Multimedia Signals and Systems

Srdjan Stanković

University of Montenegro, Faculty of Electrical Engineering

Irena Orović

University of Montenegro, Faculty of Electrical Engineering

Ervin Sejdić

University of Pittsburgh, Swanson School of Engineering, Department of Electrical and Computer Engineering

Content

Preface

The book is composed as a combination of two intertwined areas: Multimedia signal processing and Multimedia systems. Note that multimedia signal processing is presented in a larger extent than in the standard books on fundamentals of multimedia systems.

Besides commonly used signal processing techniques, here we also consider the tools convenient for certain advanced applications that might inspire a reader for further improvement of the existing multimedia algorithms.

The book is divided into nine chapters. We should emphasize that the chapters on Mathematical transforms (Chapter 1), on Compressive sensing (Chapter 6), on Digital watermarking (Chapter 7) and on Telemedicine (Chapter 8) contain a more extensive and detailed analysis than it is usual in the existing literature on Multimedia systems. We especially note the chapter on Compressive sensing and its application in Multimedia, which is a completely new area that provides a new insight into the existing applications.

Chapters on Digital audio (Chapter 2), on Digital data storage and compression (Chapter 3), on digital image (Chapter 4), on Digital video (Chapter 5) and on Multimedia Communications (Chapter 9), basically follow the classical pattern of the content in this type of literature. However, the authors have put a considerable effort to enrich this material with a lot of comprehensive information, in order to facilitate the understanding of the presented text. These chapters also contain some new and, in our opinion, interesting recently published results.

Each chapter ends with a section with worked out examples that may be useful for additional mastering and clarification of the presented material and for taking into account certain interesting applications. Beside basic examples, strictly associated with the presented theory, the book also contains some advanced applications that could be considered as a complement to the presented theory. A considerable number of Matlab codes is included in the examples, so that the reader can easily reconstruct most of the particular presented techniques.

Thus, the book basically contains a necessary material for understanding of the fundamentals of multimedia systems, and in that sense it may be used in the undergraduate courses. On the other hand, the parts related to the multimedia signal processing, together with the advanced techniques included in other chapters, may be used in the graduate courses as an appropriate literature related to the initial research.

Since this is the first edition, the authors are aware that, nevertheless all the efforts they have made to avoid the errors and ambiguities, they are practically unavoidable. Therefore, we will appreciate all the comments and suggestions to reduce these in the subsequent editions.

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