

# Guest Editorial

## Special Issue on Software Defined Wireless Sensor Networks

**A**LTHOUGH Wireless Sensor Networks (WSN) have emerged with a great potential to change our life, especially with ubiquitous sensing and sensory data access through Sensing-as-a-service (S<sup>2</sup>aaS) models, there are still many fundamental technical challenges that need to be addressed to realize this potential. These challenges include the complexity and diversity of applications, the needs for highly flexible and secure configuration management mechanisms, the need to design programmable and novel sensory techniques, and the needs to balance local intelligence and scalable cloud-based intelligence to satisfy real-time service objectives.

Software Defined Wireless Sensor Networks (SDWSNs) is a new paradigm that offers significant promise to ubiquitous sensing and sensory data access through S<sup>2</sup>aaS. In SDWSNs, the control intelligence is moved out from data plane devices (i.e., sensor nodes) and implemented in a logically centralized controller (network operating system, which however can be formed by distributed clusters), interacting with data plane devices through standard interfaces. Network operators run software programs on the controller to automatically manage data plane devices and optimize network resource usage. This architecture enables up-to-date control schemes to be developed and deployed to enable new smart sensing services.

This Special Issue aims to present the latest advances of the fundamental technologies and market trends that will impact the design and standardization of SDWSNs by bringing together academic and industrial researchers to identify and discuss technical challenges related to SDWSNs. In response to the Call for Papers, we were pleased to see 42 submissions from Australia, Canada, China, France, Japan, Republic of Korea, the United States, and other countries all over the world. In this section, we have selected 14 outstanding articles, which have been organized into three groups. The first group of papers focuses on using software-defined techniques to improve the performance of WSN, such as coverage, resource utilization and energy efficiency. The focus of the papers in the second group is on software-defined sensory data collection and transmission. The last group of papers focusses on the security, simulation and application of SDWSNs. These topics reflect the importance of this research field and represent

a stimulus for all of us since they bring us interesting novelties for encouraging the audience to continue research on SDWSNs.

In closing, we would like to thank all the authors who submitted their research results to this Special Issue. We would also like to acknowledge the contribution of many experts in the field who have participated in the review process, and provided constructive suggestions to the authors to improve the contents and presentations of the articles. We thank the staff of the IEEE SENSORS JOURNAL for their support, efficiency and competence.

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