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Handbook of Research on User Interface Design and Evaluation for Mobile Technology

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Foreword

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Section I: User Interface Design for Mobile Technologies

This section looks at many of the critical aspects concerned with effective design of mobile applications. The section begins with a series of chapters which discuss the adoption of ethnographic methods to inform the design of such technologies, including a selection of chapters which report on observed mobile device use and subsequent implications for design. This section covers issues such as how factors of user acceptance of mobile services can be used to guide the design of such technologies, as well as the impact of age and cognitive capacity on design. Chapters consider wearable technologies, the importance of contextual information in mobile application design, the design of in-car user interfaces, and issues surrounding the design and implementation of mobile learning applications. The section takes a look at adaptive and intelligent user interfaces for mobile computing, as well as tools for rapid prototyping, modeling, and simulation of mobile systems. The section concludes with a look to the future in terms of ecologies of interacting artifacts, reflecting an evolution from strictly mobile to more ubiquitous technologies.

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This section focuses on the innovative possibilities for interaction with mobile technologies. Starting with a potential classification scheme for mobile interaction techniques, this section looks at a number of novel interaction techniques such as text entry, speech-based input, and audio and haptic interaction for mobile devices. Chapters are included which introduce the concept of unobtrusive interaction and the use of EMG signals to achieve subtle interaction. This section concludes with a look at visual means of interaction, from camera-based input, through 3D visualisation and the presentation of large data sets using starfield displays, to projected displays for collaborative interaction.

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Section IV: Evaluation Techniques for Mobile Technologies

The rapid evolution of mobile technologies has posed a number of challenges in terms of effective evaluation strategies, which has opened this area up to interesting, ongoing debate - especially with regards the value of lab versus field evaluations. Starting with a theoretical look at the concepts and issues involved in evaluating mobile human-computer interaction, this section covers the spectrum of evaluation as it applies to mobile technologies. Chapters are included which look at adaptation of traditional methods to meet the needs of mobile evaluations, and chapters which outline means to systematically select, combine, and tailor methods to the specific needs of any given evaluation. The use of appropriated heuristic evaluation, wizard-of-oz studies, cognitive modeling as a testing tool, and Fitt's Law as a performance measure are all covered in this section. The use of multilayered evaluation approaches, the application of the Privacy Regulation Model as an evaluation tool, and a framework and model for identifying, organising, and classifying usability factors of mobile phones are also discussed. This section reflects the aforementioned debate regarding lab versus field evaluation of mobile technologies by including chapters representing both sides of the argument, including those which present innovative mechanisms and set-ups for use in each context.

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Section V: Case Studies

This final section includes a selection of detailed case studies. These illustrate many of the concepts discussed in previous sections and cover the design of mobile technology for a closed environment (in this case, a hospital), the design of a memory-aid, an application for reviewing meeting records, and a tool for mobile collaborative reading, as well as the evaluation of learner satisfaction in a multi-platform learning system.

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