

Editorial

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Special Issue on Mobile and Wearable Interaction

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This special issue invited contributions in the broad and important field of mobile and wearable interaction. Mobile and wearable technologies are now universal. They enable ubiquitous communication, sensing, and interaction. The design of mobile and wearable technologies has a tremendous impact both on our everyday lives and on professional practice. Research in the field of mobile interaction investigates novel interaction techniques, multimodal feedback, the use of wearables in AR and VR, mobile activity tracking, mobile conversational user interfaces, mobile and wearable technologies in special fields like healthcare, and other related topics.

Core questions concern how the overall experience of the user emerges from acting in the real world and from simultaneously using digital information, or conversely, how mobile and wearable devices may shape that experience. A challenge is the need to mediate between events in the real world and events in the digital realm. The papers in this special issue take different approaches in establishing this experience: augmenting the auditory channel, delivering notifications in the peripheral field of view, making digital information available to experts in the field, and simulating safety-relevant real-world activity in virtual reality.

“EnvironZen” by Schrapel et al. describes the design and evaluation of interactive and immersive soundscapes in urban areas. The paper focuses in particular on the role of footstep detection and on synchronizing sound augmentations with footsteps in real time. The paper shows that augmented footstep sounds effectively support the connection between user action and audio augmentation. Footstep sound augmentations may serve as unobtrusive navigation cues and slightly time-shifted augmentations affect walking speed.

“Evaluation of Priority-Dependent Notifications for Smart Glasses based on Peripheral Visual Cues” by Faul-

haber et al. investigates the delivery of low-, medium-, and high-priority notifications in the peripheral field of view of smart glasses. The paper presents a study with 24 participants in a dual-task setting, with an n-back task as the primary task and the reaction to notifications as the secondary task. The results show that the design of the notifications in the peripheral field of view leads to substantial differences in reaction times, ratings of experienced levels of distraction, and perceived workload.

“Evaluation of Mixed Reality Support for Bridge Inspectors using BIM Data” by Riedlinger et al. presents a mobile mixed reality and virtual reality prototype that allows building inspectors to investigate the structural integrity of bridges. This task involves both physical and virtual elements. The authors propose a mixed analogue and digital workflow that supports bridge inspection in the field, using “building information modeling” data. The paper is a prime example of bringing computer-based information work into the field, and also highlights the challenges that are associated with this process.

In addition to the papers for the special topic we have included the article “Evaluating Virtual Reality Simulations for Construction Safety Training” by Jelonek et al. in this issue. In the article the authors explore how virtual reality simulations can be used in training to allow workers to experience dangerous situations without being exposed to real hazards.

Then there is an article on “Collaborative Speculations on Future Themes for Participatory Design in Germany” by Berger and many others. The article has been drafted by the a large group of the members of the special interest group on participation in the German Computer Society (GI), and discusses tensions relevant to the field of Participatory Design.

Finally, we again have a practitioner’s contribution in this issue: “Ethical, Legal & Participatory Concerns in the Development of Human-Robot Interaction – Lessons from eight research projects with social robots in real-world scenarios” by Carros et al. The article reflects on long-term observations from eight projects from Human-Robot Interaction, and tries to derive universal challenges in Human-Robot Interaction in three dimensions: participatory design, ethics for social robots and legal aspects.

We thank the many people who contributed to this special issue. First, we thank the authors for reporting

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their exciting research. We also thank the reviewers. All submissions underwent a double-blind peer review process. Each manuscript was reviewed by three independent expert reviewers. Finally, we would like to thank Editor-in-Chief Michael Koch and Journal Coordinator Ulrike Kitzing for their excellent support. We hope that this special issue and its articles will once again provide a highlight on current research in the HCI space, and wish you a pleasant read.

Bionotes

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