Guest editorial: Industry 4.0 special issue

Novel technologies play an essential role in dealing with societal challenges. Here we understand that interdisciplinary research, needed to understand the complexity of society's issues, is the key to future revolutions. Industry 4.0 refers to the industrial revolution, which has expanded the tendency toward automation and data interchange using various digital technologies and processes. The origin of Industry 4.0 is traced back to Germany, which started with the development of smart manufacturing and production systems. Today, other nations have also joined the uprising of Industry 4.0 with different nomenclatures, such as the USA adopted the "Smart Manufacturing", China popularised the concept of "Made in China 2025", UK focuses as "Future of Manufacturing", India launch the "Smart Advanced Manufacturing and Rapid Transformation Hub (SAMARTH)-Udyog Bharat 4.0" and so on. The aim of Industry 4.0 is to create an ecosystem of an interconnected manufacturing system, where machines are equipped with wireless connectivity and sensors that allow them to monitor and see the entire manufacturing process and make autonomous decisions.

The overall aim of this special issue is to bring together research results that cover a broad spectrum of areas related to "Industry 4.0". The unique contributions from the special issue are based on Industry 4.0 and its technologies like additive manufacturing, robotics, 5 G, artificial intelligence (AI), augmented/virtual reality, cybersecurity, sensors in industrial and advanced manufacturing systems concepts such as Lean 4.0. This issue is to provide researchers, students, industry personnel and academicians with in-depth knowledge of state-of-the-art and future developments in operational systems in the context of Industry 4.0 and its transformations. Such approaches are necessary to improve human life's overall well-being and bring sustainability to the economy.

This special issue encloses various manuscripts having their roots in Industry 4.0 and allied technologies in the core industrial and operational systems domain that integrates the virtual and real worlds, focusing on digitisation, robotics and automation. Internet of Things, industrial Internet of Things, AI, cyber-physical systems, big data, cloud computing, additive manufacturing, industrial integration, virtual and augmented reality, big data analytics and others are examples of Industry 4.0 features. Papers are from broad areas covering application, case reporting, review, basic research, design, framework and algorithm. Researchers and practitioners need to hold hands and identify the ramifications of this happening globally. It will bridge the gap between the producer and the customer, allowing them to communicate directly. The special issue is contributed to highlighting the Industry 4.0 culture and its real-life solicitations to make social life more impressive.

The Editor and the guest editors hope that the articles under this special issue would provide a coherent set, presenting an excellent exposure to the highest quality work. Every accepted article is blind-reviewed with sometimes five reviewers and mainly two times. The guest editors hope that the contributions in this special issue provide the future reader with an insight into the broad domain of Industry 4.0 and its real-life applications. The readers will get updated with the latest status of research and development. Last but not least, the guest editors would like to express and deliver their heartiest thanks to Editor in Chief Dr Clive Loughlin and Associate Editor Dr Rob Bogue and Dr Joanne Pransky and Emerald Publishing Group, and our esteemed reviewers for their immense support and contributions in making this special issue.

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