Editorial

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Biographical notes: Yunchuan Sun is currently an Associate Professor in Beijing Normal University, Beijing, China. He acts as the Secretary of the IEEE Communications Society Technical Subcommittee for the Internet of Things from Jan. 2013. He also acts as Associate Editor of the Springer journal *Personal and Ubiquitous Computing* since Jan. 2012. He received his PhD in 2009 from the Institute of Computing Technology, Chinese Academy of Science, Beijing, China. His research interests include internet of things, semantic link network, big data modelling and representation, event-linked network, and information security.

Jin Liu is a Professor is at Wuhan University. He received his PhD degrees in State Key Lab of Software Engineering, China, in 2005. He has served as a member at IEEE Computer Society and China Computer Federation. His researches ranged over novel software on the internet, software service, and internet of things. He has published more than 60 peer-reviewed scientific papers in international conferences and journals.

The rapid increasing number of mobile devices and smart objects is significantly changing our daily life. It is estimated that there will be more than 30 billion smart things connected to the internet by 2020. A primary goal of mobile computing for the internet of things (IoT) is to create sensors with situation awareness and enable mobile applications, device and users to better know about the environments. The understanding of a situation, or context, potentially enables services and mobile applications to make intelligent decisions and to respond to the dynamics of their environments (Sun and Jara, 2014).

Semantic sensing becomes more and more important. A stunning number of highly distributed and heterogeneous devices need to communicate in different scenarios autonomously. This makes the interoperability among the 'things' on the IoT a fundamental requirement to map traceable objects into the virtual world. Semantic techniques such as ontologies, semantic annotation, linked data and semantic web services, etc., can be used as principal solutions for this purpose. The importance of semantic computing to the research and development of mobile computing applications for the IoT can be demonstrated at semantics for interoperability, IoT data integration, IoT data abstraction and access, resource/service search and discovery, semantic reasoning and interpretation.

This special issue focuses on these topics, which form the essence of semantic sensing and mobile computing for IoT and is in collaboration with the international event: International Workshop on Identification, Information and Knowledge in the Internet of Things 2013 (IIKI2013) in China (http://ireg.bnu.edu.cn/IIKI2013/). At the end of the review process, we accepted four papers for this issue. Each of the papers was peer reviewed by at least two experts in the field. In the following, we provide a brief introduction for each paper.

The first paper titled 'RFID authentication protocol design methodology' by QingLing Cai, YiJu Zhan, and Jian Yang, proposes a series of rules called RFID authentication protocol security enhanced rules (RAPSER) to provide systematic theory support for RFID authentication protocol design and verification. By Chien's and Khan's protocol, authors demonstrate how RAPSER can be implemented to design and verify RFID authentication protocols. The results show that RAPSER is efficient and effective for RFID authentication protocol design and verification.

The second paper titled 'Real-time eHealth visualisation and actuation platform' by Andrej Kos, Urban Sedlar, Mojca Volk, Klemen Peternel, Jože Guna, Aleksander Kovačić, Gregor Burger, Janez Bešter, Sašo Tomažič and Matevž Pogačnik presents an IoT platform designed to support a number of usage scenarios with special emphasis on eHealth use cases. The platform architecture supports procedural and event driven services, as well as extension

with additional data importers and visualisation modules and external devices. This broadens the scope of applicability and can support a variety of use cases beyond eHealth, such as home automation and network monitoring.

The third paper titled 'Developing operation layer of logistics information system based on EPCIS' by Qiang Li, Guoyin Zhu and Lixin Miao aims at 'Information Island' in the enterprises logistics informatisation and proposes a general development method of logistics information system which can grasp the commonness of logistics activities and help to unifying development method of all logistics activities in operation layer after a thorough analyses on EPCIS.

The fourth paper titled 'A DPA-resistant crypto engine for UHF RFID tag' by Linghao Zhu, Cheng Wu, Linyin Wu, Junyu Wang and Hao Min presents the hardware implementation of a DPA-resistant crypto engine for RFID tag conforming to ISO/IEC 18000-63 protocol aims at differential power analysis (DPA) which is a potential threat to the security of radio frequency identification (RFID) system. The masking scheme is adopted in the AES crypto engine to protect the tag from DPA attacks. The design is implemented using 0.13 μm CMOS technology. Simulation results show that the DPA-resistant crypto engine occupies 38% more area and consumes 20% more power than the unmasked one. The area of the whole tag baseband including the DPA-resistant crypto engine is about 163,000 μm^2. The average power consumption during a query round is 21.2 μW under 1 V and 1.28 MHz clock frequency.

Finally, we would like to take this opportunity to thank all authors for their valuable contributions to this issue. We are indebted to the anonymous reviewers for their hard work which help the authors to further enhance the quality of the manuscripts. We also would like to express our gratitude to Professor Kuan-Ching Li, the Editor-in-Chief of the journal, for giving us the opportunity and honours to serve as the guest editors of this issue.

References

Sun, Y. and Jara, A. (2014) 'An extensible and active semantic model of information organizing for the internet of things', *Personal and Ubiquitous Computing*, Vol. 18, No. 8, pp.1821–1833, DOI:10.1007/s00779-014-0786-z.