**EDITORIAL**

# Advances in context-aware mobile services

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## 1 Introduction

Context awareness refers to the system capability of both sensing and reacting to situational changes [1, 2]. It is one of the most exciting trends in computing today that holds the potential to make our daily life more productive, convenient, and enjoyable. Recently, with the rapid advances in mobile technologies, context-aware mobile services are emerging as an important technology to underpin the new breed of user-centric smart applications on the future ubiquitous mobile Web [3, 4]. Although mobile devices naturally have the capability to capture both the physical context, such as location, and the social context, such as presence and relationships, of users, there are many hurdles to cross in order to realize the full potential of context-aware mobile services. For example, how to extract/derive pertinent context information from the World Wide Web and the mobile networks and evaluate its quality? How to effectively manage the physical and social context information, including its security and privacy? Which is largely distributed over the Web? How to facilitate the

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development and deployment of mobile context-aware services? just name a few. Providing solutions to these issues may release the full potential of context-aware mobile services and bring genuine user expectation and satisfaction.

## 2 In this special issue

The papers in this special issue are based on the best papers from the 9th International Conference on Mobile Web Information Systems (MobiWIS 2012), which was held at Niagara Falls, Ontario, Canada, August 27–29, 2012. The conference attracted a good number of scientific papers that contributed to the state-of-the-art in the areas of mobile web information systems. All the papers invited for this special issue have undergone two rounds of rigorous review process. Based on the reviewers' feedback, six papers were selected for publication from 12 invited submissions.

The first two papers deal with the problem of context information mining and extraction. The paper by Wong et al. entitled "Online Role Mining for Context-Aware Mobile Service Recommendation" proposes several role mining algorithms, particularly an efficient and incremental online role mining algorithm, for automatically grouping mobile users into roles to achieve effective mobile service recommendation. In "Toward Location-Aware Web: Extraction Method, Applications and Evaluation", Hess et al. present a location extraction approach named SALT to equip websites with location tags. SALT is capable of extracting locations with a precision up to the street level. Three applications of SALT are discussed, and SALT is evaluated using both user study and field testing.

The next two papers focus on the issue of context information management. In "User-centric Social Context

Information Management: Ontology-based Approach and Platform", Kabir et al. presents a social context information management system which has the ability to acquire raw social data from multiple sources and to classify, infer, and store social context information using an ontology-based model. A policy model for managing access control is also discussed. In "Using a Cloud-Centric Middleware to Enable Mobile Hosting of Web Services: mHealth Use Case", Lomotey and Deters focus on the use of mobile devices as hosts of web services in an e-health domain. They propose an approach to mobile hosting of medical records using a cloud-centric middleware technique. A workflow authorization model is also discussed to ensure data privacy.

The paper by Paspallis and Papadopoulos entitled "A pluggable middleware architecture for developing context-aware, mobile applications" presents a component-based middleware architecture which facilitates the development and deployment of context-aware applications via reusable components. The proposed methodology and middleware architecture are evaluated both quantitatively and qualitatively. Finally, in "C3: An Energy-efficient Protocol for Coverage, Connectivity and Communication in WSNs", Akhlaq et al. propose an integrated and energy-efficient protocol for Coverage, Connectivity and Communication (C3) in WSNs. The proposed C3 protocol has the feature of near-optimal deployment, load balancing, and energy-efficient communication.

The papers included in this special issue cover several important topics and present some of the key directions in this vibrant and rapidly expanding area of research and development. We hope that the set of selected papers provides the community with a better understanding of the current directions and areas to focus in future and inspires your own work.

## References

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