Special Issue on Intelligent Manufacturing and Application Technology: Part 2

Preface

Driven by the era of Industry 4.0, industrial manufacturing has been continuously integrated with technologies such as automation equipment, the Internet of Things, big data, and cloud computing. Smart transformation has become an important trend in industrial development, and the concept of smart manufacturing has gradually developed. Smart manufacturing is mainly based on data, the construction of smart products, smart production, smart equipment, smart energy management, and other manufacturing processes, linking all levels from design and production to services, improving manufacturing efficiency, reducing production costs, improving product quality, optimizing product use experience, and promoting overall industrial environmental standards.

Intelligent technologies in the research field of manufacturing, including innovation sensor system design, sensing control, optimization, and machine learning, have made great progress in recent years, and "intelligent automation systems" has now become a popular term in the field of mechatronic engineering and the development of intelligent manufacturing. Many researchers in smart system control design, analysis, optimization, and automation have made great effort to develop innovative methodologies for engineering, physical and biological chips, and so forth, and these research results have had a major influence in the greater field of system simulation and control.

Meanwhile, intelligent materials have now been developed and designed with one or more properties that can be significantly changed in a controlled manner by external stimuli, such as stress, moisture, electric or magnetic fields, light, or changes in temperature. Intelligent materials are the basis of many applications, including sensors and actuators, and artificial muscles. They can also be applied for intelligent automation system monitoring and feedback optimization to increase the efficiency or quality in industry. This special issue presents six papers that focus on intelligent manufacturing systems including the topics of advanced materials, the manufacturing process, advanced modeling, and control technology in mechatronic systems. This special issue presents examples of current innovative and intelligent analyses and experiments. Lastly, I sincerely thank Ms. Misako Sakano, Editorial Department of MYU K.K., for her kind support in the publication of this issue.

Cheng-Chi Wang
Graduate Institute of Precision Manufacturing
National Chin-Yi University of Technology
Taiwan