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# Editorial: Intelligent Industrial IoT Integration with Cognitive Computing

**Yin Zhang**[1] · **Limei Peng**[2] · **Yi Sun**[3] · **Huimin Lu**[4]

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**Editorial:**

In recent years, the widespread deployment of wireless sensor networks, industrial cloud, industrial robot, embedded computing and inexpensive sensors has facilitated industrial Internet of Things (Industrial IoT) technologies and fostered some emerging applications (e.g., product lifecycle management). Industrial IoT is the direct motivation and drive for the industrial upgrading. Supported by cognitive computing, which is one of the most important fundamental researches and key techniques for implementing intelligent manufacturing, Industrial IoT is significantly becoming smarter that more intelligent services and applications are emerging. Therefore, the services of an intelligent Industrial IoT integration with cognitive computing could be suggestive, prescriptive, or instructive in nature, and it could be more affective and influential by design choices to make a new class of problems computable.

✉ Yin Zhang
yin.zhang.cn@ieee.org

Limei Peng
auroraplm@ajou.ac.kr

Yi Sun
sybupt@bupt.edu.cn

Huimin Lu
lu@cntl.kyutech.ac.jp

[1] Zhongnan University of Economics and Law, 182 Nanhu Ave, Hongshan, Wuhan, Hubei 430073, China

[2] Ajou University, 206 Woldeukeom-ro, Woncheon-dong, Yeongtong-gu, Suwon, Gyeonggi-do, South Korea

[3] Beijing University of Posts and Communications, 10 Xitucheng Rd, BeiTaiPingZhuang, Beitaipingzhuang Residential District, Haidian Qu, Beijing Shi 100876, China

[4] Kyushu Institute of Technology, Kyushu, Japan

Although IoT has emerged with a great potential to change our life especially with ubiquitous sensing and sensory data, cognitive IoT technologies will make it possible to understand what's happening in the world more deeply. Therefore, it is necessary to address the technical challenges and problems related to Industrial IoT on designing, building, and deploying novel cognitive computing, services and technologies, to enable intelligent Industrial IoT services and applications.

This special issue features six selected papers with high quality. The first article, "Botanical Internet of Things: Towards Smart Indoor Farming by Connecting People, Plant, Data and Clouds", authored by J. Yang et al., developed a botanical IoT and provided detailed solution including bottom hardware, systematic service to terminal application. Especially, a Hadoop-based approach was also proposed for big data analysis applications implemented on the basis of environmental data (temperature, humidity, illumination intensity and air) which is related to plant growing.

The second article titled "Large Scale Measurement and Analytics on Social Groups of Device-to-Device Sharing in Mobile Social Networks" presented a large-scale measurement study for the online device-to-device (D2D) content sharing in Mobile Social Networks (MSNs) with data collected from Xender, and carried out comprehensive analytics from the perspective of social networks including structural properties of sharing groups, characteristics of social graphs, motif dynamics, and cascade trees.

In the next article with the title "emHealth: Towards Emotion Health through Depression Prediction and Intelligent Health Recommender System", the authors proposed an intelligent health recommendation system for patients with depression emotion disorder to address the challenge of accessing personalized therapies in the current social status of medical resources shortage. The beneficial effects of this system can meet the needs of the electronic market and can be promoted and popularized.

The resource utilization of servers (such as CPU, memory) is an important performance metric in data center networks (DCNs). The fourth article titled "Improving Resource Utilization via Virtual Machine Placement in Data Center Networks" proposed a correlation-aware virtual machine placement scheme that effectively places virtual machines on physical machines. Specifically, neural networks model and factor model are implemented to forecast the resource utilization trend data according to the historical resource utilization data, while three correlation-aware virtual machine placement algorithms are developed to enhance resource utilization while meeting the user-defined service level agreements (SLAs).

With the recent development of Cognitive Internet of Things (CIoT) and the potential of Cyber Physical System (CPS), people's daily activities become smarter, and intelligent. The combination of CIoT and CPS can greatly enhance the quality of people's life. The fifth article, "Verifying the images authenticity in Cognitive Internet of Things (CIoT)-oriented Cyber Physical System" proposed CIoT-CPS that comprises of two main models: user activity cognitive model based on machine learning to have meaningful data, and image authentication model to verify the authenticity of images captured by various devices.

The last article titled "Fractal Research on the Edge Blur Threshold Recognition in Big Data Classification" investigated efficient trust prediction in a large-scale social network. The authors proposed the edge blur threshold algorithm for addressing to the issues in traditional big data classification, such as inaccuracies and great errors. It classified the big data based on the reduction of feature dimensions, and also classified the data on the basis of the differences of the selected data. To determine the edge blur threshold, it used the least squares method. Combined with the decision tree method, it finally realized the classification of big data.

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**Yin Zhang** is an Assistant Professor of the School of Information and Safety Engineering, Zhongnan University of Economics and Law (ZUEL), China. He is an IEEE Senior Member since 2016. He is an Excellent Young Scholar at ZUEL. He is Vice-chair of IEEE Computer Society Big Data STC. He was a Poster-Doctoral Fellow in the School of Computer Science and Technology at Huazhong University of Science and Technology, China. He serves as editor or associate editor for IEEE Access, IEEE Sensors Journal, etc. He is a Guest Editor for Mobile Networks and Applications, Sensors, Multimedia Tools and Applications, Journal of Medical Systems, New Review of Hypermedia and Multimedia, etc. He also served as Track Chair of IEEE CSCN 2017, TPC Co-Chair of CloudComp 2015 and TRIDENTCOM 2017, etc. He has published more than 60 prestigious conference and journal papers. His research interests include intelligent service computing, big data, social network, etc.

**Limei Peng** received the M.S. and Ph.D. degrees from the Chonbuk National University, South Korea, in 2006 and 2010, respectively. In 2011, she was a Research Professor with Grid Middleware Research Center, Korea Advanced Institute of Science and Technology, South Korea. She was an Associate Professor with the School of Electronic and Information Engineering, Soochow University, China, for more than two years. She is currently an Assistant Professor with the Department of Industrial Engineering, Ajou University, South Korea. Her research interests fall in optical communication networks and protocols, datacenter networks, software defined networks, and cloud computing networks.

**Yi Sun** is a lecturer of Institute of Sensing Technology and Business, Beijing University of Posts and Communications, China. She is also a Postgraduate Tutor of Institute of Network Technology and National Engineering Laboratory for Mobile Network Security (No. [2013]2685), Beijing University of Posts and Communications. Her research interests include Secure Multiparty Computation, Homomorphic Encryption, Private-preserving Secure Computation in Big Data, etc.

**Huimin Lu** received the B.S. degree in electronics information science and technology from Yangzhou University in 2008, the M.S. degree in electrical engineering from the Kyushu Institute of Technology, the M.S. degree in electrical engineering from Yangzhou University in 2011, and the Ph.D. degree in electrical engineering from the Kyushu Institute of Technology in 2014. He is currently an Associate Professor with the Kyushu Institute of Technology and also serves as an Excellent Young Researcher of MEXT-Japan. His current research interests include computer vision, robotics, artificial intelligence, and ocean observing.