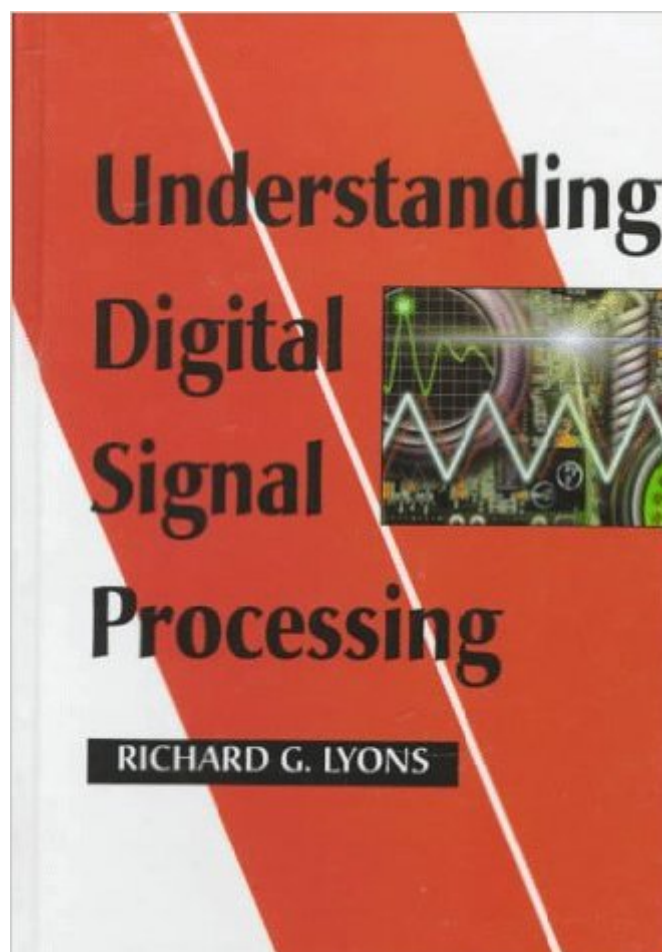# Understanding Digital Signal Processing

Synopsis

Understanding Digital Signal Processing presents both the theory and application of DSP in an approachable manner, using graphical examples and clear explanations. The book illustrates the techniques using practical examples and provides a comprehensive discussion of the important topics of periodic sampling and discrete Fourier transforms.

Book Information

Hardcover: 544 pages

Publisher: Pearson Education; 1st edition (November 6, 1996)

Language: English

ISBN-10: 0201634678

ISBN-13: 978-0201634679

Product Dimensions: 6.3 x 1.5 x 9.5 inches

Shipping Weight: 2 pounds

Average Customer Review: 4.9 out of 5 stars See all reviews (49 customer reviews)

Best Sellers Rank: #1,063,289 in Books (See Top 100 in Books)   #42 in Books > Computers & Technology > Hardware & DIY > Microprocessors & System Design > DSPs   #277 in Books > Textbooks > Engineering > Electrical & Electronic Engineering   #893 in Books > Engineering & Transportation > Engineering > Electrical & Electronics > Circuits

Customer Reviews

I just received this book in the mail yesterday and haven't been able to put it down! This is the first review I have ever written but I wanted to express my thanks to the author for this book while also letting others know what a great resource it is.This book is an excellent source for engineers seeking familiarity with DSP. I'm an Army officer trying to prepare for civilian employment in DSP design, and it has been over 4 years since I graduated with a degree in electrical engineering. Until opening this book I had no exposure to engineering since graduation, but I had no trouble understanding the material presented in this amazing book. Mr. Lyons says it all in the following quote from the preface:"It's one thing to write equations, but it's another matter altogether to explain what those equations really mean from a practical standpoint, and that's the goal of this book."This book is simply the best-written textbook I have ever encountered, in fact some fictional novels I have read are less engaging than this book! Mr. Lyons discusses very technical concepts clearly and fully, requiring only moderate effort on the part of the reader to fully grasp the material. He also includes occasional historical references or quotes that I found very entertaining, such as the origin

of the word 'analog' as it relates to digital systems.I took two basic courses in signal processing in college, basically manipulating formulas and drawing pictures with no real understanding of what was actually happening. In just two hours of studying Chapter 2, Periodic Sampling, I developed an intuitive understanding of sampling theory, lowpass and bandpass sampling.

I had taken a dsp subject during undergraduate course in engineering school. Our lecturer had recommended us a text by Oppenheim et al.- "Signals & Systems", and claimed that the book to be quite informative as introductory text. I don't question that book to be informative, but I doubt it to serve well as an introductory text. For most of us in the class, it definitely doesn't seem to fit as a beginner material, especially we didn't have previous background in signals & systems. If one thinks that, "mathematics" should not meant for understanding an explaination, then most probably he/she would feel difficult to read that book. Same thing go for most of the other signal processing books.I've passed the dsp exam by gobbling up all the mathematics, but without success in understanding the truths (reasons) behind. Since then, whenever I saw any 'unexplainable' maths to 'explain' a signal process, mostly I would just being frightened away, or even stopped from continue reading it. This certainly couldn't satisfy my desire towards learning new knowledge.Then, I decided to take a try on this book. Luckily I did. It is indeed the kind of stuff which should be taught in the first place, especially to students (or engineers) who want to learn dsp for the first time, without too much struggling.This book is understandable, readable, & easy to swallow. Richard Lyons tries avoiding mathematics whenever possible, however if the maths is unavoidable, he will explain it in plain english by giving a "numerical + graphical" example to better visualize it. For example, instead of telling convolution is $y(n)=h(k)*x(k)$, he would further depict the convolution, terms by terms, in the way of $y(n) = (1/3) . x(n-2) + (1/3) . x(n-1) + (1/3) .$

Multidimensional Digital Signal Processing (Prentice-Hall Signal Processing Series) Digital Signal Processing with Examples in MATLAB®, Second Edition (Electrical Engineering & Applied Signal Processing Series) Digital Signal Processing: with Selected Topics: Adaptive Systems, Time-Frequency Analysis, Sparse Signal Processing Bayesian Signal Processing: Classical, Modern and Particle Filtering Methods (Adaptive and Cognitive Dynamic Systems: Signal Processing, Learning, Communications and Control) Discrete-Time Signal Processing (3rd Edition) (Prentice-Hall Signal Processing Series) Signal Processing Algorithms in Fortran and C (Prentice-Hall Signal Processing Series) LabVIEW Digital Signal Processing: and Digital Communications Understanding Digital Signal Processing (3rd Edition) Understanding Digital Signal

Processing Understanding Digital Signal Processing (2nd Edition) Biosignal and Medical Image Processing (Signal Processing and Communications) Speech and Audio Signal Processing: Processing and Perception of Speech and Music Handbook of Neural Networks for Speech Processing (Artech House Signal Processing Library) Prentice hall literature (common core edition) (teachers edition grade 6) (Prentice Hall and Texas Instruments Digital Signal Processing Series) The Scientist & Engineer's Guide to Digital Signal Processing Schaums Outline of Digital Signal Processing, 2nd Edition (Schaum's Outlines) Think DSP: Digital Signal Processing in Python VLSI Digital Signal Processing Systems: Design and Implementation Digital Signal Processing and the Microcontroller Digital Signal Processing 4th Edition