Editorial

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Chih-Hsing Chu is a Professor in the National Tsing Hua University. He received his PhD in Mechanical Engineering from the University of California at Berkeley. He has involved in editorial work of international journals: the Editor-in-Chief of *Journal of Industrial and Production Engineering*, an Associate Editor in *IEEE Transactions on Automation Science and Engineering*, an Editor in *International Journal of Precision Engineering and Manufacturing*, and on the editorial board of *International Journal of Computer Integrated Manufacturing*, *IJPEM: Green Technology*, and *International Journal of Manufacturing Research*. His research interests include digital manufacturing, CAD/CAM, augmented reality, and collaborative engineering.

The special issue on 'innovative manufacturing technology' is dedicated to new advances in manufacturing technology. The eight papers included in this issue represent a sample of current innovative manufacturing technologies and cover a wide range of topics including social manufacturing, cloud manufacturing, additive manufacturing, and advanced machining technologies. These papers are organised into three topic groups, with the first two papers on new manufacturing philosophies including social manufacturing and networked manufacturing, following by the next three papers on additive manufacturing, and the last three on machine tool information modelling and machining process characterisation.

Focusing on new manufacturing philosophy, Jiang and Leng presented the concept, framework and value drivers of social manufacturing, where social intelligence techniques facilitate the outsourcing and crowdsourcing-oriented life cycle management of mass individualisation production. They described core aspects to achieve the concept of social manufacturing. Zhao et al. developed an interoperable knowledge base of manufacturing resource and service capability in networked environment to support resource discovery and selection. Based on the proposed knowledge base, they proposed a triple-level service matchmaking strategy including feature instance matching, attributes matching and condition matching to evaluate manufacturability and performance of manufacturing service.

Moon et al. proposed the complex commonality index (CCI) to measure parametric, modular, and process sharing within a product family and to evaluate the design of product families implemented with additive manufactured modules. The market share (MS) was formulated to measure a product family's performance based on customer-perceived utilities. Trappey et al. presented focuses on the technological and functional aspects of patent informatics to discover the innovation trends for materials, products and processes. An ontology-based technology function matrix was created and applied to describe the distribution of global dental additive manufacturing patents. Peng and Sun presented a modelling method of energy consumption for 3D printing that analyses energy consuming components for machines used in different stages. Examples show that energy consumption in a product life cycle can be saved by taking collective efforts from different stages of 3D printing into consideration.

Zhang et al. proposed a comprehensive but generic machine tool data model to store, exchange and share information of machine tools among various manufacturing tasks. The data model consists of information for general machine property, machine tool capability, site location, information carrier, NC controller, servo, and mechanical elements. To control thermal errors produced on a CNC machine tool, Hu et al. presented a real-time compensation controller that estimates the operating temperature of the machine and performs the error prediction based on neural network techniques. Zhang et al. developed a computational approach to tool path planning for layered plunge milling of free-form surface channels using a five-axis machine tool. The approach automatically determines the maximum tool diameter, the maximum tool length and the depth as well as the machining area within each machining layer. The machining efficiency and the roughing errors of free-form channels can be also estimated.

With the advance of information and communication technologies such as AI, big data, cloud computing and internet of things, traditional manufacturing is facing an unprecedented great change. The networked, intelligent and individualised manufacturing technologies are emerging and changing the way how modern products are fabricated. This special issue aims to provide a summary of recent works on those leading-edge

research areas. We would like to express our sincere gratitude to the editing and publishing team of *International Journal of Manufacturing Research*. We also appreciate the help provided by the reviewers during the review process.