Journal of Universal Computer Science, vol. 16, no. 15 (2010), 1927-1928
submitted: 13/7/10, accepted: 19/7/10, appeared: 1/8/10 © J.UCS

Mobile Context-Aware Applications for Ubiquitous Computing

J.UCS Special Issue

María D. Lozano
(University of Castilla-La Mancha, Albacete, Spain
maria.lozano@uclm.es)

Jose A. Gallud
(University of Castilla-La Mancha, Albacete, Spain
jose.gallud@ucml.es)

Philippe Palanque
(Université Paul Sabatier, Toulouse, France
palanque@irit.fr)

Mobile devices are changing users' technological habits since the possibilities to be connected to Internet everywhere are increasing as technology is surrounding all aspects of users' life. A user with a mobile device can find that its standard functionality can be extended with those applications and services provided by the environment. Moreover, the user can influence in the environment by means of its interactions. An important requirement is that the mobile device has to be able to interact with the context.

Recent advances in mobile technology are providing mobile users with the capacity to interact with their surrounding world. Mobile systems can be deployed in a wide range of physical environments. The context awareness needed in these scenarios is much more than a question of location or positioning. These systems have to address more sophisticated techniques to adapt the system's behavior to the context of the user.

This Special Issue tries to offer an innovative and original vision of the now and future context-aware applications for ubiquitous computing. A number of good quality papers were received and, after a rigorous reviewing process, only eleven papers were selected for publication. The next lines include a brief summary of each paper.

The paper by Ichiro Satoh presents an agent-based system for building and operating agent-based context-aware services in public spaces, including museums.

The paper by Young Bok Kim proposes a real-time analysis scheme based on real-time estimation of time-based usability and accessibility for human mobile-web interactions with a name-based directory server for social networking in the ubiquitous Internet environment and he includes an implementation of a ubiquitous mobile-web directory service.

The paper authored by Alejandro Cadenas et al., presents a global context processing architecture and a proposal for a multi-level context management

framework for smart telecommunications services, whose objective is to optimise the available processing resources of the presented architecture to provide contextual monitoring to a high number of subscribers with limited resources.

Kris McGlinn et al. explore their experiences in the development of a Simulated Context (SimCon) Model which currently supports taking information from a Virtual Reality (VR) smart building and converting it into three types of location context to conduct early rapid evaluation of location based smart building applications.

The paper authored by Giussepe Ghiani and Fabio Paternò presents a novel technique for supporting device selection by providing dynamic graphical representations of the user's orientation and position in relation to the available target devices in the current environment.

Marino Linaje et al. present the combination of two different methodologies, WebML and RUX-Method, both using MDD principles, to obtain multi-device context-aware Rich Internet Applications using a Model-Driven approach.

The paper by Praveen Madiraju et al., proposes the architecture of a system named Mobile Intelligent Interruptions Management (MIIM), created for the automated administration of personal unavailability with regard to cell phones.

Juan M. López and Montserrat Sendín present a software infrastructure to automatically adapt mobile systems according to their context of use. This infrastructure provides a multi-sensor support and is independent of the mobile technology used on the device.

Jason J. Jung proposes a novel mechanism for integrating online social networks, which are regarded as an important channel for exchanging and propagating contexts. To efficiently discover personal contexts of certain users, the contexts of their neighbors can be used to provide mobile recommendation services to mobile subscribers.

Ricardo Tesoriero et al. present an MDA approach that defines three layers of models to develop context-aware applications for ubiquitous computing environments. The first layer captures the conceptual characteristics of the application. The second layer defines the software characteristics of the application. The third layer defines the deployment environment of the system according to the views generated by the second layer.

Youna Jung and Minsoo Kim introduce community computing as a new paradigm in which ubiquitous services are provided through context-aware cooperation among existing agents. To design such systems intuitively, they propose an abstraction model, called the situation-aware community computing model which includes the community situation model and the situation-aware cooperation model.

We would like to thank all reviewers for their time and effort and for providing invaluable comments and suggestions to the authors. Certainly, they have specially contributed to improve the quality of this special issue. We also thank Hermann Maurer (Managing Editor) and Dana Kaiser (Assistant Editor) of J.UCS, for their help and for giving us the opportunity to edit this special issue. Finally, we hope the reader will enjoy the contents of this special issue and find it useful and informative.

María Lozano, Jose A. Gallud and Philippe Palanque
July, 2010