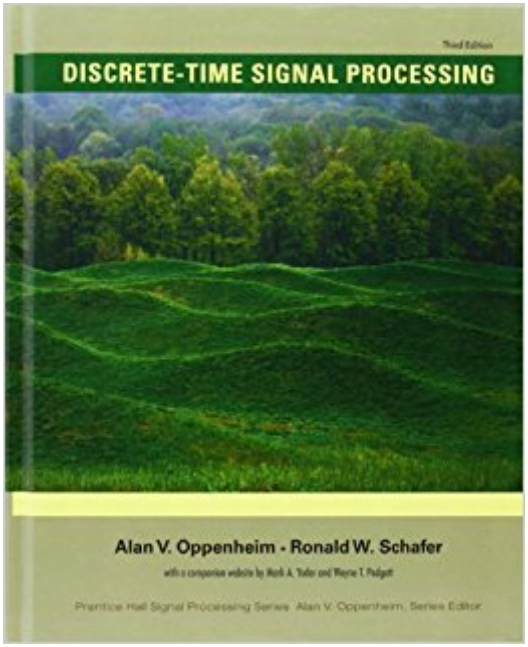
Discrete-Time Signal Processing (3rd Edition) (Prentice-Hall Signal Processing Series)



Synopsis

For senior/graduate-level courses in Discrete-Time Signal Processing. Discrete-Time Signal Processing, Third EditionÃ Â is the definitive, authoritative text on DSP Ã¢â ¬â œ ideal for those with introductory-level knowledge of signals and systems. Written by prominent DSP pioneers, it provides thorough treatment of the fundamental theorems and properties of discrete-time linear systems, filtering, sampling, and discrete-time Fourier Analysis. By focusing on the general and universal concepts in discrete-time signal processing, it remains vital and relevant to the new challenges arising in the field. Access to the password-protected companion Website and myeBook is included with each new copy of Discrete-Time Signal Processing, Third Edition .

Book Information

Series: Prentice-Hall Signal Processing Series

Hardcover: 1120 pages

Publisher: Pearson; 3 edition (August 28, 2009)

Language: English

ISBN-10: 0131988425

ISBN-13: 978-0131988422

Product Dimensions: 7.7 x 1.7 x 9.4 inches

Shipping Weight: 4.2 pounds (View shipping rates and policies)

Average Customer Review: 4.3 out of 5 stars 71 customer reviews

Best Sellers Rank: #45,304 in Books (See Top 100 in Books) #2 inÃ Â Books > Engineering & Transportation > Engineering > Telecommunications & Sensors > Microwaves #3 inÃ Â Books > Engineering & Transportation > Engineering > Telecommunications & Sensors > Signal Processing #23 inÃ Â Books > Science & Math > Mathematics > Pure Mathematics > Discrete Mathematics

Customer Reviews

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This is the outstanding 2nd edition of Oppenheim’s classic DSP book, which for over two decades was the only real choice for a textbook on the subject. That was too bad, since the first edition was probably the worst thing I have ever seen in print - terse, incomprehensible, and with only a few awful and poorly illustrated examples. When I decided to take a refresher course in DSP, I was horrified to see our class would be using the second edition of that horrendous text. What I found instead was a completely rehabilitated textbook! This is not a beginner’s DSP textbook by any

stretch of the imagination, but absolutely everything is explained and there are plenty of well worked out examples. The end-of-chapter problems are broken down into simple, intermediate, and advanced problems with quite a few mind-puzzlers in the advanced section. Plus, the answers to the first 20 problems in every chapter are in the back of the book.There is really nothing unique about the book's format. What does makes the book unique is the density and amount of material included. Just about every page is packed with well-explained important information. I highly recommend this book to anyone who has had a prior semester of an upper-level undergraduate class in Signals and Systems and wants to study DSP. An accompanying book that you might find helpful is "Understanding Digital Signal Processing" by Lyons. That book is good for getting an intuitive feel for DSP. Another book that will help you with some of the earlier concepts in this book (linear systems, DTFT, Z-transform, DFT, basic filter design) and some of the direct computations involved is "Schaum's Outline of Digital Signal Processing". does not show the table of contents, so I do that here:1. Introduction.2. Discrete-Time Signals and Systems.Introduction. Discrete-time Signals: Sequences. Discrete-time Systems. Linear Time-Invariant Systems. Properties of Linear Time-Invariant Systems. Linear Constant-Coefficient Difference Equations. Frequency-Domain Representation of Discrete-Time Signals and Systems. Representation of Sequence by Fourier Transforms. Symmetry Properties of the Fourier Transform. Fourier Transform Theorems. Discrete-Time Random Signals. Summary.3. The z-Transform.Introduction. The z-Transform. Properties of the Region of Convergence for the z-Transform. The Inverse z-Transform. z-Transform Properties. Summary.4. Sampling of Continuous-Time Signals.Introduction. Periodic Sampling. Frequency-Domain Representation of Sampling. Reconstruction of a Bandlimited Signal from its Samples. Discrete-Time Processing of Continuous-Time Signals. Continuous-Time Processing of Discrete-Time Signals. Changing the Sampling Rate Using Discrete-Time Processing. Practical Considerations. Oversampling and Noise Shaping. Summary.5. Transform Analysis of Linear Time-Invariant Systems.Introduction. The Frequency Response of LTI Systems. System Functions for Systems Characterized by Linearity. Frequency Response for Rational System Functions. Relationship Between Magnitude and Phase. All-Pass Systems. Minimum-Phase Systems. Linear Systems with Generalized Linear Phase. Summary.6. Structures for Discrete-Time Systems.Introduction. Block Diagram Representation of Linear Constant-Coefficient Difference Equations. Signal Flow Graph Representation of Linear Constant-Coefficient Difference Equations. Basic Structures for IIR Systems. Transposed Forms. Basic Network Structures for FIR Systems. Overview of Finite-Precision Numerical Effects. The Effects of Coefficient Quantization. Effects of Roundoff Noise in Digital Filters. Zero-Input Limit Cycles in Fixed-Point Realizations of IIR Digital

Filters. Summary.7. Filter Design Techniques.Introduction. Design of Discrete-Time IIR Filters from Continuous-Time Filters. Design of FIR Filters by Windowing. Examples of FIR Filter Design by the Kaiser Window Method. Optimum Approximations of FIR Filters. Examples of FIR Equiripple Approximation. Comments on IIR and FIR Digital Filters. Summary.8. The Discrete Fourier Transform.Introduction. Representation of Periodic Sequences: the Discrete Fourier Series. Summary of Properties of the DFS Representation of Periodic Sequences. The Fourier Transform of Periodic Signals. Sampling the Fourier Transform. Fourier Representation of Finite-Duration Sequences: The Discrete-Fourier Transform. Properties of the Discrete Fourier Transform. Summary of Properties of the Discrete Fourier Transform. Linear Convolution Using the Discrete Fourier Transform. The Discrete Cosine Transform (DCT). Summary.9. Computation of the Discrete Fourier Transform.Introduction. Efficient Computation of the Discrete Fourier Transform. The Goertzel Algorithm Decimation-in-Time FFT Algorithms. Decimation-in-Frequency FFT Algorithms. Practical Considerations Implementation of the DFT Using Convolution. Summary.10. Fourier Analysis of Signals Using the Discrete Fourier Transform.Introduction. Fourier Analysis of Signals Using the DFT. DFT Analysis of Sinusoidal Signals. The Time-Dependent Fourier Transform. Block Convolution Using the Time-Dependent Fourier Transform. Fourier Analysis of Nonstationary Signals. Fourier Analysis of Stationary Random Signals: the Periodogram. Spectrum Analysis of Random Signals Using Estimates of the Autocorrelation Sequence. Summary.11. Discrete Hilbert Transforms.Introduction. Real and Imaginary Part Sufficiency of the Fourier Transform for Causal Sequences. Sufficiency Theorems for Finite-Length Sequences. Relationships Between Magnitude and Phase. Hilbert Transform Relations for Complex Sequences. Summary.

I had to buy this article as mandatory textbook for a Digital Signal Processing graduate course. It is definitely a complete and deep treatment of digital signal processing. However, I found it a little bit difficult to read and this is why I used it mainly to try to understand those concepts that were not clear to me from the lectures/notes. So far, the book gave me all the answers I needed.

One of the best. I am not sure whether Mr. Benoit Boulet has written similar book. If he does, his book should be equally good but in a much lower price. I bought Mr. Benoit Boulet’s Signal and System that Mr. Alan V. Oppenheim also wrote and it is not only equally good but at much lower price.

Required textbook for a DSP class I took. This book is not for hobbyists. Make sure you have a solid

background in calculus. And make sure you have a great instructor too. If you are looking for something more easily digestible, then Lyons, "Understanding Digital Signal Processing", is a better choice.

Arrived quick. SUPERB condition. Couldn’t be happier. A+++++

i like itÃƒÂ Ã Â Ã Å’it is veryuseful andcheapestÃƒÂ Ã Â Ã Â•

Almost new with available access code!

Good book.

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