



Editorial: Innovation and Application of Internet of Things for Smart Cities

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Published online: 14 January 2021

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Editorial:

With continuous advances in novel ICT technologies (including Internet of Things (IoT), artificial intelligence (AI), cloud/fog/edge computing, mobile Internet, and smart terminals), smart cities have provided citizens a more convenient and smarter life with sustainable innovation, including client innovation, open innovation, public innovation, and cooperative innovation. A variety of value-added IoT applications for smart cities have been emerging, e.g., smart home, smart healthcare, smart transportation, smart energy management, smart retailing, smart grid, water system, smart building, smart factory, smart office, air pollution control, and so on. All the sensed information and facilities collaborate together to form economic and effective interaction, providing people with better working efficiency and life quality. Enhanced by ICT technologies, the public municipal services not only improve the government's performance, but also provide citizens with better life quality. Therefore, it has been an important indicator for every country in the world to improve city competitiveness through developing smart cities.

The goal of this special issue is to publish both state-of-the-art and predictive papers on recent advances in “Wireless Internet” selected from the 12th EAI International Wireless Internet Conference (WiCON 2019), which was held in Taichung (Taiwan) during November 26–27, 2019. After the event, an open call was published to encourage the contributions presented at WiCON 2019 to be extended and submitted to this special issue. After a rigorous review process, eleven high quality papers were selected for publication, which are briefly reviewed in the following.

In the paper entitled “Multi-Objective Wireless Sensor Network Deployment Problem with Cooperative Distance-Based Sensing Coverage” authored by Sheng-Chuan Wang, et al., introduces the sensor deployment problem considering the sensing coverage, distance, and cooperative coverage, simultaneously.

The second paper, “MD2DO: A Channel Selection Method for Device to Device Communication Using the Mobile Edge Computing (MEC) Paradigm”, authored by Rung-Shiang Cheng, et al., proposes a scheme called MD2DO, which combines the MEC mechanism and Wi-Fi D2D to enhance the capacity of network and offload cellular traffic.

The third paper, “A RFID-Based Infection Prevention and Control Mechanism in Aged Care Living Residences” by Lun-Ping Hung, et al., presents an infection control system for the aged care living residences, which can collect the Tag signals of the residents in the aged care living residences by using RFID technology.

The fourth paper, “Challenges of Credit Reference Based on Big Data Technology in China”, by Cheng-Yong Liu, et al., introduces the challenges of big data-based credit service industry in China, and presents the combination of big data-based credit reference with blockchain technology.

The fifth paper, “Reporting Mechanisms for Internet of Things”, by Xingang Liu, et al., proposes an NTF – LRS algorithm for facial expression recognition to enhance the ability of distinguishing several basic expressions.

The sixth paper, “Word Embedding Quantization for Personalized Recommendation on Storage-Constrained Edge Devices in a Smart Store”, by Yao-Chung Fan, et al., proposes the WEQ framework, which reduces the size of a given word embedding model by quantizing multiple word vectors into a bounding area.

The seventh paper, “Machine Learning Based Prediction and Modeling in Healthcare Secured Internet of Things”, authored by Charafeddine E. Aitzaouiat, et al., proposes an innovative scheme, Smart Observatory of Involuntary Medical Seizures (SOIMS), which is applied to the prediction of a particular case of heart diseases, namely, junctional Tachycardia.

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The eighth paper, “Identity Authentication with Association Behavior Sequence in Machine-to-Machine Mobile Terminals” by Congcong Shi, et al., proposes an intelligent terminal user behavior sequence analysis method based on Behavior Common Subsequence Sequence Similarity Algorithm (BCSA).

The ninth paper, “Routing and wavelength allotment for exchanged folded hypercube communications embedded in bus-topology WDM optical networks”, by Yu-Liang Liu, proposes the embedding scheme ES and the wavelength allotment algorithm WA to address the RWA problem for embedding exchanged folded hypercube communication patterns in bus-topology WDM optical networks.

The tenth paper, “Reporting Mechanisms for Internet of Things”, by Chia-Wei Chang, et al., investigates two reporting mechanisms to save the energy of IoT devices which are typically installed at hard-to-reach locations on NCTU campus, and discusses how much energy could be saved and how close the reported data to the time-variant environmental information could be.

The last article titled “A Multi-Domain VNE Algorithm based on Load Balancing in the IoT networks”, authored by Peiyong Zhang, et al., discusses operational optimization of the genetic algorithm, and gives the calculation method of crossover probability in three cases, as well as the gene scoring strategy for selecting mutated genes.

Acknowledgements As the guest editors of this special issue, we would like to thank all authors who have submitted papers to the special issue and in particular those whose papers have been accepted for this special issue. Assistance from the editorial staff of the Mobile Networks and Applications is also much appreciated. Besides, the guest editors wish to acknowledge all those who have generously given their time to review the papers submitted for consideration for inclusion in this special issue. Finally, our special thanks go to Dr. Imrich Chlamtac (editor-in-chief) for his valuable support throughout the preparation of this special issue.

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Der-Jiunn Deng (M'10) received the Ph.D. degree in electrical engineering from the National Taiwan University in 2005. He joined the National Changhua University of Education as an Assistant Professor in the Department of Computer Science and Information Engineering in August 2005 and then became a Distinguished Professor in August 2016. In 2010, 2011, and 2012, he received the Research Excellency Award of National Changhua University of Education. In 2012

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