

Preface

Nowadays, we increasingly live in smart environments – computerized environments that can sense, track, and model their users and, as a result, provide them with personalized services. Computers have become small enough to be embedded in everyday objects, from shirt buttons to pencils; high-quality (and soon to be flexible) computer display devices can be embedded in objects of all sizes, from wristwatches to billboards; and wireless Internet communication is becoming more widely available every day. We are also transitioning from traditional linear media to highly targeted, interactive media. The convergence of these factors (miniaturization, display technology, wireless communication, and interactive media) will lead to environments where media and visual content will not only be accessible on desktop computers but at many different locations in a given environment. Such ubiquitous display environments will support a rich variety of interactive display devices in order to provide their users with relevant information in a seamless manner. This will enable people to interact with information artifacts, rather than with dedicated information-processing devices, in a more natural and casual fashion.

In this book, leading researchers in ubiquitous display environments envision a day when a wide variety of displays will seamlessly provide carefully targeted information to users. For example, as you enter a building, a display shows you a carefully selected list of events, in which you may be interested. When exiting the building, a display reminds you where you parked your car and recommends the best route home. This convergence of technologies poses exciting and fundamental research challenges. It will lead to innovative technologies for human education, cultural heritage appreciation, and scientific development.

This book is based on talks given at the German–Israeli Minerva School in autumn 2009 at the University of Haifa, Israel. It addresses the challenges of how to exploit these new technologies within the context of an educational and cultural experience. It discusses both the scientific and the technological aspects of these challenges. On the scientific side, it integrates Artificial Intelligence, User Modeling, Temporal and Spatial Reasoning, Intelligent User Interfaces, and User-Centric Design methodologies. On the technological side, it integrates mobile and wireless networking infrastructures, interfaces, group displays, and context-driven adaptive presentations.

The book covers a diverse set of topics, as the issue is multidisciplinary in nature – from multiagent systems and architectures to aesthetics, from reasoning about time and space and about visitors’ behavior to actual design, implementation, and evaluation of context-aware information delivery over large displays. While it was impossible to cover all aspects of ubiquitous display environments, we have tried to sample the state of the art in the field and we hope that it introduces some additional aspects.

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Tsvi Kuflik and Antonio Krüger
Haifa and Saarbrücken



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Krüger, A.; Kuflik, T. (Eds.)

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