DESCRIPTION

A biomedical engineering perspective on the theory, methods, and applications of signal processing. This book provides a unique framework for understanding signal processing of biomedical signals and what it tells us about signal sources and their behavior in response to perturbation. Using a modeling-based approach, the author shows how to perform signal processing by developing and manipulating a model of the signal source, providing a logical, coherent basis for recognizing signal types and for tackling the special challenges posed by biomedical signals—such as the effects of noise on the signal, changes in basic properties, or the fact that these signals contain large stochastic components and may even be fractal or chaotic. Each chapter begins with a detailed biomedical example, illustrating the methods under discussion and highlighting the interconnection between the theoretical concepts and applications. The author has enlisted experts from numerous subspecialties in biomedical engineering to help develop these examples and has made most examples available as Matlab or Simulink files via anonymous ftp. Without the need for a background in electrical engineering, readers will become acquainted with proven techniques for analyzing biomedical signals and learn how to choose the appropriate method for a given application.

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