

Editorial

The Special Issue on Multidisciplinary Sciences and Engineering (2020–21) in the *Advances in Science, Technology and Engineering Systems Journal (ASTES Journal)* reflects a period marked by both disruption and accelerated innovation. As global challenges grew increasingly complex spanning public health, environmental sustainability, digital transformation, and resilient infrastructure the need for integrative approaches across scientific and engineering domains became more evident than ever. This issue brings together a diverse collection of contributions that demonstrate how interdisciplinary thinking not only enriches academic inquiry but also drives practical solutions to real-world problems.

A defining feature of this special issue is its breadth. The selected papers traverse traditional disciplinary boundaries, combining insights from fields such as computer science, mechanical and electrical engineering, materials science, environmental studies, and applied mathematics. Several contributions highlight the growing role of data-driven methodologies, including artificial intelligence and machine learning, in optimizing systems and enhancing predictive capabilities. Others emphasize sustainable design principles, renewable energy technologies, and resource-efficient processes areas that are critical for long-term societal resilience. The convergence of these perspectives illustrates the strength of multidisciplinary collaboration in addressing challenges that no single field can adequately resolve in isolation.

Equally noteworthy is the methodological diversity present in this issue. Authors employ a range of approaches, from theoretical modeling and simulation to experimental validation and case study analysis. This combination of rigor and applicability underscores the journal's commitment to bridging the gap between theory and practice. In particular, several studies offer scalable solutions and frameworks that can be adapted across different contexts, reinforcing the value of engineering innovation as a driver of economic and social progress.

The 2020–21 timeframe also provides an important backdrop for this collection. The global pandemic served as both a challenge and a catalyst, prompting rapid advancements in digital systems, remote sensing, healthcare technologies, and resilient supply chains. Many of the works included here reflect this shift, either directly or indirectly, by proposing technologies and strategies that enhance adaptability and robustness in uncertain environments. This responsiveness to contemporary needs highlights the dynamic nature of multidisciplinary research and its capacity to evolve alongside emerging global priorities.

The editorial team extends its sincere appreciation to the authors for their contributions, as well as to the reviewers whose thoughtful evaluations ensured the quality and integrity of the published work. The collaborative effort behind this special issue exemplifies the academic community's dedication to advancing knowledge and fostering innovation, even under challenging circumstances.

This special issue stands as a testament to the transformative potential of multidisciplinary sciences and engineering. By integrating diverse perspectives, methodologies, and applications, it not only advances scholarly discourse but also provides meaningful pathways toward addressing some of the most pressing issues of our time.

Guest Editor

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