Preface

This book is a result of both my research in the field of joint source-channel coding and my teaching in the field of Communications Engineering over the last decade at the Universities of Kiel, Munich, Lund and Edinburgh.

Joint source-channel coding is a field of ongoing research, and it can be seen as a part of the more general area of "Cross-Layer Design". Thus, this book is actually a snapshot that, of course, also reflects my personal preferences.

The book contains some more specialised chapters, which deal with "near-optimum joint decoding" (Chapter 3) and with good encoder designs for a number of special but practically relevant cases (Chapters 4–7). To make the material more accessible, I added the introductory Chapter 2 that provides the basic theory and an overview of practical approaches. In Appendix A I have collected results for the theoretical performance limits of communication systems. Although these limits of Information Theory are not the main topic of this book, they are still important as they form the ultimate limits for any practical system, which may or may not use joint source-channel coding. This collection of theoretical limits can be a useful reference and, hence, may also be of value to those not directly interested in the main topic of this book.

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