

## Special issue on “Personalization and situation awareness in smart environments”

Ana M. Bernardos · Boon-Chong Seet ·  
Elisabetta Farella

Published online: 31 January 2015  
© Springer-Verlag Berlin Heidelberg 2015

Smart environments are technology augmented physical ecosystems, which have been pervasively and non-invasively instrumented to become perceptive and responsive. These enriched capabilities are possible thanks to the existence of infrastructures that enable the acquisition and fusion of data coming from a wide variety of both virtual sources and ubiquitous sensing devices (wireless sensor networks, personal devices, smart objects, etc.). On top of this data, user-centric paradigms aim at learning about the ecosystem’s activity, in order to adapt and personalize the offering of features and applications that may better fit the needs and preferences of its dwellers. In a complementary way, environment-centric paradigms exploit information in pursuit of a holistic understanding of the smart space’s status and its evolution, through situation analysis techniques, to enhance decision making of global management services.

With this context in mind, the present Special Issue brings together recent advances on tools, activity recognition, applications and service design for *Personalization and Situation Awareness in Smart Environments*. The Special Issue contains both extended versions of selected papers presented at the International Workshop on Smart Environments and Ambient Intelligence 2013 (SEnAmI 2013) and submissions accepted from open call. After a

three-round review process, in which three referees reviewed each submitted paper, eight papers were finally selected for publication.

The first paper, “*System-Level Approach to the Design of Ambient Intelligence Systems based on Wireless Sensor and Actuator Networks*” by U.D. Atmojo et al., lies within the architectural solutions to deal with smart environments information. The authors propose a system-level programming language to develop a middleware-free Ambient Intelligence system, in order to overcome the problems of designing distributed systems on top of Wireless Sensor and Actor Networks (WSANs).

The three following papers explore different aspects of activity/behavior recognition in smart environments. “*Bio-inspired relevant interaction modeling in Cognitive crowd management*” by S. Chiappino et al., describes an Intelligent Video Surveillance (IVS) system based on a bio-inspired model of human reasoning and consciousness that applies Cognitive Systems to anomaly detection and management. Thereafter, “*CRAFFT: An activity prediction model based on Bayesian networks*” by E. Nazerfard and D.J. Cook, details and validates an activity prediction model that relies on Bayesian networks together with a two-step inference process to predict and label the activities and to anticipate the start time of the next one. The paper entitled “*Using implicit user feedback to balance energy consumption and user comfort of computer screens*” by P. Jaramillo et al., presents a dynamically adaptive proximity controller to balance energy consumption and user comfort of computer screens in office environments.

Two application-oriented papers are next included. “*Building a smart campus to support ubiquitous learning*” by Y. Atif et al., describes a social community platform for university campuses that involves learners, experts and physical resources. The proposed model of smart campus,

---

A. M. Bernardos (✉)  
Universidad Politécnica de Madrid, Madrid, Spain  
e-mail: abernardos@grpss.ssr.upm.es

B.-C. Seet  
Auckland University of Technology, Auckland, New Zealand

E. Farella  
Università di Bologna-Fondazione Bruno Kessler,  
Bologna, Trento, Italy

conceived as a composition of ambient learning spaces and capable of dynamically modeling the learners' profiles, aims at offering a persuasive and ubiquitous approach to learning. Following, the research work entitled "*Situational awareness in smart environments: socio-mobile and sensor data fusion for emergency response to disasters*" by G.L. Foresti et al., explores the potentiality of analyzing mobile social and smart sensors data to increase the efficiency of the whole situational awareness emergency services, localize the critical areas and obtain relevant information for response and completion of search and rescue operations.

The Special Issue concludes with two papers related to service design and user experience. "*Evaluating context-aware user interface migration in multi-device environments*" by G. Ghiani et al., describes a solution for migrating user interfaces and maintaining the interaction

sessions across devices when changing situations. The solution is validated through a longitudinal diary study and a controlled user study that serves to gain insights into the user needs and technical requirements for context-aware information sharing. The final paper is "*Situation-aware safety service for children via participatory design*" by S. Pansar-Syvaniemi et al. The research work reports the lessons learned from the use of a methodology that combines participatory tools, brainstorming workshops and scenario writing to the design a situation-aware safety service for children.

As Guest Editors of this Special Issue, we want to thank the authors for their contributions, the anonymous referees for their time and help and the editorial support from the Journal of Ambient Intelligence and Humanized Computing at every stage of the publication process.