Preface

Celebrating its third year in print in 2011, the *International Journal of Mobile Human Computer Interaction* (IJMHCI) continued to see the coming together of innovation, high quality research, and thought provoking and challenging articles to create exciting issues of the journal.

This Advances book is a compendium of articles from the third volume of the *International Journal of Mobile Human Computer Interaction* (IJMHCI). The mission of the IJMHCI is to provide an international forum for researchers, educators, and practitioners to advance knowledge and practice in all facets of design and evaluation of human interaction with mobile technologies; to encourage readers to think out of the box to ensure that novel, effective user interface design and evaluation strategies continue to emerge and, in turn, the true potential of mobile technology is realized whilst being sensitive to the societal impact such technologies may have. The IJMHCI brings together a comprehensive collection of research articles from international experts on the design, evaluation, and use of innovative handheld, mobile, and wearable technologies; it also considers issues associated with the social and/or organizational impacts of such technologies. Emerging theories, methods, and interaction designs are included and are complemented with case studies which demonstrate the practical application of these new ideas. The aim of the journal is to increase exposure to, and heighten awareness of, the complexity of current and future issues concerning mobile human-computer interaction. In its infant years, and over the life of the journal, articles have presented (and will undoubtedly and indeed hopefully continue to present) alternative points of view for some of the field’s hotly debated topics. Such variance is not only stimulating but also essential in terms of encouraging readers to think to the future and embrace the challenge of new paradigms both for interaction design and evaluation.

**HIGHLIGHTING DIVERSITY IN MOBILE HCI**

The third volume of the IJMHCI comprised 4 issues which, collectively, continue to highlight the diversity encompassed by the field of Mobile HCI. The first four articles included in this publication appeared in issue 3(1) of the IJMHCI. Spanning research on In-Vehicle Information Systems, discussion on mobile search, and studies to highlight how people actually use mobile phones as well as to investigate the comprehensibility of privacy policies on mobile devices, these comprehensive yet diverse articles exemplify the broad spectrum of research encompassed by the field of Mobile HCI and thereby captured within the journal.

The first article launched Volume 3 by showcasing another of the latest talents to join our field. A lot of PhD work is published in a somewhat disjointed fashion as a series of papers, each covering distinct...
sub-components of the bigger PhD research picture. The result is that the collective whole of a PhD is often un- or under-appreciated. The IJMHCI invites researchers who have recently graduated with a PhD in a mobile HCI-related topic to submit a comprehensive overview article of their PhD research. Such articles provide recent PhD graduates with a unique opportunity to showcase to a broad reader base, in a comprehensive and centralized fashion, the “big picture” of their research. In turn, it allows the mobile HCI research community to become aware of, to appreciate, and to take pride in the achievements of the newest members of our research family. This is certainly possible in terms of the first article of Volume 3 and, thereby, this compendium. In his article entitled “Evaluating the Visual Demand of In-Vehicle Information Systems: The Development of a New Method,” Ainojie Alexander Irune provides a comprehensive overview of his PhD research (supervised by Dr. Gary Burnett, Irune’s PhD was awarded at the University of Nottingham in December 2009). In this article, Irune notes the paradox between the variety of driver support and infotainment functions provided by in-vehicle information systems (IVIS) and the increasing concern about the distraction potential presented by such systems. He highlights the need to be able to assess and predict drivers’ visual attention to ensure the safe operation of IVIS. In response, Irune presents a novel method, focusing on glance duration, for predicting the visual demand imposed by an IVIS, and discusses the series of studies that led to its development.

As acknowledged before, the IJMHCI would not be possible without the invaluable input of its advisory board members. As the first in a series of invited articles designed to both recognize the contribution of the journal’s advisors and to intellectually challenge IJMHCI readers, I am honored to present an invited paper by Dr. Matt Jones, a member of the International Advisory Board of the IJMHCI. In “Classic and Alternative Mobile Search: A Review and Agenda,” Matt reflects on “research that provides insights into the impact of current interfaces and pointers to yet unmet needs” (this volume). Recognizing the role of classic text-dominated interfaces and interaction mechanisms, Matt suggests an alternative set of search features to meet the needs of future mobile search activities. Arguing for indirect, continuous, and multimodal approaches to mobile search, Matt highlights the challenges associated with work directed specifically at “developing” world contexts.

In the third article, entitled “How Do People Use Their Mobile Phones? A Field Study of Small Device Users,” Tianyi Chen, Simon Harper, and Yeliz Yesilada reflect on the challenges we face when designing usability evaluations for small devices. They note that contextual factors – including users’ physical activities – are often omitted from evaluation settings which, as a result, return results that lack meaning. Contributing to the ongoing debate about how best to approach the evaluation of mobile technologies, and providing empirical behavioral information which we can all draw on when designing such devices, Chen et al. discuss a field study which they conducted to investigate the behavior of users of small devices in naturalistic settings.

In the fourth article – “Evaluating the Readability of Privacy Policies in Mobile Environments” – Ravi Singh, Manasa Sumeeth, and James Miller discuss the issue of presentation of privacy policies on mobile devices to support maximum comprehension across average internet users. It is sensible to assume that the limited screen resources of most mobile technologies will lead to reduced comprehension when policies drafted for review on desktop-based systems are moved, without substantial adaptation, to a mobile environment. In their article, Singh et al. empirically illustrate the extent to which this assumption holds true and explore the question of whether privacy policies are useless in their current format on mobile devices.
CELEBRATING THE BEST

Issues 3(2) and 3(3) saw the launch of a new initiative for the IJMHCI. Collectively, these issues comprised a two part themed issue designed to showcase the best papers from each of the workshops run during the 12th International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI’2010) in Lisbon, Portugal. MobileHCI’2010 saw a record number of workshop proposals, from which seven full day and two half day workshops were selected. These workshops covered topics ranging from the use of audio and haptics for spatial information delivery through the social mobile web to playful experiences in Mobile HCI! Across the two parts of this themed issue, the IJMHCI highlighted the best papers from eight of the nine exciting and varied workshops.

- **Workshop on Tool-support for Mobile and Pervasive Application Development:**
  - **Organizers:** Ilhan Aslan (University of Salzburg, Austria), Paul Holleis (DOCOMO Communications Laboratories Europe, Germany), Karin Leichtenstern (Augsburg University, Germany), Christoph Stahl (Saarland University, Germany), Rainer Wasinger (University of Sydney, Australia).
  - **Best Paper:** Remote and Autonomous Studies of Mobile and Ubiquitous Applications in Real Contexts by Kasper Løvborg Jensen (Aalborg University, Denmark).

  Few of today’s available mobile and pervasive applications consider users’ preferences, situational context, and other devices in their environment. Developing such mobile applications requires a thorough understanding of the complex interplay of users, personal devices, and their environment. The workshop on Tool-Support for Mobile and Pervasive Application Development (TSMPAD) focuses on software tools which support the designer of a mobile or pervasive application in the development process – e.g., task and requirements analysis, conceptual design, prototyping, and evaluation. In order to effectively provide support for the development of a mobile or pervasive application it is important for a tool to: (i) provide representations and concepts to describe the users and their needs in mobile settings; (ii) realize the design as a mobile application; and (iii) aid the designer in evaluating the developed applications with target users. The overall goal of the workshop was to reflect the state of the art of available tools, discuss current and emerging issues (e.g., tool-support for cross-platform development) and identify future problems for researchers and designers of mobile and pervasive applications. [Overview by organizer Ilhan Aslan, University of Salzburg, Austria].

  In his paper, Jensen presents a conceptual framework for remote and autonomous studies in the field which he then applies via the delivery of two practical tools (RECON and GREATDANE) to facilitate such studies. Jensen’s approach addresses key issues such as cost, scalability, and obtrusiveness to the user experience associated with existing methods for studying applications in situ, and he reflects on his experience of using these methods and tools for the remote and autonomous study of two mobile and ubiquitous environments.

- **NIMD’10: First International Workshop on Nudge & Influence Through Mobile Devices:**
  - **Organizers:** Parisa Eslambolchilar (Swansea University, UK), Max L. Wilson, (Swansea University, UK), and Andreas Komninos (Glasgow Caledonian University, UK).
Best Paper: *Nudging the trolley in the supermarket: How to deliver the right information to shoppers* by Peter M. Todd (Indiana University, USA), Yvonne Rogers (The Open University, UK) and Stephen J. Payne (University of Bath, UK).

The aim of Nudge and Influence through Mobile Devices (NIMD) workshop was to provide a focal point for research and technology dedicated to persuasion and influence on mobile platforms. We were inspired to establish a scientific network and community dedicated to emerging technologies for persuasion using mobile devices. This workshop was an excellent opportunity for interaction designers and researchers in this area to share their latest research and technologies on ‘nudge’ methods with the Mobile HCI community. Patterns of consumption such as drinking and smoking are shaped by the taken-for-granted practices of everyday life. However, these practices are not fixed and are ‘immensely malleable’. Consequently, it is important to understand how the habits of everyday life change and evolve. Our decisions are inevitably influenced by how the choices are presented. Therefore, it is legitimate to deliberately ‘nudge’ people’s behavior in order to improve their lives. Mobile devices can play a significant role in shaping normal practices in three distinct ways: (1) they facilitate the capture of information at the right time and place; (2) they provide non-invasive and cost effective methods for communicating personalized data that compare individual performance with relevant social group performance; and (3) social network sites running on the device facilitate communication of personalized data that relate to the participant’s self-defined community. Among the issues addressed by the workshop were: What opportunities do mobile interventions provide?; Is persuasion ethical?; and How can we extend the scale of intervention in a society using mobile devices? [Overview by organizer Parisa Eslambolchilar, Swansea University, UK].

In response to the plethora of information now available that is intended to help consumers decide what food to buy and eat, Todd *et al.* explore the potential to nudge people’s food shopping behaviour during a visit to the supermarket such that they are better able to make informed purchasing decisions despite the time pressures inherent in visits to the supermarket. Exploring the potential for augmented reality to deliver ‘instant information’ that can assist consumers in making informed choices in situ, Todd *et al.* discuss some of the challenges involved in designing such information displays and indicate some possible ways to meet those challenges.

**SiMPE: 5th Workshop on Speech in Mobile and Pervasive Environments:**
- **Organizers:** Amit A. Nanavati (IBM India Research Laboratory, India), Nitendra Rajput (IBM India Research Laboratory, India), Alexander I. Rudnicky (Carnegie Mellon University, USA), Markku Turunen (University of Tampere, Finland), Andrew Kun (University of New Hampshire, USA), Tim Paek (Microsoft Research, USA), and Ivan Tashev (Microsoft Research, USA).
- **Best Paper #1:** *Speech for Content Creation* by Joseph Polifroni (Nokia Research Center, USA) Imre Kiss (Nokia Research Center, USA) and Stephanie Seneff (MIT CSAIL, USA).
- **Best Paper #2:** *3D Talking-Head Interface to Voice-Interactive Services on Mobile Phones* by Jiri Danihelka (Czech Technical University in Prague, Czech Republic), Roman Hak (Czech Technical University in Prague, Czech Republic), Lukas Kencel (Czech Technical University in Prague, Czech Republic), and Jiri Zara (Czech Technical University in Prague, Czech Republic).
With the proliferation of pervasive devices and the increase in their processing capabilities, client-side speech processing has been emerging as a viable alternative. The SiMPE workshop series ([http://research.ihost.com/SiMPE/](http://research.ihost.com/SiMPE/)) started in 2006 with the goal of enabling speech processing on mobile and embedded devices to meet the challenges of pervasive environments (such as noise) and leveraging the context they offer (such as location). SiMPE 2010, the 5th in the series, continues to explore issues, possibilities, and approaches for enabling speech processing as well as convenient and effective speech and multimodal user interfaces.

The workshop started with a keynote speech by Albrecht Schmidt on “Trends and Challenges in Mobile Interaction.” He opined that classical computing limitations (such as memory and processing) will not play a significant role (they haven’t in the past) and that speech can be used for implicit interactions. The rest of the workshop was divided into 4 sessions: position papers, early results, demos and full papers. The sessions were really interactive and the participants were enthusiastically engaged during the entire workshop. In the last hour, there was a round table discussion on modes and topics for collaboration. The workshop summary is available on the SiMPE wiki ([http://simpe.wikispaces.com/SiMPE+2010](http://simpe.wikispaces.com/SiMPE+2010)) [Overview by organizer Amit A Nanavati, IBM India Research Laboratory, India].

In the first of two best papers awarded by this workshop, Polifroni et al. propose the paradigm of speech for content creation. They argue that it is time to use mobile devices to create content on-the-fly and propose the use of speech to generate uniquely personalisable data in mobile contexts. In their paper, Polifroni et al. discuss a prototype system they have developed to enable the speech-based creation of restaurant review content.

In the second of the workshop’s best papers, Danihelka et al. present a novel framework – which supports multi-modal interaction using speech and 3D graphics – for easy creation of interactive, platform-independent voice-services incorporating an animated 3D talkinghead interface, for mobile phones. They suggest that their tools have the capacity to empower developers and researchers who wish to use mobile talkinghead applications for mobile entertainment, m-commerce, mobile healthcare delivery, and/or mobile education.

• **International Workshop on Mobile Social Signal Processing:**
  - **Organizers:** Alessandro Vinciarelli (University of Glasgow, UK/Idiap Research Institute, Switzerland), Rod Murray-Smith (University of Glasgow, UK), and Herve’ Bourlard (Idiap Research Institute, Switzerland/EPFL, France).
  - **Best Paper:** feelabuzz – Direct Tactile Communication with Mobile Phones by Christian Leichsenring (Bielefeld University, Germany), René Tünnermann (Bielefeld University, Germany) and Thomas Hermann (Bielefeld University, Germany).

Conversation is the primordial site of social interaction, and mobile phones, allowing one to talk with virtually anybody at virtually any moment, have, not surprisingly, pervaded our everyday life more quickly and deeply than any previous technology.

However, while becoming a preeminent form of social interaction, mobile phone conversations have been the subject of limited investigation from both a psychological and technological points of view.
The reason is not only that the diffusion of mobile phones is a relatively recent phenomenon, but also that phone conversations have traditionally been considered nothing more than particular cases of face-to-face conversations, characterized by speech being the only information at disposition, in contrast with actual face-to-face conversations where humans are known to exchange not only words, but also a wide spectrum of nonverbal behavioral cues accounting for social, affective, and relational phenomena.

This leaves open a major gap in the moment where two important phenomena take place in the scientific and technological landscape. The first is that nowadays, standard mobile phones contain a large number of sensors (e.g., GPS, accelerometers, magnetometers, capacitive touch, and, in the near future, pressure sensing). Also the increasing processing power and the potential to use server-side processing allows the use of algorithms previously considered only possible on powerful PCs, capturing, with unprecedented depth and precision, context and behavior of their users (e.g., position, movement, hand grip behavior, proximity to social network members, gait type, auditory context). This behavior can also potentially be compared with large numbers of other users, to categories the style of interaction. The second is that automatic analysis, synthesis, and understanding of verbal and nonverbal communication, typically captured with multiple sensors, is one of the hottest topics in the computing community. This applies in particular to Social Signal Processing (SSP), the new, emerging domain aimed at bringing social intelligence in machines.

The goal of the International Workshop on Mobile Social Signal Processing was to bridge the gap mentioned above by gathering, for the first time, researchers active in the communities that have dealt, so far separately, with the two phenomena described earlier. The participants included representatives from both industry (Nokia, Sony-Ericsson, and Google) and academia. Presentations and discussions focused on the potential that Social Signal Processing can have for the improvement of mobile phones, possibly leading to new applications, and on the value of cellular phones as a tool for studying and understanding social interactions. The outcomes of the workshop will be published in a volume of the Springer LNCS Series [Overview by organizer Alessandro Vinciarelli, University of Glasgow, UK].

Recognizing the potential for touch to elicit feelings of connectedness, Leichsenring et al. present feelabuzz, a system to transmit movements of one mobile phone to the vibration actuator of another one. Having used a direct, non-abstract approach (without the use of pattern recognition techniques) in order not to destroy the feeling at the receiving end, Leichsenring et al. explore the potential of their approach, present the mapping they used and discuss further possible development beyond the existing prototype to enable a large-scale user study.

• **Mobile HCI and Technical ICTD: A Methodological Perspective:**
  ◦ **Organizers:** Jörg Dörflinger (SAP Research, Germany), Tom Gross (Bauhaus-University Weimar, Germany), Gary Marsden (University of Cape Town, South Africa), Matt Jones (Swansea University, UK), and Mark Dunlop (University of Strathclyde, UK).
  ◦ **Best Paper:** *Human-Centered Design for Development* by Hendrik Knoche (EPFL IC LDM, Switzerland), PR Sheshagiri Rao (CK Trust, India) and Jeffrey Huang (EPFL IC LDM, Switzerland).
Mobile HCI has a great set of methods supporting effective research in all phases of mobile research. Methodologies for data collection, theory building, testing of hypothesis, and framework creation are represented with survey research, applied research, basic research, and normative writings. Methodologies are available for laboratory experiments supporting controlled experiments and theory testing in artificial environments. Generation, testing, and description of hypothesis and theory as well as studying of current practices and evaluation of new practices in natural settings are supported by methodologies like case studies, field studies, and action research. Due to the huge opportunities of mobile computing in developing countries Technical Information and Communication Technologies for Development (ICTD) could benefit from this complete set of Mobile HCI methodologies supporting all phases of a mobile research lifecycle.

Moreover, not only could technical ICTD benefit from Mobile HCI but so too could Mobile HCI benefit from technical ICTD. A review of Mobile HCI publications revealed that there is very little research done using field methods or studies (action research, case studies, field studies) in natural settings. Most Mobile HCI studies focused on the technical aspects of prototyping and performing evaluations, if at all, in laboratory settings only. This is where Mobile HCI could learn from technical ICTD because field studies in natural settings and real world evaluations using action research and participatory design form the foundation of good technical ICTD research. The utilization of the rarely used Mobile HCI research methods in technical ICTD could foster a valuable cross fertilization.

The goal of this workshop (http://www.uctictd2010.org/) was to elaborate on the application of Mobile HCI methods for technical ICTD. Researchers from the ICTD research field presented their work and experiences with Mobile HCI research methods. Presentations covered topics including: experiences and lessons learned in technical ICTD research; success stories and failures of technical ICTD research; utilization and combination of Mobile HCI research methods in technical ICTD research; and utilization of action research, user centered design and participatory design in technical ICTD research.

In discussions during the workshop it became clear that there is a benefit in using Mobile HCI research methods in ICTD research, specifically technical ICTD. As an initial workshop result, however, the participating researchers revealed some points of adaptation of Mobile HCI research methods necessary for their efficient utilization in the ICTD context – e.g., cultural adaptation, ethics, end user focus, trust building, end user incentive models, focus on real business case, user centered research approach, and capacity building, to name only a few. The workshop participants will continue the discussion and further refine the necessary adaptations of Mobile HCI research methods to support technical ICTD research [Overview by organizer Jörg Dörflinger, SAP Research, Germany].

In reviewing the lessons learned from a project geared at improving the livelihood of marginal farmers in India through wireless sensor networks, Knoche et al. highlight the challenges faced by ICTD. They argue that a lack of focus on users and principal attention to technology in the design process resulted in lack of interest and acceptance of their technology by their target population. Knoche et al. discuss and argue for the benefits to ICTD of embracing human-centred design principles.
The mobile space is evolving at an astonishing rate. At present there are close to 5 billion mobile subscribers worldwide and with continued advances in devices and services the mobile web looks set to inspire a new age of anytime, anywhere information access. The nature of the information being accessed is also shifting from traditional content towards social content. Online social networking sites such as Facebook, Twitter, and Foursquare continue to experience huge increases in usage, with more and more users seeking novel ways of interacting with their friends and family, e.g. sharing pictures, status updates, and providing recommendations.

The combination of the social and the mobile spaces are going to define the future of information consumption and communication. This edition of the Social Mobile Web workshop explored this novel and soon to be prevalent space. The contributions we received addressed different aspects of this challenging domain. For example, enabling novel social interactions via cell-phones, leveraging context-awareness in social settings beyond location, social-based recommendations while on the move and challenges in evaluating social mobile services in the wild [Overview by organizers Karen Church and Josep M. Pujol, Telefonica Research, Spain].

In their paper, Larsen and Stopczynski report on their experiences of applying unique 2D barcodes on wristbands and mobile phones to uniquely identify festival participants in order to develop an exploratory festival-wide social network prototype. They describe a set of social network applications and reflect on their experiences from initial use of these applications. They discuss how their novel approach enabled mass participation in the festival-wide social network due to the lack of any requirement for participants to have any special hardware or mobile client applications. On the basis that they found the 2D barcodes represented a feasible low-cost approach for unique participant identification and social network interaction, Larsen and Stopczynski reflect on the implications for the design of future systems of this nature.
Orientation and navigation are very important skills for getting along in daily life. The acquisition and use of these skills is based on the processing of visual, auditory and sensorimotor/kinesthetic information, denoting the relations between objects, places, and people. With the recent availability of global positioning method, of comprehensive GIS systems, of powerful mobile computers and of advanced interaction techniques, multisensory spatial information could now be presented in a personalized, context-aware and intuitive manner. However, it is still not completely clear how to design, and how and when to present multisensory (audio, visual, haptic) spatial information on mobile devices. This question was the main focus of the workshop we organized at MobileHCI 2010.

Fourteen papers and demonstrations were accepted and presented at the workshop. All of them were highly relevant to the workshop topics. The following questions were discussed:

The workshop was very successful. The participants had very different backgrounds (e.g., computer science, engineering, design, psychology, marketing). They were coming both from academia and industry. This diversity in our educational and institutional backgrounds resulted in very rich, interesting and active discussions and demonstrations.

The workshop was organized in the framework of the EU Haptimap project. We are grateful to the European Commission which co-funds it (FP7-ICT-224675) [Overview by organizer Margarita Anastassova, CEA, LIST, France].

Srikulwong and O’Neill report on their investigation of representation techniques for spatial and related information in the design of tactile displays for pedestrian navigation systems. Srikulwong and O’Neill compared – on the basis of distinguishability, learnability, memorability and user preferences – two tactile techniques for landmark representation using either one or two actuators. They suggest their results – which suggest that when landmark and directional information is presented simultaneously, their two actuator approach was better at enabling users to maintain levels of performance – may be able to help guide the design of presentation of key landmark information on wearable tactile displays.

- Please Enjoy!?! Workshop on Playful Experiences in Mobile HCI:
  - **Organizers:** Ylva Fernaeus (SICS, Sweden), Henriette Cramer (SICS, Sweden), Hannu Korhonen (Nokia Research, Finland) and Joseph ‘Jofish’ Kaye (Nokia Research, USA).
  - **Best Paper:** Good Times?! 3 Problems and Design Considerations for Playful HCI by Abdallah El Ali (University of Amsterdam, The Netherlands), Frank Nack (University of Amsterdam, The Netherlands) and Lynda Hardman (CWI, The Netherlands).

Designing for play and playful experiences has become a central theme in how people use and value interaction with mobile devices, and is also a focus in several research projects. This workshop aimed to gather experiences and explore different approaches and challenges to this particular sub-field of mobile HCI.

We believe that mobile devices are especially interesting to study in terms of playful experiences. First, mobile devices include a range of interesting sensors and media facilities (GPS, Sensors, Camera)
which potentially enable extended possibilities for playful interaction. The widespread use of mobile devices also means that they are used in many different contexts, including social settings where playful activities emerge easily. With respect to this, mobile devices are used as mediators in social interaction both remotely and locally. Moreover, people carry mobile devices with them, making for very personal, smooth, and habitual practices, integrating some play in daily routines, in transitional ‘non-places’, and while waiting. A simplistic example is how people no longer have to ‘stop’ what they are doing and go away to participate in, for example, an online social network; instead such activities may run in parallel and on top of other activities. These are all aspects that have been extensively studied and addressed in, for example, ubiquitous gaming.

Researchers, designers and developers with interest in this theme were welcomed to participate in a full day activity of presentations and discussions. Nine position papers were presented in the morning session and thereafter focus was on discussing examples of own experiences playfulness with mobile technology. An overarching theme was discussions around what kinds of experiences can be considered playful, especially as there are many uncertainties as to how playful experiences can be addressed in design as well as in research [Overview by organizer Ylva Fernaeus, SICS, Sweden].

In their paper, El Ali et al. analyze how “fun or playfulness” can be studied and designed for in mobile and ubiquitous environments. They discuss the notion of a ‘playful experience’ and highlight three problems that arise in realizing the scenario: the inference problem, the experience-capture maintenance problem, and the measurement problem. In response, they suggest that experiences can be approached as information-rich representations or as arising from human-system interaction, incentive mechanisms can be mediators of fun and engagement, and measuring experiences requires a balance in testing methodology choice.

RESEARCH IN THE LARGE

Directing our attention to the opportunities and associated challenges of utilizing mobile app stores and markets as research vehicles, issue 3(4) of the IJMHCI was a special issue on Research in the Large guest-edited by Henriette Cramer, Mattias Rost, and Frank Bentley. As the guest editors noted, although mobile app stores and markets provide researchers with a huge opportunity to gather research data from the public at large, evaluation and research methods need to be adapted to this new context. Given a lack of information about successful strategies and ways to overcome the methodological challenges inherent to large-scale deployment for research purposes, the guest editors organized a workshop dedicated to this topic, from which the special issue of the IJMHC arose. Interested readers should refer to IJMHC Vol 3., Issue 4 to read the guest editors’ preface which provides an overview of strategies and opportunities in ‘research in the large’, as well as providing an introduction to the challenges with associated research ethics and validity. In collating this special issue of the IJMHC, the guest editors hoped “that these articles will help to form a beginning of a community around large-scale deployments and that the lessons from these authors can be taken forward to help improve the quality of future work in this area” and that “as more research is completed in this domain, best practices and updated methods will emerge that can more reliably lead to valid and repeatable results.”
The articles included in this special issue ascribe to three main themes – distribution, data analysis, and validity – with some articles spanning the themes. In the first article, entitled “A Comparison of Distribution Channels for Large-Scale Deployments of iOS Applications,” Donald McMillan, Alistair Morrison, and Matthew Chalmers provide an analysis of two ways to distribute an iOS application: through the official Apple App Store or through third-party repositories. This analysis highlights decision criteria that research teams should analyze if deciding to deploy a new application for the iOS platform.

In an article entitled “WorldCupinion: Experiences with an Android App for Real-Time Opinion Sharing During Soccer World Cup Games,” Robert Schleicher, Alireza Sahami Shirazi, Michael Rohs, Sven Kratz, and Albrecht Schmidt present their experiences with releasing a research application on the Android Market. They highlight important issues that researchers must take into account when conducting research in the large, in addition to giving accounts to what they learned about their application, WorldCupinion.

This time focusing on data-analysis, Alistair Morrison and Matthew Chalmers describe (in “SGVis: Analysis of Data from Mass Participation Ubicomp Trials”) a tool to visualize real-time results from a large-scale deployment as well as a way to see patterns of use across individual users. This system shows great promise in identifying patterns and combining more qualitative methods with the quantitative data that is being collected.

The final two articles focus on validity of results. In “Experimenting through Mobile Apps and App Stores,” Paul Coulton and Will Bamford give accounts of a longitudinal study, including two apps with more than 1.5 million downloads, of how app stores behave with experiments. They show how the number of new downloads are affected by events like updates, changes in presentation, etc. In “My App is an Experiment: Experience from User Studies in Mobile App Stores,” Niels Henze, Martin Pielot, Benjamin Poppinga, Torben Schinke, and Susanne Boll discuss five large-scale deployments that they have been involved in and discuss practical details of what has and hasn’t worked in order to attract users and receive meaningful data when using an app as an experimental ‘apparatus’. They discuss differences in use observed in an ‘in the wild’ evaluation versus a more controlled field experiment as well as the ethics of conducting research with unknown participants.

CLOSING COMMENTS

By bringing together the articles from Volume 3 of the IJMHCI which deliver exciting research and innovation, practical guidance, and research challenges in the field of Mobile HCI, this compendium serves as an essential publication for researchers, educators, students, and practitioners alike.

Continuing into a third year of publication of the IJMHCI would not have been possible without the ongoing efforts of the journal’s amazing team of reviewers and associate editors. As the journal ages and becomes increasingly established as a key publication venue for research and innovation in the field of Mobile HCI, there has been an increasing growth in the stream of submissions, making the voluntary contribution of the IJMHCI’s team even more laudable. I would, therefore, like to take this opportunity to thank all the members of the team who make the IJMHCI such a great publication – the invaluable contribution of the journal’s advisory boards and board of reviewers and, of course, the essential contribution made by the authors of published articles and guest editors of special issues. These combined efforts have not only led to another year of an exciting and vibrant journal, but have culminated in this comprehensive publication.
All that remains now is for me to welcome you to this book which draws together all the research achievements and challenges presented in the third volume of the IJHMCI.

Joanna Lumsden
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ENDNOTES

1. One workshop – Ensembles of On-Body Devices organised by Daniel Ashbrook (Nokia Research, USA) and Kent Lyons (Intel Labs, USA) – did not nominate a best paper. Information on this workshop can be found at http://burx.com/ensembles/.