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EDITORIAL

Advances in mobile web information systems

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Over the years, advances in mobile technologies are gradually bringing the full potential of desktop computers to potable mobile devices. As a matter of the fact that the number of mobile phone users is already much higher than desktop users, most Internet and Web based services such as search engine querying, news reading, multimedia downloading, instant messaging, online shopping, and also social networking will soon be accessed mainly through a large variety of mobile devices instead of desktop computers.

This theme issue looks at the new development in mobile Web information systems such as location-based applications, mobile payment systems, mobile context-aware applications, and mobile Web data search engines. It is based on the regular submissions and the extended best papers from the 9th International Conference on Mobile Web Information Systems (MobiWIS 2012), which was held at Niagara Falls, Ontario,

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Canada, August 27–29, 2012. The following papers were included in this special issue after several rounds of review by the guest editors and the invited reviewers.

The paper by Wang et al., "Energy Efficiency on Location Based Applications in Mobile Cloud Computing: A Survey", provides a comprehensive survey of recent work on low-power design of location-based applications. An overview of LBAs and different location sensing technologies used today are introduced and the methods for energy saving with existing locating technologies are investigated. Furthermore, techniques for reduction of location updating queries and simplification of trajectory data, which are cloud-based schemes, are also discussed. These techniques are important for developing new energy efficient locating approaches by leveraging the cloud capabilities of storage computation and sharing.

The paper by Isaac and Zeadeally, "Design, Implementation, and Performance Analysis of A Secure Payment Protocol in a Payment Gateway Centric Model", discusses the design and the implementation of an anonymous secure payment protocol based on the Payment Gateway Centric scenario for mobile environments where the client cannot communicate directly with the merchant to process the payment request. This novel payment protocol uses symmetric-key operations because of their low computational requirements. The performance evaluation of the proposed payment protocol in a real environment shows that it requires a small execution time for a payment transaction using a mobile phone and a restricted scenario which causes only a slight increase in the number of the steps necessary to complete a payment transaction as a result of the lack of direct communication between the client and the merchant.

The paper by Biswas and Vidyasankar, "Privacy Preserving and Transactional Advertising for Mobile Services", focuses on context-aware mobile adverting systems. They propose protocols that allow users to store their encrypted mobile sensor data on untrusted third party cloud servers. The advertisements, which are also stored on the server, are customized to potential users based on their sensor values and then are forwarded to the users. The concurrency control protocols performed by the cloud provider ensure that the advertisements are fresh and consistent, which is achieved by integrating transactional and cryptographic primitives.

Finally, the paper by Li and Liu, "XBridge-Mobile: Efficient XML Keyword Search on Mobile Web Data", focuses on the challenge of applying the traditional keyword search methods to mobile devices that have limited bandwidths, power and frequent disconnections. They propose a novel adaptive mobile-based XML keyword search approach called *XBridge-Mobile* that can derive the semantics of a keyword query and generate a set of effective structured patterns by analyzing the given keyword query and the schemas of XML data sources. This approach can reduce the communication cost between web server and mobile client as only the derived patterns and a few results need to be transferred. This approach can economically maintain the frequent structured pattern queries in the mobile device, which can further reduce the expense of downloading data.

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