Editorial

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Biographical notes: Waltenegus Dargie is a Researcher at the Technical University of Dresden. He obtained a PhD in Computer Engineering from the same university in 2006. He holds an MSc from the Technical University of Kaiserslautern, Germany (2002) and a BSc from the Nazareth Technical College, Ethiopia (1997), both in Electrical Engineering. Previously, he has been a Researcher in the Department of Electrical Engineering and Computer Science at the University of Kassel (2002–2005) and at the Fraunhofer Institute of Experimental Software Engineering (2002–2003). His research interests include autonomous computing, context-aware computing, wireless sensor networks and digital signal processing. He is a Member of the IEEE and IEEE Communication Society.

Noriaki Kuwahara is an Associate Professor at the Kyoto Institute of Technology, Japan. Previously, he has been working at various capacities in different institutions. He joined Sumitomo Electric Industry Ltd. in 1987 and ATR Communication System Labs in 1993. In 1997, he received DrEng from the University of Tokyo. In 2007, he became an Associated Professor of Graduate School of Science and Technology, Kyoto Institute of Technology. He is a Member of Human Interface Society of Japan, Information Processing Society of Japan, The Institute of Image Information and Television Engineers and IEEE Computer Society.

Mieso K. Denko is an Associate Professor at the University of Guelph, Canada. He received his PhD from the University of Natal, South Africa, in Computer Science. His current research interests include wireless networks, mobile and

pervasive computing, body sensor networks and network security. He is a Founder/Co-founder of a number of international workshops and served as a programme chair/co-chair of several *IEEE/ACM International Conferences*. He has been serving as guest co-editor of the *ACM/Springer Mobile Networks and Applications* and *IEEE Systems Journal*. He also serves in the editorial board of the *Int. J. Smart Homes* and the *Journal of Ubiquitous Computing and Communications*. He is a Senior Member of the *ACM* and *IEEE*.

This special issue investigates the role of context-aware computing in developing autonomous systems. These systems are capable of making autonomous decisions to adapt to internal and external dynamics. Typically, they employ sensors to perceive their physical surrounding, interpret the sensed data according to their world model and carry out decisions pertaining to adaptation. The decisions' level and scope depend on the perceived change in the environment and their users' expectation, and may involve cooperation with other systems.

Context-aware computing is very well investigated in this regard within the pervasive computing community. Some of its aspects are data acquisition, context modelling, context representation and context recognition. Such a vast mining of knowledge and experience can be exploited to develop smart and self-managing systems.

Context is a broad concept. Often, it is related to the information that describes the situation of users, physical places, devices and computing infrastructures. Context-aware computing deals with the consumption of such information by applications to provide suitable services and to adapt to a computing environment.

The papers that appear in this special issue were initially presented in Nara, Japan, at the *3rd ACM International Workshop on Context-Awareness for Self-Managing Systems* (casemans 2009). Several reviewers have participated during the initial as well as the second round review process. Each paper has initially been reviewed at least by three reviewers and after the workshop, a selection committee identified some of the casemans 2009 papers and invited the authors to submit extended versions for further consideration to publish them in the journal's special issue. The second round review consisted of two qualified reviewers and the guest editors. Finally, the guest editors agreed to select four high quality papers which got positive reviews from all the reviewers.

The paper by Dargie and Schill focuses on developing smart systems. It argues that intelligent systems have different aspects that are better understood by different people, having a diversity of experience and background. Subsequently, it proposes a method of orchestrating the knowledge and experience of people from various fields to build complex and smart sensing systems. The paper by Yonezawa et al. aims to enable a robot to recognise the intention of a user through the detection of gaze and utterances. The paper by Cheng et al. employs wireless sensor networks and context-aware computing to recognise various nursing activities in a hospital. The system is useful to reduce danger in patient handling. Finally, the paper by Ardissono et al. extends the traditional service-oriented architecture by incorporating a context component that enriches the SOA architecture with context-aware workflow management.