GUEST EDITORIAL PREFACE

Special Issue on Mobile HCI @ iHCI2014

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Welcome to the latest issue of the *International Journal of Mobile Human Computer Interaction* (IJMHCI). Back by popular demand following the success of our special issue showcasing the best of mobile HCI research as presented at the 2013 iHCI conference, I am delighted to be able to present this themed issue showcasing the best of mobile HCI research as presented at the 8th Annual Irish Human Computer Interaction (iHCI'2014) conference, Ireland's leading forum for work in all areas of Human Computer Interaction at which strong mobile HCI research is starting to emerge. The 2014 conference took place at Dublin City University on 1st and 2nd September. The annual iHCI conference has established itself as the premier venue for the Irish HCI community to meet and discuss their work "at home" and to create national awareness and visibility for a growing field of research in Irish academia and industry.

Considering as part of its remit a responsibility to bring greater awareness to interesting research being published in venues such as iHCI, the IJMHCI is delighted to introduce five varied and interesting articles in this issue. These articles were selected by the iHCI'14 conference programme chairs as the best of the peer-reviewed articles in the field of mobile HCI from the 2014 iHCI conference, and the authors were then invited to extend their papers for inclusion in this themed issue of the IJMHCI.

The first article – *"Using Mobile Touch Devices to Provide Flexible Classroom Assessment Techniques"* – is by Séamus C. McLoone, Rudi Villing, and Simon O'Keeffe. In this, the authors discuss the design of a student response system (SRS) delivered as an Android app to support classroom assessment techniques (CATs) across science, technology, engineering and mathematics (STEM) subjects in which *freeform* student input (as opposed to restrictive multiple choice or text-based responses) is often of value. CATs support formative, ungraded activities that illustrate students' learning and level of understanding of material so that a teacher can take corrective action to address learning deficiencies and enhance students' learning. By delivering their SRS as a freely downloadable app for students to run on touch-based tablets and smartphones which they commonly own, the authors' solution circumvents the logistical issues associated with portability and equipment ownership which often limit the practical use of SRSs. By tackling the complexities of sup-

porting freeform student responses (including equations and diagrams), the authors' solution addresses the input limitations of existing SRSs, returning a system of greater relevance to STEM subjects. This article discusses the design of the interaction for both student and teacher stakeholders, examines some of the issues surrounding freeform input across different mobile form factors, and summarizes the authors' ongoing evaluation of their SRS.

In *"AudioAuth: Exploring the Design and Usability of a Sound-Based Authentication System"*, Karim Said, Ravi Kuber, and Emma Murphy explore the potential for a novel alternative, based on the selection of a sequence of abstract sounds, to traditional PIN-based user authentication systems. The authors first explored users' capacity to discriminate between sounds, finding that manipulation of timbre, rhythm and spatial positioning benefitted users' ability to differentiate sounds. Armed with their findings from this study, the authors then examined the usability of AudioAuth, a proof-of-concept sound-based authentication interface, and explored its potential application in mobile contexts. On the basis of their findings, the authors propose guidance for the use of abstract sounds to support user authentication and reflect on methodological lessons learned via the conduct of their study, not least the value of qualitative study methods in "*determining the true nature of participants' experiences*". The authors identify some interesting future research stemming from their exploration of AudioAuth.

The third article, authored by Edel Jennings, Mark Roddy, Alexander J. Leckey and Guy Feigenblat, is entitled *"Use of Scripted Role-Play in Evaluation of Multiple-User Multiple-Service Mobile Social and Pervasive Systems"*. In this, the authors argue that mobile and social computing is becoming ever more deeply integrated within our physical world due to the spread of smart connected objects and that user (if not participatory) centred approaches to design of applications to function within that socio-technical ecology is critical. They stress that "*understanding users' expectations, experiences, and perceptions is particularly important in the case of context-aware pervasive computing, where context-of-use is directly meaningful for human system interactions*". They further argue that there is currently a paucity of reliable methods for evaluation of prototypes "*whose utility is often dependent on rich data sets and/or the presences of multiple users simultaneously engaging in multiple activities*". In an attempt to address this situation, they explored the evaluative use of participatory role-play for systems which have social, mobile and pervasive dimensions. The found this to encourage deeper user engagement with and exploration of, as well as discussion of, mobile social applications than would be afforded by traditional evaluation approaches (such as Think Aloud and Cognitive Walkthrough), especially when constrained by time and participant numbers.

"A Prototype Audio-Tactile Map System with an Advanced Auditory Display" by Liam O'Sullivan, Lorenzo Picinali, Andrea Gerino and Douglas Cawthorne turns our attention to the idea of an audio-tactile map for visually impaired users. The authors introduce the beneficial qualities of tactile surfaces (such as tactile paper) for blind and partially-sighted users, and argue for the addition of an interactive auditory display to such surfaces to enhance the interface by providing additional information. The authors have developed a prototype system – Audio-Tactile Map (ATM) – which tracks the actions of users' hands on a tactile surface and responds with sonic feedback in the form of both verbalized information and environmental sounds which are useful for navigation. The authors discuss two implementations of ATM – a desktop-based information point and a mobile version which comprises a tablet computer with tactile paper overlay – which were designed with involvement of a partially-sighted user. The article includes a discussion on a usability test of the designs in which partially-sighted users returned positive feedback. Aside from the tested application of ATM, the authors discuss its applicability to digital heritage and social inclusion for visually impaired users, as well

as its promise for the creation of more general multimodal interfaces for all.

Continuing the theme of technologies for users with special needs, the final paper – *"Exploring Boundaries to the Benefits of Lifelogging for Identity Maintenance for People with Dementia"* by Paulina Piasek, Kate Irving, and Alan F. Smeaton – introduces us to the idea of using lifelogging to support the wellbeing of people with dementia. The authors investigated the integration of lifelogging technology within a therapeutic approach to support people with dementia. Using the case study approach – an exploratory, descriptive approach – they investigated the concept of SenseCam therapy to stimulate the cognition of a person with dementia; their focus or primary goal was to support the maintenance of the personal identity of the person with dementia. Contributing to a research area in which there is currently a paucity of knowledge regarding the effect of lifelogging technology on people with dementia, the authors highlight a number of factors that need to be given careful consideration if developing such technologies for this user group and explore the boundaries of the use of lifelogging technology for this purpose. The authors warn that failure to observe the identified boundaries runs risks of undermining human rights and even the wellbeing of the very people the technology would be being developed to assist.

I trust that you will agree that this selection of articles is not only varied and interesting, but collectively the articles address many of the timely issues and challenges facing mobile HCI at this juncture. I shall now leave you to enjoy and be inspired!

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