Recent Advancements in Big Data Technologies and Applications in Computing, IoT and Computer Engineering Technology

J.UCS Special Issue

Ka Lok Man
(Xi'an Jiaotong-Liverpool University, China and
Swinburne University of Technology Sarawak, Malaysia
ka.man@xjtlu.edu.cn)

Ou (Owen) Liu
(Xi'an Jiaotong-Liverpool University, China
owen.liu@xjtlu.edu.cn)

Danny Hughes
(KU Leuven, Belgium
danny.hughes@cs.kuleuven.be)

Chao Lu
(Southern Illinois University, Carbondale, IL, USA
chaolu@siu.edu)

Welcome to the special issue on "*Recent Advancements in Big Data Technologies and Applications in Computing, IoT and Computer Engineering Technology*". This issue presents ten high quality academic papers. This mix provides a well-rounded snapshot of current research in the field and provides a springboard for driving future work and discussion. The ten papers presented in this volume are summarized as follows:

1. "*Longitudinal Healthcare Data Management Platform of Healthcare IoT Devices for Personalized Services*": Ahyoung Choi and Hangsik Shin propose a platform that can be utilized for future healthcare service to share accumulated healthcare data in various situations.
2. "*An Experimental System for MQTT/CoAP-based IoT Applications in IPv6 over Bluetooth Low Energy*": Chi-Yi Lin, Kai-Hung Liao and Chia-Hsuan Chang present an IPv6 over BLE experimental system based on Raspberry Pi 3 and Nordic nRF51-DK development boards for MQTT/CoAP-based IoT Applications.
3. "*An Effective Risk Factor Detection and Disease Prediction (RFD-DP) Model Applied to Hypertension*": Dingkun Li, Yaning Li, Zhou Ye, Seon Phil Jeone, Musa Ibrahim and Keun Ho Ryu illustrate a model called Risk Factor Detection and Disease Prediction (RFD-DP) which outperforms traditional feature selection and classification methods in terms of accuracy, F-score, and AUC.

4. "*Target Selection in Head-Mounted Display Virtual Reality Environments*": Difeng Yu, Hai-Ning Liang, Feiyu Lu, Vijayakumar Nanjappan, Konstantinos Papangelis and Wei Wang explore target selection in HMD VR environments which assesses the performance of the main selection metaphors/techniques under conditions that are relevant to the VR environments, including a various index of difficulty (derived from the Fitt's Law), target density, and target occlusion.

5. "*Detection of Potholes Using a Deep Convolutional Neural Network*": Lim Kuoy Suong and Kwon Jangwoo design a deep Convolutional Neural Network (CNN) based on YOLOv2 with a different architecture for the detection of potholes.

6. "*Verifying Secure Authentication Protocol for Communication between IoT-based Medical Devices*": Nipon Theera-Umpon, Kun-Hee Han, Woo-Sik Bae, Sanghyuk Lee and Van Huy Pham develop a protocol which encrypts the communication process and data to eliminate the likelihood of personal information being leaked.

7. "*Machine Learning Optimization of Parameters for Noise Estimation*": Yuyong Jeon, Ilkyeun Ra, Youngjin Park and Sangmin Lee propose a fast and effective machine learning method of parameter optimization for noise estimation of various types of noise.

8. "*Crumbling Walls Log Quorum System based Name Resolution Routing for CCN based IoT*": Pir Imran Shah, Peer Azmat Shah, Sadaf Yasmin, Zahoor-ur-Rehman, Akhlaque Ahmad, Yunyoung Nam and Seungmin Rho present a Content Centric Networking (CCN) based approach in the IoT environment to address scalability problems associated with CCN-assisted IoTs.

9. "*The Generation of Electricity Load Profiles Using K–Means Clustering Algorithm*": Rūta Užupytė, Tomas Babarskis and Tomas Krilavičius introduce an approach which is based on the periodicity analysis and well-known clustering technique – K-means that can be applied for identification for separate users load profiles and clustering of load profiles.

10. "*Modelling of Automotive Engine Dynamics using Diagonal Recurrent Neural Network*": Yujia Zhai, Kejun Qian, Fei Xue and Moncef Tayahi apply a Diagonal Recurrent Neural Network (DRNN) to model SI engine dynamics to achieve a balance between the modelling performance and computational burden, and a moderate cost on computation.