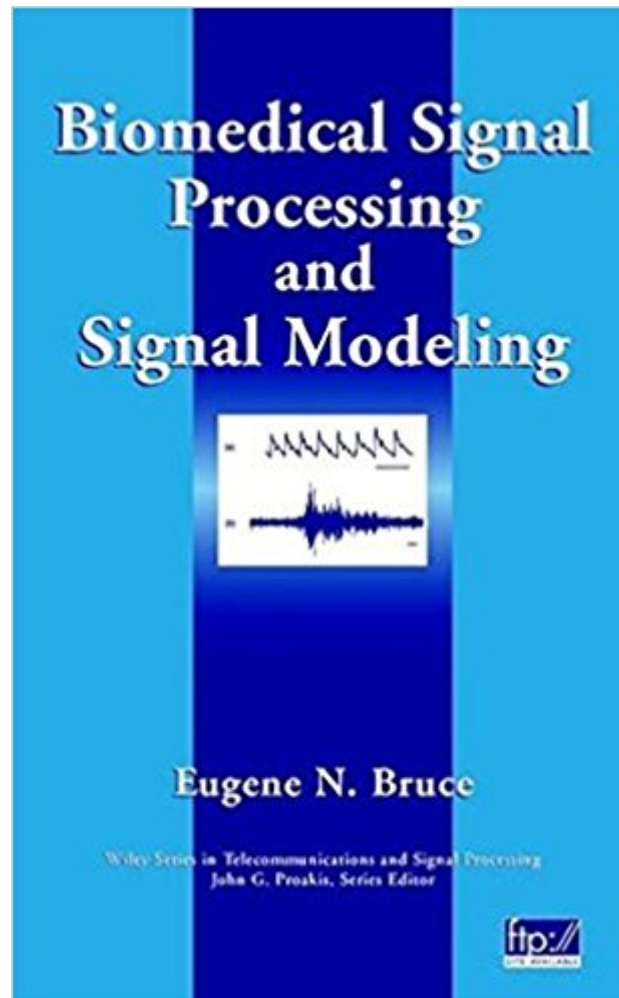




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Biomedical Signal Processing And Signal Modeling



Synopsis

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-including 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. An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the author.

Book Information

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Customer Reviews

"This book provides a framework for understanding signal processing of biomedical signals and

what it tells us about signal sources and their behavior in response to perturbation." (SciTech Book News Vol. 25, No. 2 June 2001)

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-including 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.

Firstly, I want to start off by saying that this book's title is completely misleading. Just because you add a small pastiche of how a signal processing technique is utilized in medicine at the beginning of each chapter doesn't make this "biomedical signal processing." All the chapters presented seem to be a horribly summarized knockoff of Oppenheim's "Signals and Systems", a book which is already rather difficult to navigate through. I honestly do not believe this book was written with the biomedical engineer in mind; it seems more geared towards electrical engineers who are concentrating in instrumentation, thus its practicality seems only fit for those who have proficiency in DSP. If this text was not trying so hard to be an Oppenheim knockoff, it would be bearable. The math-heavy explanations obscure the actual facts at hand, and deviates the reader from truly understanding how a technique is utilized. An introductory book on general DSP would be much more practical than this one for biomedical engineers who are trying to learn it without any electrical background.

Good book for looking at the mathematics behind biomedical signal processing. If you're going to use

Matlab in conjunction with your study of this book, I used "Biosignal and Biomedical Image Processing: Matlab-Based Applications," by John L. Semmlow.

Good book for reference on biomedical signal processing and more generally signal processing. Small and concise, excellent book for that purpose.

it was disappointing that this book on Fourier transforms was not loaded with sex, as asked if it had.. by the review.. I'm not kidding... But as a textbook it is just fine.. MatLab and signal processing what could be better.

This book provides tools of prime importance for engineers and researchers involved with biomedical engineering. One outstanding aspect of the book is the way the fundamentals of signal processing are presented. Special aspects such as chaotic behaviour of the signals are also presented.

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