Special Issue on Applications of Novel Sensors and Related Technologies for Internet of Things: Part 3-2

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 3-2 of this special issue, 10 excellent papers in three categories of sensors and materials fields have been selected.

- (1) Physical/Mechanical Sensors: "Design and Implementation of a Single-phase Inverter with Technology of Sinusoidal Pulse Width Modulation" by Tsai and Wang, and "Induction Motor Fault Diagnosis Based on Discrete Fractional Fourier Transform of Stator Current" by Gu *et al.*
- (2) Related Technologies: "Hybrid Convolutional-gated Recurrent Unit Neural Network Model for Prediction of Weather Indicators" by Zhang *et al.*, and "Automated AI Approach for Noninvasive Shrimp Length and Weight Estimation Using Underwater Imaging and Feeding

Induction" by Lu *et al.*, and "Distributed Denial of Service Attack Detection Based on Cuckoo Search Bidirectional Learning Method" by Ke *et al.*, and "Harnessing Deep Neural Networks for Rapid Knife Wound Identification in Forensic Science: A Proof-of-Concept Study" by Wei *et al.*

(3) Sensor Applications: "Heterogeneous Sensor Fusion for Obstacle Localization in Mobile Robot Navigation" by Sun *et al.*, and "Using Simulation Method to Analyze Intraocular Pressure at Different Postures and Eye Movement Angles" by Zheng *et al.*, and "Analyses of How the Design of a Hybrid Performance Stabilization System Affects Spinal Motion and Intervertebral Disc Pressure Using Finite Element Method" by Lee *et al.*, and "Lifetime Prediction and Preventive Maintenance Strategy for an Automotive Belt Applied to Internet of Things" by Yang *et al.*

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