

EDITORIAL PREFACE

Special Issue of Best Papers from Selected MobileHCI'2013 Workshops

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INTRODUCTION

Welcome to the latest issue of the *International Journal of Mobile Human Computer Interaction* (IJMHCI). This issue, following on from the repeated success of similarly themed issues over the past three years, showcases the best papers from a selection of the workshops run during the 15th International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI'2013) held in Munich, Germany. The organizers of each of the MobileHCI'2013 workshops were invited to nominate their best paper for inclusion in this themed issue. Five of the workshops did nominate a best paper and I am delighted to be able to present to you extended versions of these best papers. In addition, although unable to nominate a best paper, the organizers of a sixth workshop have contributed a position paper which introduces their workshop and associated insights. As is always the case with the MobileHCI workshops, the workshops covered an interesting spectrum, as is outlined below.

WORKSHOP ON PROTOTYPING TO SUPPORT THE INTERACTION DESIGNING IN MOBILE APPLICATION DEVELOPMENT (PID-MAD 2013)

- **Organisers:** Shah Rukh Humayoun (University of Kaiserslautern, Germany), Stefan Hess (Fraunhofer IESE, Germany), and Achim Ebert (University of Kaiserslautern, Germany);
- **Best Paper:** *Evolving Mobile Prototypes Towards The Best-suited Design and Interaction Schema Using The Genetic Algorithm* by Ragaad AlTarawneh (University of Kaiserslautern, Germany) and Shah Rukh Humayoun (University of Kaiserslautern, Germany).

“The workshop envisions that research must address the need for a change in existing prototyping techniques as well as focus on novel prototyping approaches and frameworks that

would support not only the interaction design process but the whole development process of mobile application development. Targeting this goal, the PID-MAD 2013 workshop (<http://hciv.de/pidmad13/>) provides a platform for interaction designers and other interested communities (e.g., requirement engineers, usability engineers, project managers, mobile app developers, etc.) for discussing issues that are relevant to mobile app prototyping. The workshop is therefore dedicated to observation, concepts, approaches, frameworks, and practices that would allow understanding, facilitating, and increasing the awareness of the role of prototyping during interaction designing phases, particularly, as well as in other phases of mobile application development.

Researchers and practitioners were invited to submit contributions including problem statements, technical solutions, experience reports, planned work and vision papers. Each submission was reviewed by at least three members of the Program Committee (PC), which lead to a total number of ten accepted papers. The presented work was reviewed based on workshop relevance, academic rigor, innovation, industrial applicability, and quality of writing. The workshop program consisted of three sessions for paper presentations and one interactive session for exploring and sharing ideas and experiences amongst the workshop participants about the solved and unsolved problems. We intend to publish the workshop discussion results as a report in the ACM SIGSOFT Software Engineering Notes.

In the selected best paper, AlTarawneh and Humayoun present an approach for evolving created mobile app prototypes towards the final prototype with the best-suited design and interaction schema. The authors use the Genetic Algorithm technique for searching the best solution (i.e., the prototype with the best suited design and interaction schema with regard to the current mobile environment) from the set of created prototypes during the design phase.” [Overview and Best Paper Introduction by Shah Rukh Humayoun, University of Kaiserslautern, Germany].

DESIGNING MOBILE AUGMENTED REALITY 2013

- **Organisers:** Jens Grubert (Graz University of Technology, Austria), Tobias Langlotz (Graz University of Technology, Austria), and Hartmut Seichter (Graz University of Technology, Austria);
- **Best Paper:** *Empirical Evaluation of Smartphone Augmented Reality Browsers in an Urban Tourism Destination Context* by Zornitza Yovcheva (Bournemouth University, UK), Dimitrios Buhalis (Bournemouth University, UK), Christos Gatzidis (Bournemouth University, UK), and Corné P.J.M. van Elzakker (University of Twente, The Netherlands).

“Development of mobile Augmented Reality (AR) solutions is quickly gaining traction over the last few years, sparked by an increased usage of mobile devices capable of supporting better and faster AR interfaces. One popular incarnation of these AR interfaces are AR browsers allowing users to experience dynamic information blended into their real environment. But many of these solutions are built around reuse and appropriation of available metaphors from conventional interaction paradigms, unfortunately not considering the manifold issues that raise from contextual factors appearing when augmenting the physical environment with digital information.

The workshop “Designing Mobile Augmented Reality” addresses challenges for the creation of AR interfaces given the fragile nature of mobile contexts. The focus of this workshop is on conceptual problems of mobile AR rather than on actual implementations. In the workshop we discussed theoretical design approaches, evaluation methods and development choices that are forming the design space for mobile AR interfaces. It became apparent that both conceptual issues, that are connected to the integration into the physical world, and limited technical implementations play major roles in designing mobile AR interfaces.

We chose our best paper according to the breadth in the methodology and the novelty in conceptual ideas. The best paper by Yovcheva *et al.* addresses all major design stages of a mobile AR system in a popular and relevant application context. Based on findings of several evaluations it proposes an extension to a mobile AR design framework. It presents various interdependencies between challenges in mobile AR such as spatial and visual registration and their impact on user perception. Based on an actual use case, an AR browser like application, the paper provides transferable knowledge that could yield solid stepping stones for more researchers to join the quest for better mobile AR interfaces. Further, the addressed design considerations show the subtle complexity AR requires in the conceptual connection of real and virtual and its technical implementation.” [Overview and Best Paper Introduction by Jens Grubert, Graz University of Technology, Austria].

INFORMING FUTURE DESIGN VIA LARGE-SCALE RESEARCH METHODS AND BIG DATA 2013

- **Organisers:** Mattias Rost (University of Glasgow, UK), Alistair Morrison (University of Glasgow, UK), Henriette Cramer (Yahoo! Research), and Frank Bentley (Yahoo! Research);
- **Best Paper:** *A Case Study of Research through the App Store: Leveraging the System UI as a Playing Field for Improving the Design of Smartphone Launchers* by Matthias Böhmer (DFKI GmbH, Saarbrücken, Germany) and Antonio Krüger (DFKI GmbH, Saarbrücken, Germany).

“With the launch of ‘app stores’ on several mobile platforms and the great uptake of smartphones among the general population, researchers have begun utilising these distribution channels to deploy research software to

large numbers of users. Previous Research In The Large workshops have sought to establish baseline practice in this area. We have seen the use of app stores as being successful as a methodology for gathering large amounts of data, leading to design implications, but we have yet to explore the full potential for this data’s use and interpretation. How is it possible to leverage the practices of large-scale research, beyond the current approaches, to more directly inform future designs? We propose that the time is right to re-energise discussions on large-scale research, looking further than the basic methodological issues and assessing the potential for informing the design of new mobile software.

This workshop discussed and developed ideas on how mass participation trials, large-scale usage data and service distribution can be leveraged and contribute to new ways of informing design. By bringing together people from a wide array of disciplines who have experience with studies of technology in everyday contexts, designing mobile systems and large-scale trials, we hope to move discussion of large-scale mobile HCI methodology beyond use simply as a tool to collect large amounts of data.

Smartphones generally allow users to place app icons freely on a launch screen. This allows for customising their phone, and to place often used apps in easily accessible locations, as well as to get familiar with the layout of launch screens to remember where particular icons are. But how quickly can users find a particular app icon on their phones? Our selected best paper attempts to answer this question, and by doing so inform the design of app launchers to minimise the time it takes for a user to launch an application.

The authors have created a game on top of Android where the user is asked to find a random app as quickly as possible. By measuring the time it takes to find different apps, they successfully manage to build a model to predict the time it will take to launch the next application.

In this way, the game does not take place in their app itself, but uses the phone itself and its icon configuration as the game court. This way they use a large-scale research method to not only answer questions related to the app they created, but about people and their phones.” [Overview and Best Paper Introduction by Mattias Rost, University of Glasgow, UK].

ENTERTAINMENT TECHNOLOGY IN TRANSPORTATION AGAINST FRUSTRATION, AGGRESSION AND IRRATIONALITY

- **Organisers:** David Wilfinger (University of Salzburg, Austria), Alexander Meschtscherjakov (University of Salzburg, Austria), Manfred Tscheligi (University of Salzburg, Austria), Petra Sundström (Mobile Life Centre, Sweden), Dalila Szostak (Intel Corporation, USA), and Roderick McCall (University of Luxembourg, Luxembourg);
- **Best Paper:** *Designing for Frustration and Disputes in the Family Car* by Chandrika Cycil (Brunel University, UK), Mark Perry (Brunel University, UK), and Eric Laurier (University of Edinburgh, UK).

“This workshop addresses two strong fields within the Mobile HCI community: mobile games & entertainment and transportation user interfaces. Using transportation technology (e.g., a car, plane, or traveling in public transportation) can be frustrating and cause negative experiences due to crowded streets, delays, and other travelers. This may lead to aggression towards other road members and passengers and lead to irrational behaviors. Games & entertainment technology offer potential to resolve these negative user experiences. This workshop brings together entertainment and transportation user interface experts, who

are willing to understand mobile entertainment technology as a potential solution to improve the experience of all travelers, drivers, and workers within the transportation field. Submissions for the workshop included research efforts towards multiplayer games for the car, the potentials of game design approaches for urban mobility, the reduction of stress on the rear seat and experiences in traffic congestions. In the workshop, participants presented their efforts and together developed concepts for future transportation entertainment system by creating sketches and mockups of system ideas.

The paper “*Designing for disputes and frustration in the Family Car*” by Chandrika Cycil, Mark Perry, and Eric Laurier is a highly valuable contribution to the field of mobile entertainment and transportation. The authors put their focus on aspects of travelling in the car, that have only partly been addressed by researchers, namely negative experiences of passengers and the effect that these can have on the other passengers and the drivers. While research especially in the automotive domain has mainly focused on drivers and their workload, the rich social interactions in the vehicle also have to be considered when designing mobile in-car technology. For that purpose, the authors describe their ethnographic work with four families to inform the design of entertainment systems in the vehicle. Their results describe sources of frustration, such as events that happened before even getting into the vehicle, and car related frustrations such as sound disturbances and difficulties when sharing devices. Finally they give design recommendations based on the results, stressing the importance to consider the time before a trip when dealing with negative experiences. Additionally, the authors propose that entertainment systems should be aware that they are used in the vehicle and adapt functionality, for example by supporting an exchange of the device between children. The presented work shows the high value of ethnographic studies in

the transportation domain and their relevance for designing interactive technology to reduce negative experiences while travelling and was chosen as best paper of this workshop.” [Overview and Best Paper Introduction by David Wilfinger, University of Salzburg, Austria].

SIMPE: 8TH WORKSHOP ON SPEECH AND SOUND IN MOBILE AND PERSASIVE ENVIRONMENTS

- **Organisers:** Amit A. Nanavati (IBM India Research Laboratory, India), Nitendra Rajput (IBM India Research Laboratory, India), Cumhur Erkut (University of Eastern Finland, Finland), Antti Jylhä (University of Helsinki, Finland), Alexander I. Rudnicky (Carnegie Mellon University, USA), Stefania Serafin (Aalborg University, Copenhagen, Denmark), and Markku Turunen (University of Tampere, Finland);
- **Best Paper:** *Belfast Soundwalks: Experiences in Sound and Place Through Locative Media* by Sarah Bass (Queen’s University Belfast, UK) and Pedro Rebelo (Queen’s University Belfast, UK).

“The SiMPE workshop series started in 2006 with the goal of enabling speech processing on mobile and embedded devices. The SiMPE 2012 workshop extended the notion of audio to non-speech sounds and thus the expansion became Speech and Sound. SiMPE 2010 and 2011 brought together researchers from the speech and the HCI communities. Speech User interaction in cars was a focus area in 2009. Multimodality got more attention in SiMPE 2008. In SiMPE 2007, the focus was on developing regions.

With SiMPE 2013, the 8th in the series, we continue to explore the area of speech along with sound. Akin to language processing and

text-to-speech synthesis in the voice-driven interaction loop, sensors can track continuous human activities such as singing, walking, or shaking the mobile phone, and non-speech audio can facilitate continuous interaction. The technologies underlying speech processing and sound processing are quite different and these communities have been working mostly independent of each other. And yet, for multimodal interactions on the mobile, it is perhaps natural to ask whether and how speech and sound can be mixed and used more effectively and naturally.

SiMPE 2013 has attracted high quality submission equally from the speech and non-speech sound communities, and each of them were reviewed by peer experts. Submissions and reviewers included, SiMPE 2013 has spanned 8 countries (Australia, Denmark, Finland, Germany, India, Italy, UK, and USA).

In our selected best paper, the authors Sarah Bass and Pedro Rebelo describe a suite of locative mobile applications based on soundwalks. The aim of this suite is to engage the public in sonic art through the creation of up to ten soundwalks within the city of Belfast. The development procedure is very interesting: prototypes by various individual artists were implemented via <http://appfurnace.com/>, and collected under an umbrella application. From the Mobile HCI point of view, the interaction paradigm is interesting and beyond the state-of-the-art: the user selects the soundwalk, then walks, and receives the sonic feedback, which in turn determines the path and future actions of the user. In this closed-loop of sonic interaction, the information amount is modulated by the proximity to target. Future work could include an experiential and analytical evaluation of the application suite, as well as its cognitive load. Augmented Reality Audio technology and interaction design can guide the future development.” [Overview and Best Paper Introduction by Cumhur Erkut, University of Eastern Finland, Finland].

SECOND WORKSHOP ON USABLE PRIVACY AND SECURITY FOR MOBILE DEVICES (U-PRISM 2)

- **Organisers:** Sonia Chiasson (Carleton University, Canada), Heather Crawford (Florida Institute of Technology, USA), Serge Egelman (UC Berkeley, USA) and Pourang Irani (University of Manitoba, Canada);
- **Position Paper:** *Reflections on U-PriSM2: The Second Workshop on Usable Privacy and Security for Mobile Devices* by Sonia Chiasson (Carleton University, Canada), Heather Crawford (Florida Institute of

Technology, USA), Serge Egelman (University of California Berkeley, USA) and Pourang Irani (University of Manitoba, Canada)

As always, the varied and interesting papers included in this themed issue of the IJMHCI collectively represent a wide cross section of the facets comprising the Mobile HCI discipline and I sincerely hope that you enjoy reading the broad spectrum of articles!

*Joanna Lumsden
Editor-in-Chief
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