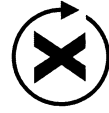


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Multimedia Applications

With 77 Figures



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Preface

Multimedia Applications and Systems are an increasingly common part of our everyday lives—emerging mobile terminals which can display pictures and video data, DVD players in the home, downloadable games, streaming in the Internet, radio stations on the World Wide Web—are just a few examples. These applications and systems are becoming an integral part of our heterogeneous computing and communication environment. Over the last decade, we have experienced an explosive growth of multimedia computing, communication, and applications (World Wide Web, conferencing, digital entertainment, etc.) which provide not just text and images but also video, audio, and other continuous media. In the future, all computers and networks will contain multimedia devices. They will also require appropriate processing and communication support to provide seamless and ubiquitous services for the relevant multimedia applications.

This book is one of three closely related volumes which aim to cover the whole area of multimedia technology and its applications: The first volume (*Ralf Steinmetz, Klara Nahrstedt, “Multimedia Fundamentals Volume 1: Media Coding and Content Processing”, Prentice-Hall, 2002*) deals mainly with the fundamentals of media per se, and covers media-specific considerations such as individual media characteristics, media processing, and optical storage, content analysis, and processing. It includes coding, compression, and a detailed discussion of optical storage. The second volume (*Ralf Steinmetz, Klara Nahrstedt, “Multimedia Systems”, Springer-Verlag, 2004*) focusses on issues intrinsic to systems: basic characteristics of multimedia operating systems, multimedia networking and communication, and multimedia middleware

systems. Taken together, our three books are intended to be the standard reference books on “multimedia fundamentals”.

Do the volumes published to date contain information which readers might need to make the most out of reading this book?

The present book can be read (and understood) without detailed knowledge of media coding and content processing. However, a basic grasp of the notion of compression would certainly be useful (but is not necessary). With respect to multimedia system issues, some knowledge about the concept of quality of service, as well as about basic system issues, would be extremely helpful. To some extent, such knowledge is required in order to understand many specific issues of multimedia applications, such as synchronization, group communications, databases, and programming.

In this book, we emphasize the field of multimedia applications, together with some services. Chapters 2 to 5 relate to more generic service issues: In Chapter 2 we present issues related to generic multimedia database management systems. Chapter 3 describes programming issues at different levels of abstraction. It also covers some object-based and object-oriented approaches, such as DSM-CC and DAVIC. Chapter 4 concentrates on security issues, with the focus on watermarking. Chapter 5 goes into some detail about documents and hypertext. Chapters 6 through 9 cover more dedicated, application-related issues. Chapter 6 outlines details of media design, while Chapter 7 deals with general user-interface topics. In Chapter 8, we present some issues relevant for multimedia learning, and Chapter 9 covers various possible applications and presents a detailed case study.

Overall, the book covers a wide scope, due to its intended purpose of serving as a reference. It evolved from the third edition of our book on multimedia technology, published in German in 2000 [Ste00]. (Figures from this book have been reused with the permission of Springer-Verlag). However, several sections of the English text depart from the corresponding material in the German edition. The present volume can be used by computer professionals who are interested in multimedia systems, or by instructors as a textbook for introductory multimedia courses in computer science and related disciplines.

To help instructors use this book, additional material is available on our Web site: <http://www.kom.tu-darmstadt.de/mm-book/>. Please enter `mm_book` and `mm_docs` for user name and password, respectively.

Many people have helped us to prepare this book: R. Ackermann, M. Bräuer, D. Dimitriu, J. Dittmann, A. El Saddik, M. Farber, S. Fischer, J. Geißler, N. Georganas, C. Griwodz, T. Hollmer, T. Kamps, T. Kunkelmann, A. Mauthe, A. Meissner, K. Reichenberger, J. Schmitt, K. Schork-Jakobi, C. Seeberg, A. Steinacker, N. Streitz, P. Tandler, H. Thimm, D. Tietze, M. Wessner, L. Wolf. Thank you!

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