

Foreword

Welcome to the first 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; two review articles and the rest are regular articles. The authors of these articles come from different countries namely Bangladesh, India, Indonesia, Iraq, Malaysia, Saudi Arabia, Spain and United Kingdom.

Izzati Saleh, Azwati Azmin and Azan Yunus from Malaysia and Wan Rahiman from Bangladesh presented an analysis of pure-pursuit algorithm parameters for nonholonomic mobile robot navigation in unstructured and confined space. This study's simulation-based experiment is limited to the mobile robot arrangement. The Look Ahead Distance parameter is adjusted so the mobile robot can navigate the predefined map closely following the waypoints. The optimal Look Ahead Distance value is combined with the VFH+ algorithm for obstacle avoidance. The method is enhanced by adding the λ weight so the robot returns to its waypoints after avoiding an obstacle. The investigation reveals that λ influences the mobile robot's capacity to return to its predetermined waypoints after avoiding an obstacle. The detailed information of this study is available on page 99.

An investigation on a high-performance THz metallic axial mode helix antenna with an optimised truncated hollow cone ground plane for a 6G wireless communication system was conducted by Zahraa Raad Mayoof Hajiyat et al. from Universiti Putra Malaysia. The simulation results show that the optimised copper (annealed) axial mode helix antenna performed well in the 0.52–0.98 THz frequency band with an impedance BW of 0.46 THz and FBW of 61.33%. Additionally, the highest directivity and realised gain recorded were 21.8 dBi and 21.5 dBi at 0.85 THz, respectively. The comparative analysis between the CST MWS and Ansys HFSS showed good agreement, further validating the proposed antenna design. Moreover, the performance comparison of this study shows that the proposed optimised THz antenna design offered an outstanding directivity performance compared to other available THz axial mode helix antennas. Further details of the investigation can be found on page 249.

The next article reviewed the agricultural area's carbofuran usage, toxicity, and degradation pathways. Carbofuran is a highly toxic insecticide commonly used to protect crops in agricultural areas. Exposure to carbofuran can cause harmful effects on the ecological environment and human health, particularly on non-target species such as birds and aquatic organisms. Carbofuran continues to be used, although it has been banned in some countries. Several metabolites

are formed during the breakdown of carbofuran. These include 3-hydroxy-carbofuran, 3-ketocarbofuran, carbofuran-phenol, and 3-hydroxy-5-nitrophenol. These metabolites vary in toxicity and persistence in the environment, with some being more lethal than the parent compound. Details of this study are available on page 285.

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.

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