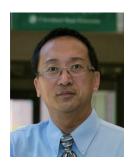# SPECIAL ISSUE ON APPLICATIONS OF NOVEL SENSORS AND RELATED TECHNOLOGIES FOR INTERNET OF THINGS: PART 3-1

PREFACE

In recent years, applications of novel sensing and related technologies to electronic and mechanical devices have become very popular fields. The booming economic development in Asia, particularly the leading manufacturing industries from automobile, machinery, computer, communication, consumer products, and flat-panel displays to semiconductor and micro/nano applications have attracted intense attention from universities, research institutions and many industrial corporations. Manufacturing is the economic lifeline of a country and has been regarded as a labor- intensive industry. In order to cut production costs, devices for the Internet of Things have been widely developed. The Internet of Things is composed of integrated end devices and facilities, such as intelligent sensors for internal control, industrial systems, mobile terminal systems, floor control systems, and home intelligent facilities. Smart devices and external control information are utilized with the hope of attracting companies that manufacture high-value-added products in the aerospace, automotive, IT mold, textiles, optoelectronic, watches, medical device, automation, energy, and semiconductor-related parts and components fields Therefore, the key to maintaining a competitive advantage in domestic manufacturing in the future is to continue to rely on the development of novel manufacturing and precision machinery-related technologies.

The scope of this Special Issue, entitled "Applications of Novel Sensors and Related Technologies for Internet of Things", covers fundamental sensors and materials used in electronic, mechanical, and electrical engineering, including their synthesis and integration with many elements, the design of electronic and optical devices, sensing technologies, evaluation of various performance characteristics, and exploration of their wide-ranging applications in areas such as industry, environmental control, and materials analyses. In part 3-1 of this special issue, 11 excellent papers in three categories of sensors and materials fields have been selected.

(1) Physical/Mechanical Sensors: "Envelope Sensor Design for Partial Discharge Signals of High-voltage Power Apparatus" by Kuo *et al.*, and "Dual-window Coupled Dual-mode Substrate Integrated Waveguide Filter with Multiple Transmission Zeros for Point-to-point Communication of Automated Guided Vehicle" by Li *et al.*

(2) Related Technologies: "Hidden Markov Models for Anomalous Behavior Detection in Surveillance Video with Depth Map" by Yeh *et al.*, and "Development of a Location-based Rapid Building Performance Simulation Tool Combined with Design of Experiment Method

for Energy Efficiency Enhancement in Existing Healthcare Building Retrofitting" by Chiu *et al.*, and "Real-time Fall Detection and Reporting System Using the AlphaPose Model of Artificial Intelligence" by Chang and Lin, and "Comparative Analysis of Lightweight OpenPose and MoveNet AI Models for Real-time Fall Detection and Alert Systems" by Chang *et al.*, and "Optimization of Thermal Control Parameters for Laptop Computer Cooling System Using Finite Volume Method" by Chen *et al.*, and "Investigation of Motion Illusions in Continuous Line Graphics on Geometric Forms through Eye-movement Analysis" by Chang *et al.*, and "Design Parameters of Solid Oxide Fuel Cell Microstructure Based on Power Generation Performance Simulation" by Leu *et al.*

(3) Sensor Applications: "Rogue Base Station Detection in Industrial Internet of Things" by Liu *et al.*, and "Simulation and Optimization of Production Scheduling in Multivariety Small-batch Mixed-flow Assembly Workshops Using IoT" by Lei *et al.*

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