Editorial

The Special Issue on *Recent Advances in Engineering Systems (2018–2019)* in the *Advances in Science, Technology and Engineering Systems Journal (ASTES Journal)* presents a timely and comprehensive collection of research contributions that reflect the continued evolution of engineering systems in an era defined by rapid technological progress and increasing system complexity. The period of 2018–2019 has been marked by significant strides in the development of integrated, intelligent, and adaptive systems capable of addressing the multifaceted challenges of modern society. This special issue brings together innovative studies that span theoretical advancements, methodological improvements, and practical implementations across a wide range of engineering domains.

A central theme across the contributions is the growing integration of digital technologies within engineering systems. The emergence of data-driven approaches, artificial intelligence, and advanced simulation techniques has transformed how systems are designed, analyzed, and managed. Researchers have increasingly leveraged machine learning algorithms, real-time data acquisition, and predictive modeling to enhance system efficiency, reliability, and responsiveness. These advancements are particularly evident in applications such as smart infrastructure, autonomous systems, industrial automation, and intelligent transportation, where the ability to process and respond to complex data streams is essential.

Another important focus of this special issue is the advancement of system optimization and performance enhancement. The included studies explore novel optimization techniques, control strategies, and decision-making frameworks that aim to improve system functionality under varying and often uncertain conditions. By incorporating robust design principles and adaptive control mechanisms, these contributions demonstrate how engineering systems can achieve higher levels of performance while maintaining stability and resilience. Such approaches are crucial in ensuring that modern systems can operate effectively in dynamic environments.

Sustainability and resilience continue to play a significant role in shaping contemporary engineering research. The works presented in this issue emphasize the need for systems that are not only efficient but also environmentally responsible and capable of withstanding external stresses. From renewable energy integration and sustainable construction practices to resource-efficient system design, the research highlights innovative solutions that align engineering advancements with global sustainability objectives. These efforts underscore the importance of balancing technological progress with environmental stewardship.

Interdisciplinary collaboration remains a defining characteristic of the advancements showcased in this issue. The complexity of modern engineering challenges necessitates the integration of knowledge from multiple fields, including civil, mechanical, electrical, and computer engineering, as well as applied sciences. The contributions illustrate how such collaboration fosters innovation, enabling the development of comprehensive systems that are more adaptable, efficient, and robust. This interdisciplinary approach is particularly evident in the design and implementation of cyber-physical systems, where physical processes are closely integrated with computational intelligence.

The editorial team expresses its sincere gratitude to the authors, reviewers, and editorial members whose dedication and expertise have contributed to the successful completion of this special issue. Their efforts have ensured the publication of high-quality research that advances

both theoretical understanding and practical application in engineering systems. The collection presented herein reflects the ongoing transformation of engineering systems into more intelligent, interconnected, and sustainable entities, providing valuable insights and inspiration for future research and development in this rapidly evolving field.

Guest Editor

Prof. Ahmad Yusairi Bani Hashim