
Editorial

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The concept of a smart home which interacts and readily responds in an adaptive intelligent manner to the needs of its occupants as well as various changes in its ambient conditions is getting closer to being realised. This is driven by the phenomenal advances in various scientific and technological fields with the information communication technology (ICT) field taking the lead. Ubiquitous miniature sensors with computing and communication capabilities can be connected to form intelligent sensor networks. These devices can be distributed within the home to enable a wide range of monitoring and control functions. Integrating the capabilities of such sensor networks with other technologies such as wireless mobile communication systems and context-aware computing opens huge possibilities for intelligent applications.

The market for smart homes is set to grow substantially in the not too distant future. Some of these homes will be conventional ones that convert some of their functionality to become smart, while others will be purpose built with embedded smartness. In both cases, there are already many applications that are putting smartness aspects of the homes to practical use. An example of such applications is telemedicine. This application area of smart homes continues to attract huge interest. It is basically driven by the spiraling cost of providing health care in a conventional manner and the need to support independent forms of living for the elderly and persons who require long term health care.

The field of smart homes is by its very nature a multidisciplinary one. Therefore, it continues to attract interest from researchers in many diverse fields. This is due to the many challenges that need to be overcome to engineer pervasive technological systems that deliver the required ambient intelligent services in ways that do not disrupt the normal functioning of the lives of the occupants of the home.

This special issue includes ten articles that cover many aspects of smart homes technologies and applications. The article by M. Al-Qutayri and J. Jeedella, 'Smart homes: technologies, applications and challenges', presents a review of the various technologies that can be integrated to design a smart home, the major application areas that will benefit from the realisation of smart homes, and the technological and social challenges that need to be overcome to make such homes an acceptable reality. In the article 'Exploiting Bluetooth for deploying indoor LBS over a localisation infrastructure independent architecture', A. Zafeiropoulos et al., present an evaluation of using Bluetooth wireless technology, as a localisation technique, for providing web-based location aware content through Java enabled handheld devices. The article by J. Simões and T. Magedanz, 'Smart advertising in the home of the future', presents a framework approach to address advertising solutions focusing on smart home environments, enriching the overall user quality of experience. The article by M. Al-Qutayri et al.,

'Integrated secure wireless system for smart home monitoring and control', describes a complete architecture and design of a prototype smart home system that integrates a variety of wireless information and communication technologies in order to securely monitor and control home appliances.

In the article 'Remote computing resource management from small devices by utilising WSRF', S. Huang et al., present a framework that enables the use of small mobile devices to conduct computing resource management in a distributed environment with possible application to smart homes. The articles by L. Liu et al., 'A bushfire detection and monitoring systems', and Y. Sun et al., 'A bushfire monitoring and detection system for smart homes using ZigBee technology', describe complete cost effective systems that use various sensors and wireless communication technologies for early detection of bushfires. The article 'MATLAB-based tool for modelling on-grid photovoltaic systems dedicated to the housing sector in UAE', by A. Assi and M. Jama focuses the design of on-grid building-integrated photovoltaic systems for energy efficiency. The article by R Ben-Tekaya et al., 'Performance evaluation of MIC@R NoC for real-time applications', presents a network on-chip for interconnection of devices in a smart home with an efficient routing scheme. Last but not least, the article by B. Jamali, 'A GNU radio based SDR RFID platform', presents an implementation of a software-defined re-configurable RFID reader design using the GNU radio.

In closing, I would like to thank all those who contributed to making this special issue possible. They include the authors who submitted their papers, the reviewers, the Editor-in-Chief and the editorial and production staff of the *IJCAET*. I hope the readers will find this special issue on smart homes informative and enjoyable to read.