Editorial

The Special Issue on Advanced Electrical and Communication Technologies (2020) in the *Advances in Science, Technology and Engineering Systems Journal (ASTES Journal)* presents a timely collection of research addressing the rapid evolution of electrical engineering and modern communication systems. As global connectivity and energy demands continue to expand, innovations in these domains play a central role in enabling efficient, reliable, and intelligent infrastructures. This issue brings together contributions that reflect the dynamic interplay between theoretical advancements and practical implementations, highlighting the transformative impact of emerging electrical and communication technologies.

A key focus of this special issue lies in the advancement of next-generation communication systems. Several papers explore developments in wireless communication, including enhancements in signal processing, spectrum utilization, and network optimization. The emergence of high-speed, low-latency communication frameworks is examined alongside enabling technologies such as 5G networks, software-defined networking, and adaptive communication protocols. These contributions underscore the importance of robust and scalable communication architectures in supporting the growing demands of data-intensive applications and interconnected devices.

In parallel, the issue emphasizes progress in electrical engineering systems, particularly in power generation, transmission, and distribution. Research on smart grids, renewable energy integration, and energy-efficient power electronics demonstrates the field's shift toward sustainability and resilience. Authors investigate innovative approaches to grid stability, fault detection, and load management, reflecting the increasing complexity of modern electrical networks. The integration of intelligent monitoring and control mechanisms further highlights the convergence of electrical engineering with digital technologies.

Another notable aspect of this issue is the convergence of electrical and communication technologies within emerging paradigms such as the Internet of Things (IoT), embedded systems, and cyber-physical infrastructures. Contributions in this area illustrate how interconnected sensing, communication, and control systems are enabling smarter environments, from industrial automation to urban development. This multidisciplinary perspective reinforces the role of integrated technologies in addressing contemporary challenges across sectors.

The methodological approaches adopted across the papers are diverse, encompassing analytical modeling, simulation-based studies, experimental validation, and real-world case applications. This breadth ensures both academic rigor and practical relevance, allowing the findings to inform future research, industry practices, and policy development. Many studies emphasize reliability, efficiency, and scalability, offering solutions that can be adapted to evolving technological landscapes.

The year 2020 provides a significant context for this collection, as the increasing reliance on digital communication and stable energy systems became more pronounced under global disruptions. The research presented in this issue reflects a broader shift toward resilient and adaptive infrastructures capable of supporting continuous connectivity and sustainable energy usage.

The editorial team expresses its sincere appreciation to the authors for their valuable contributions and to the reviewers for their meticulous and constructive feedback. Their combined efforts have ensured the high quality and relevance of this special issue.

This special issue offers a comprehensive perspective on the advancements shaping electrical and communication technologies, emphasizing their critical role in modern society. By bridging theoretical innovation with applied research, it provides a foundation for continued progress in developing efficient, intelligent, and interconnected systems that meet the demands of an increasingly complex world.

Guest Editor

Prof. Nabil Srifi