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Edited by the Digital Signal Processing Committee, IEEE Acoustics, Speech, and Signal Processing Society
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Progress in the field of digital signal processing has been rapid, and the literature has increased apace with the expanding activity in research and applications. Because of the interdisciplinary interest in the subject, important papers appear in any of a number of journals and other publications. Making these key papers readily accessible is the purpose of this book (and of its 1972 companion volume, DIGITAL SIGNAL PROCESSING).

The papers reprinted in this volume were carefully selected from the large number of candidates. Those with the best combination of comprehensiveness, treatment, and length were chosen, with preference given to tutorial and review papers. No articles included in the 1972 companion volume were selected.

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The behavior of actual communications channels—both wire and radio—including the effect of such channels on information-bearing signals, is a subject of great interest and practical importance in communications. Yet most texts limit their treatment to specialized idealized channels, failing to take into account real-world channel conditions that may not be amenable to exact analytic representation.

This book was organized to fill a void by providing a comprehensive single source of tutorial and expository information on the behavioral characteristics of practical communications channels "across the spectrum." Covered are the time-variant transfer-function properties, analytic modeling, simulation, error-rate behavior, and actual system performance. An extensive bibliography is included for each subject category as listed in the contents below.

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One of the most promising developments in the communications field is the use of optical fibers for the transmission of signals. Because progress in optical fiber technology has been rapid, it is necessary to consult the recent journal literature to obtain a current picture of the state of the art. This can be a formidable assignment, since there are hundreds of scattered papers on the subject. This time-consuming task is dramatically simplified by this book, which contains papers carefully selected with the objective of providing a comprehensive survey of the latest concepts, advances, and trends.

The book begins with a comprehensive two-part tutorial-review paper that introduces the reader to the background and current state of optical fiber technology.

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