Guest Editorial Preface

Special Issue on Emerging Technologies-Enabled Methods for Sustainable Computing

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In today's era, automation and the development of intelligent systems have unlocked the potential for environmental safety and sustainable development. Development of these intelligent systems provides opportunities to resolve some of the challenges affecting our lives in adverse ways. This rapid progress of global urbanization, urban expansion, and increasing urban population density, also poses unprecedented challenges to the environment, energy/natural resources, and society.

At the same time, a massive transformation has been witnessed in the technology space with the convergence of emerging technologies such as AIoT, Edge Computing, FoG Computing, Block Chain and 5G, etc. Block Chain and Artificial Intelligence of Things (AIoT) technologies can be seen as a remarkable revolution of the 21st Century for digital transformation. AIoT provides a platform for bringing intelligent automation to industries to control various operations, whereas Blockchain technology has the capability of providing an efficient and secure way of managing different operations. With the arrival of 5G, and through the power of remote data processing technologies such as Cloud and Fog computing, various industries such as health care, agriculture, automation, governance, etc. are absorbing these next-generation technologies for reducing costs, increasing productivity along with safety for human workers as well as for the industrial appliances.

There is a great need for sustainable development in the current environment and it will have a significant impact worldwide. In this regard, the present special issue was proposed to bring a revolutionary change to the automation industries recognizing the remarkable power of next-generation technologies in transforming the industries. The special issue was to invite researchers, practitioners, engineers, and scientists involved in the design of Sustainable Computing Methods using IoT and Blockchain-based intelligent solutions towards reforming the industrial activities and functions.

The special issue received a large number of submissions covering various research fields, particularly on developing and applying novel algorithms using advanced technologies. After rigorous reviews by the panel of experts, five manuscripts were selected for publication in the special issue. The research work presented in these papers covered transformative technologies to implement security and privacy models toward a secure society and industries.

The special issue on Emerging Technologies enabled methods for sustainable computing focuses on the implementation of novel technologies such as blockchain, FOG computing, cloud computing, etc. for the development of a more secure environment for sustainable industries development. IJIIT is one of the leading journals which publishes original research promoting the development of intelligent systems, devices, and applications. This special issue follows IJIIT practices to promote advanced methods and technologies for developing smart applications for different sectors.

The main contributions of this special issue are briefly summarized below.

"TS2LBDP-Design of an Improved Task-Side SLA Model for Efficient Task-Scheduling via Bioinspired Deadline-Aware Pattern Analysis," authored by Shelke and Shahapurkar, presents an improved task-side service level (TS2L) agreement model for efficient task-scheduling using elephant herd optimization (EHO) with deadline (BDP) awareness.TS2LBDP incorporates pattern analysis using ensemble hierarchical, KMeans, and fuzzy C means (FCM) clustering methods. A combination of these modules assists in improving task diversity, and scheduling efficiency. SLA-based distribution enhances scheduling fairness and reduces mean waiting time for different clients.

In the article titled "Experimental Study of Location Spoofing and Identity Spoofing Attack in Internet of Things Network," Mehta and Patel examine the location and identity spoofing attacks on IoT-based devices. The authors present a detailed simulation of these two attacks through the Cooja simulator and investigate the performance of the network in the presence of these attacks.

Joshi and Choudhury discuss the applicability of blockchain technology in real estate in the article titled "Tokenization of Real Estate Assets Using Blockchain." Here, the authors analyze various issues in real estate management such as administrative overheads, lack of transparency, fraud, several intermediaries, title issues, paperwork, an increasing number of arbitrations, and the lack of liquidity. This paper proposes a framework that uses blockchain as an underlying technology.

Lonkar and Karmore, in "Statistical Evaluation of Power-Aware Routing Protocols for Wireless Networks: An Empirical Study," present a comparison of various power-aware routing protocols which can be used to construct routing models for low-delay, high-throughput, high PDR installations. Furthermore, the authors have proposed an algorithm rank score (ARS) routing model which can be used by network designer models to achieve performance balance over numerous assessments.

The article titled "SDN-Based Traffic Monitoring in Data Center Network Using Floodlight Controller" by Sahu, Tiwari, and Kumar analyze the elephant and cheetah traffic flows related issues and the need for their management. The authors present a novel mechanism to detect flows, which requires continuous polling of all switches. The article claims the successful detection of elephant flow and cheetah flow that can be rerouted to improve the Quality-of-Service (QoS).

This special issue is a product of innovations involved in the development of intelligent methods with the contribution of various authors around the globe. We hope that the special issue provides meaningful insights to its readers.

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