Foreword

Instead of holding this book in your hands, wouldn’t you rather be hiking in the mountains—assuming that, while doing so, you could still be absorbing and applying the content of the book? This type of scenario has been brought within reach by recent progress in two areas: 1. mobile and wearable systems, which enable us to use computers in just about every imaginable setting; and 2. multimodal interaction, which (a) gives us alternative input and output methods, such as speech and haptic feedback, to replace the ones that are not feasible with small mobile systems and (b) allows us to choose the most suitable modalities for each setting that we find ourselves in.

Viewed in this way, the marriage between mobility and multimodality seems to have been made in heaven. But as with some real marriages, realizing the full promise of this one requires resolution of some conflicts that lie under the surface. Multimodality tends to demand more intensive and complex processing than small mobile devices can readily provide. And the users experience resource limitations of their own: in addition to having to deal with typically imperfect system processing, they have to figure out how to use the available modalities effectively in any given situation, while at the same time often interacting with their physical environment.

Realizing the full potential of mobile multimodality requires a simultaneous understanding of these and related issues on both the system and the human sides of the interaction. In the research literature available so far, we can find many research contributions, in different communities and publication venues, that address particular parts of this overall challenge. But making sense of them all is like assembling a puzzle whose small pieces are dispersed among the rooms of a house. Wouldn’t it be better to have a smaller number of larger puzzle pieces, all in the same place, that can help us to see the whole picture and understand the remaining gaps?

That’s where this book comes in. Most of the chapters describe ambitious approaches to significant portions of the overall challenge of mobile multimodality, in each case showing how a number of facets of the problem can be handled simultaneously; the last three chapters give the reader a chance to apply the more general concepts to specific problems of current interest. By studying and comparing these complementary perspectives on the field, just about any reader will achieve a more coherent and detailed mental model of this multifaceted topic than they had before, along with a keener awareness of what needs to be done next.

In sum, the traditional format of this book actually masks its true character as a significant part of today’s progress toward a world full of smoothly used mobile multimodal systems.

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Anthony Jameson is a Principal Researcher in the Intelligent User Interfaces Department at the German Research Center for Artificial Intelligence (DFKI) and Adjunct Professor for Human-Computer Interaction at the International University in Germany. He earned degrees at Harvard, the University of Hamburg, the University of Amsterdam, and Saarland University. He began conducting and publishing research at the interface between psychology and artificial intelligence as a student in the late 1970s. Among the topics relevant to the present volume on which he has published widely are user modeling and adaptation; intelligent mobile assistants; and the usability issues raised by the design of mobile and multimodal systems.