# EDITORIAL PREFACE

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The buzzword of these days is the Big Data, which is defined as complex, unstructured or semi-structured data of which the size is huge. Big data has existed for a long time, but it did not catch great attention until recently because it did not prevail. However, owing to the high popularity of computers and great IT advancements, big data is everywhere nowadays. Tremendous amount of data is generated every day, everywhere, from fields such as businesses, research, and sciences. Likewise, the omnipresence of mobile devices has created a kind of big data, mobile big data. It is defined as big data transmitted between mobile devices and mobile devices/servers via a mobile service. Mobile big data is also prevailing based on the following observations:

- According to O'Grady (2012), 6 billion SMS (short message service) messages were sent every day (over 2.2 trillion a year) in the United States in 2012;
- 8.6 trillion ($10^{12}$) text messages were sent worldwide each year based on a report from Portio Research (Kelly, 2012);
- According to Wu (2011), 1.9 zettabytes ($10^{21}$ bytes) of information were sent through broadcast technology, such as televisions and GPS, and 65 exabytes ($10^{18}$ bytes) of information were through two-way communications technology, such as cell phones, in 2007.

Like big data, traditional methods such as files and relational databases are not able to handle mobile big data anymore because of its vast size and high complication. Innovative methods and technologies must be created to handle emerging mobile big data. Though this issue does not address mobile big data, it does want to show researchers a trendy research direction, mobile big data research. This issue consists of five articles covering the current topics of handheld computing including: (i) mobile Web 2.0, (ii) mobile Web, (iii) IPTV video services, (iv) mobile social communities, and (v) mobile government. Brief introductions of the five articles are given next:

**Article 1 - Mobile Web 2.0 integration:** Web 2.0 tools provide a wide variety of collaboration and communication tools some of which could be used for mobile learning. This paper investigates the impact of the introduction of Web 2.0 and mlearning to facilitate student eportfolios within the context of a first year Bachelor of Design and Visual Arts course in New Zealand (Unitec). Core Web 2.0 (social software) tools used in establishing students' Web 2.0 eportfolios included: Vox, Qik, Picasaweb, Prezi, Google Docs, and YouTube. The participating lecturers and the technology steward also used these Web 2.0 tools to collaborate on the design of the project. The

paper reflects upon the impact of the participants' previous Web 2.0 experience and the use of these tools to facilitate student-generated content and at the same time to act as catalysts for pedagogical change. The project is evaluated as an action research cycle within a framework of longitudinal action research investigating the impact of mobile Web 2.0 on higher education from 2006 to the present;

**Article 2 - Automatic usability evaluation of mobile Web pages with XML:** To increase the usability of mobile browsing, the Mobile Web Best Practices have been proposed to guide the development of mobile-friendly Web pages. In this paper, the mobileOK checker, a free service provided by W3C, is used to automatically inspect the conformance of 46 popular mobile Web sites to the Mobile Web Best Practices. The authors analyze the evaluation results and provide suggestions for improving the design of mobile Web sites. In mobile browsing, different mobile devices have different screen sizes, layout structures, and styles to represent Web contents. Furthermore, mobile devices are developing fast. The diversity and fast development of mobile devices cause the mobile design guidelines changing over time. However, the mobileOK checker is not flexible to include new guidelines or customize a best practice rule to fit a specific mobile browsing scenario. To solve this problem, this paper presents a generic approach to represent the mobile design guidelines through an XML schema. Using the XML schema provides the flexibly to support evolving guidelines in an open format. To evaluate their approach, a prototype, *WPChecker*, has been developed;

**Article 3 - Intelligent bandwidth allocation of IPTV streams with bitstream complexity measures:** IPTV video services are increasingly being considered for delivery to mobile devices over broadband wireless access networks. The IPTV streams or channels are multiplexed together for transport across an IP core network prior to distribution across the access network. According to the type of access network, prior bandwidth constraints exist that restrict the multiplex data-rate. This paper presents a bandwidth allocation scheme based on content complexity to equalize the overall video quality of the IPTV sub-streams, in effect a form of statistical multiplexing. Bandwidth adaptation is achieved through a bank of bit-rate transcoders. Complexity metrics serve to estimate the appropriate bandwidth share for each stream, prior to distribution over a wireless or ADSL access network. These metrics are derived after entropy decoding of the input compressed bit-streams, without the delay resulting from a full decode. Fuzzy-logic control serves to adjust the balance between spatial and temporal coding complexity. The paper examines constant and varying bandwidth scenarios. Experimental results show a significant overall gain in video quality in comparison to a fixed bandwidth allocation;

**Article 4 - Context-aware multimedia distribution to mobile social communities:** This paper introduces a next generation context-aware architecture for social networking multimedia distribution. It enhances the Multimedia Broadcast Multicast Service (MBMS) and the Evolved MBMS (E-MBMS) systems by adding users' situation knowledge on their assessments allowing Mobile Operators to offer personalized services delivered over optimized networks. Furthermore, it evolves IP Multimedia Subsystem (IMS) with specific functionalities to control the context information and to manage MBMS and E-MBMS bearers. The proposed framework was tested and the results are presented. A clever content sharing in mobile communities can be the basis of the famous killer application that Mobile Operators are still looking for;

**Article 5 - Mobile government in Jordan:** Is it a step in the right direction? Mobile government (M-government) is a new delivery

channel for governments to provide timely information and services ubiquitously to residents, businesses and other government departments through mobile devices. Developing countries have a higher mobile penetration rate than the fixed line internet rates which opens doors of opportunities for these countries to bridge the digital gab and gain a better reach through M-government. This paper measures the Jordanian citizens' awareness of launching a mobile government (M-government) portal in Jordan and investigates their attitude towards it. Furthermore, this study captured the government perspective in regards to launching the mobile government portal and citizens' awareness of that. The results showed that Jordanians have a positive attitude towards mobile government; additionally the results also identified the main barriers of using mobile internet and electronic government (E-government) services in Jordan and proposed a success factors model for mobile government in Jordan.

Handheld/mobile/smartphone/tablet research is getting very popular as handheld devices prevail. One of the leading research subjects is mobile big data. The IJHCR provides the up-to-date and critical information about handheld research and development. To make the IJHCR even better, you are welcome to contribute articles, especially the ones related to mobile big data, to this journal or join the editorial review board.

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*Wen-Chen Hu received a BE, an ME, an MS, and a PhD, all in Computer Science, from Tamkang University, Taiwan, the National Central University, Taiwan, the University of Iowa, Iowa City, and the University of Florida, Gainesville, in 1984, 1986, 1993, and 1998, respectively. He is currently an associate professor in the Department of Computer Science of the University of North Dakota, Grand Forks. He was an assistant professor in the Department of Computer Science and Software Engineering at the Auburn University, Alabama, for years. He is the Editor-in-Chief of the* International Journal of Handheld Computing Research *(IJHCR) and an associate editor of the* Journal of Information Technology Research *(JITR), and has acted as editors and editorial advisory/review board members for over 20 international journals/books and served more than 20 tracks/sessions and program committees for international conferences. He has also won a couple of awards of best papers, best reviewers, and community services. Dr. Hu has been teaching more than 10 years at the US universities and over 10 different computer/IT-related courses, and advising more than 50 graduate students. He has published over 100 articles in refereed journals, conference proceedings, books, and encyclopedias, edited five books and proceedings, and solely authored a book entitled* Internet-Enabled Handheld Devices, Computing, and Programming: Mobile Commerce and Personal Data Applications. *His current research interests include handheld/mobile/smartphone/tablet computing, location-based services, Web-enabled information system such as search engines and Web mining, electronic and mobile commerce systems, and Web technologies. He is a member of the IEEE Computer Society and ACM (Association for Computing Machinery).*