes in Kuantan were investigated using Landsat 5 TM, Landsat 8 OLI, and Sentinel-2 based on the best classifier. Random forest classification outperformed maximum likelihood classification with an overall accuracy of 85% compared to 92.8%. The findings also revealed that urbanization is the main factor contributing to land changes in Kuantan, with a 32% increase in the build-up region and 32% in forest degradation. The detailed information of this study is available on page 2699.

An application of the Geographic Information System for monitoring firefly population abundance (*Pteroptyx tener*) and the influence of abiotic factors was studied by Nurhafizul Abu Seri and Azimah Abd Rahman from Universiti Sains Malaysia. The study was conducted from November 2021 to April 2022, utilizing GIS software to apply hotspot mapping and Inverse Distance Weighting analysis to elucidate the spatial distribution of firefly populations. A total of 111,615 individuals were recorded, with a particular focus on this firefly species' presence on their display trees. Hotspot analysis showed that Station 6, located at the mouth of a river with dense mangroves, hosted 55,723 fireflies (50.01%). In contrast, Stations 9 and 10, near ponds and shrimp settlements, recorded 517–723 fireflies (0.65% and 0.46%). Pearson's correlation coefficient (r) unveiled a statistically significant positive correlation ($r = 0.88$, $p < 0.05$) between wind speed and the abundance of firefly populations within the Sepetang River. However, no statistically significant correlation ($p > 0.05$) was found between firefly abundance and other abiotic parameters, including relative humidity, air temperature, tide level, pH, electrical conductivity, salinity, total dissolved solids, and water clarity. Thus, the results revealed the preference for fireflies due to the availability of vegetation, wind speed and minimal disturbance in this area. The detailed information of this study is available on page 2873.

Another article on secure data aggregation and transmission systems for wireless body area networks using Twofish symmetric key generation by Insozhan Nagasundharamoorthi et al. from India. The Twofish technique is animatedly employed to make the secure symmetric keys chosen for its robust encryption capabilities. These keys are used to encrypt and decrypt aggregated health data through transmission. The proposed TFSKG-SDA method implements effective algorithms for aggregating data to safeguard end-to-end privacy and preserve data accuracy while reducing bandwidth consumption. Thus, for improved performance, an innovative genetic algorithm for data security is presented in this study. This paper introduces TFSKG-SDA, a system that, by employing rigorous simulation testing, enhances security protocols, resistance against recognized threats, and data transmission efficacy in resource-constrained WBANs. We assess the encryption strength, computational cost, and communication efficiency of the TFSKG- SDA method to prove its significance to real-world healthcare applications. Further details of the investigation can be found on page 2903.

In the last 12 months, of all the manuscripts peer-reviewed, 29.4% were accepted. This seems to be the trend in PJST.

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, Editor-in-Chief 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.

Chief Executive Editor

Mohd Sapuan Salit

executive_editor.pertanika@upm.edu.my