
Editorial

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Recently, there has been a growing interest in the design, development and deployment of sensor systems for applications of high-level inference, which leads to an increasing demand on interconnecting wireless sensor networks with other emerging technologies, such as RFID technology, multimedia-based surveillance system, biomedical technology, mobile agent based networks, P2P technology and business process and semantic technology, etc. With sensor technology being incorporated into these technologies, demands from an increasing number of autonomous and intelligent applications can be met.

This special issue is intended to provide a forum for presenting, exchanging and discussing the most recent advances in different aspects of integrating wireless sensor networks with emerging technologies. In particular, it will bring together leading researchers, industry professionals, and research students to study the applications, architectures, protocols, models, evaluation methods, and experimental studies of the advanced sensor integration technology. In response to the call for contributions, we have received a large number of papers from both academia and industries that covered a variety of interesting topics related to WSNs. Two rounds of careful review by the guest editors and experts in the field led to four papers for inclusion in this special issue.

The first paper 'Development of a shoe-mounted assistive user interface for navigation' by J. Zhang et al. addresses the issue of navigation for the visually impaired, which is likely one of the most challenging tasks due to high expectations on both the functionality and the mechanical specifications of the devices. The authors present the prototype a multiple sensor-based hand-free device as a navigation aid to detect obstacles. The developed device incorporates a sensor unit and a feedback unit with either a wired or a wireless data communication set-up. The working principle and the design criteria are identified with several working scenarios for potential applications. The implementation of the design into a prototype device is discussed in details.

In the paper 'User-centric data gathering multi-channel system for IPv6-enabled wireless sensor networks' by P. Neves et al., the authors propose a multi-channel data-gathering solution with support for web visualisation, local computer application and mobile application. As a result, sensed data can be disseminated and consumed through various channels simultaneously, with adequate features and user interfaces. Moreover, the system features a Plug-and-Play like experience by abstracting hardware details and zero user-configuration.

M.B. Uddin and C. Castelluccia, in the paper 'Towards clock skew based services in wireless sensor networks', validate that MICAz and TelosB sensor motes have different and unique clock skews. Furthermore, the clock skew of a node can easily be monitored, even via a multi-hop wireless sensor network. The authors argue that this feature can be used for the identification of the nodes, the detection of Wormhole and Sybil attacks. Then, they show that the clock skew of a sensor node varies with the temperature, and explain how this property can be used to detect malicious and malfunctioning nodes and to geo-localise them.

In the last paper 'Sensor integration for perinatology research' by W. Chen et al., the authors propose the design work of a smart jacket integrated with textile sensors for neonatal monitoring and software architecture of advanced sensor integration for delivery simulator. Prototypes are built for demonstrating the design concept and the experimental results are obtained in clinical settings.

We would like to thank all the reviewers for their efforts and constructive comments. We would in particular like to thank Professor Yang Xiao, the Editor-in-Chief, for his support and helpful suggestions during the very delicate stages of concluding the special issue. Finally, we would like to thank all the authors who submitted their precious research work to this special issue.