Univ. Prof. Dr. Alois FERSCH A

Institut für Pervasive Computing
Johannes Kepler Universität Linz
Altenberger Straße 69
A-4040 Linz

Dr. Albrecht Schmidt
Ludwig-Maximilians-Universität München

Interacting with Mobile and Pervasive Systems

Computing and communication devices are pervasively embedded into our everyday environments. Interaction in the context of the real world includes more and more interacting with complex mobile and embedded information systems. In many cases such interaction is multimodal and distributed between public and personal mobile devices. Advances in underlying network, processing, perception, and actuation technologies as well as new production techniques, such as 3D-printing, allow unprecedented options for creating novel user interfaces. However, as constraints that applied to the domain of mechanical and electrical user inter-faces are not given anymore, there is a great risk of creating user interfaces where the conceptual model is not understandable anymore. To make pervasive computing usable, establishing appropriate interaction paradigms and metaphors is the great challenge.

Context-Aware Interaction, Implicit Interaction and Tangible User Interfaces are novel approaches which take into account that the interaction with information happens in the real world and is conceptually embedded into foreground tasks carried out by the user. To explore opportunities and challenges several prototypical systems were designed, implemented, and evaluated. Using case studies the talk presents innovative mobile phone applications that make use of contextual information, novel interactive devices, and conventional objects and computers that are enriched by pervasive technologies. This will outline the interplay between pervasive technologies, mobile systems and user experience.

Concentrating on what information is created and what information is consumed by the user while performing a task in the real world is the basic idea of Embedded Interaction. The focus is not on a single technology or a specific device. The aim is to seek optimal support for a task considering all technologies available in a certain context. This requires an understanding of different parameters of novel input and output technologies. The talk concludes with an outlook on research challenges that arise from the concept of Embedded Interaction related to current developments in the field of pervasive computing.

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Information: **http://www.pervasive.jku.at**

Dr. Albrecht Schmidt is head of the Embedded Interaction research group in the computer science department at the University of Munich (Ludwig-Maximilians-Universität München), Germany. His general research interests are ubiquitous computing and context-awareness. In particularly he is interested in novel user interfaces and new interaction methods. Albrecht received a PhD in computer science from Lancaster University, UK, a MSc in Computer Science (Diplom) from University of Ulm, Germany, and a MSc in Computing from Manchester Metropolitan University, UK. From 1998 to 2001 he was working as a research assistant at TecO at the University of Karlsruhe.

Contact details and further information can be found at:
http://www.hcilab.org/albrecht/