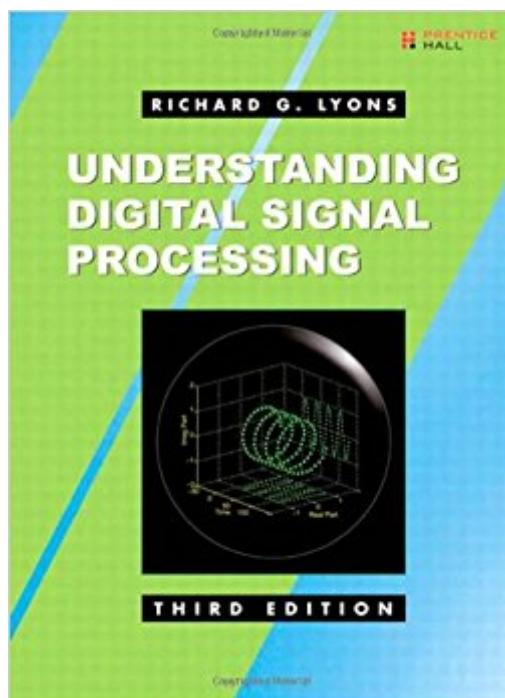The book was found

Understanding Digital Signal Processing (3rd Edition)

Synopsis

.comâ ™s Top-Selling DSP Book for Seven Straight Yearsâ ”Now Fully Updated!   Â Understanding Digital Signal Processing, Third Edition, is quite simply the best resource for engineers and other technical professionals who want to master and apply todayâ ™s latest DSP techniques. Richard G. Lyons has updated and expanded his best-selling second edition to reflect the newest technologies, building on the exceptionally readable coverage that made it the favorite of DSP professionals worldwide. He has also added hands-on problems to every chapter, giving students even more of the practical experience they need to succeed. Â Comprehensive in scope and clear in approach, this book achieves the perfect balance between theory and practice, keeps math at a tolerable level, and makes DSP exceptionally accessible to beginners without ever oversimplifying it. Readers can thoroughly grasp the basics and quickly move on to more sophisticated techniques. Â This edition adds extensive new coverage of FIR and IIR filter analysis techniques, digital differentiators, integrators, and matched filters. Lyons has significantly updated and expanded his discussions of multirate processing techniques, which are crucial to modern wireless and satellite communications. He also presents nearly twice as many DSP Tricks as in the second editionâ ”including techniques even seasoned DSP professionals may have overlooked. Â Coverage includes New homework problems that deepen your understanding and help you apply what youâ ™ve learned Practical, day-to-day DSP implementations and problem-solving throughout Useful new guidance on generalized digital networks, including discrete differentiators, integrators, and matched filters Clear descriptions of statistical measures of signals, variance reduction by averaging, and real-world signal-to-noise ratio (SNR) computation A significantly expanded chapter on sample rate conversion (multirate systems) and associated filtering techniques New guidance on implementing fast convolution, IIR filter scaling, and more Enhanced coverage of analyzing digital filter behavior and performance for diverse communications and biomedical applications Discrete sequences/systems, periodic sampling, DFT, FFT, finite/infinite impulse response filters, quadrature (I/Q) processing, discrete Hilbert transforms, binary number formats, and much more

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Customer Reviews

Richard G. Lyons is a consulting Systems Engineer and lecturer with Besser Associates in Mountain View, California. He is author of the book "Understanding Digital Signal Processing", editor and contributor to the book "Streamlining Digital Signal Processing", and has authored numerous articles on DSP. Lyons has taught DSP at the University of California Santa Cruz Extension and recently received the IEEE Signal Processing Society's 2012 Educator of the Year award.

If you are planning to get into DSP from a practical point of view, then there are only two books to get - and this is one of them. DSP is a complex subject, and if you are not in an educational environment where you have easy access to teachers who can advise you, then you could easily be turned off by diving into a book such as Schafer and Oppenheim's recognized text book on the subject. I am a retired ex-academic with an interest in signal processing, and decided to get back into the field, which had developed considerably since I was involved in basic continuous signal processing, which than revolved around Fourier analysis and integrals. I researched the market thoroughly and ended up purchasing Steven Smith's excellent book "The Scientist and Engineer's Guide to Digital Signal Processing", which gives a conceptual view of DSP without getting too involved in the mathematics of the subject. Having worked through this book and established a solid basis of what DSP is all about, I decided that I needed a little more mathematical support to the concepts, and settled on the current book. What a good choice. These two books are a perfect complement to each other, and the writing style of the authors is very similar. Anybody getting into DSP is strongly advised to purchase them both. But back to the current book - this book focuses on the reader and makes you feel that you are interacting with a teacher rather than puzzling over equations. It leads you gently through the concepts, but doesn't bypass thorough considerations of the development, for instance, of the Fast Fourier Transform, which can be quite intimidating. This is

a chapter that you can scan through without disrupting the rest of the material. The book includes many exercises and - best of all - Rick Lyons has a DSP blog of tips and tricks where you can get invaluable information and interact directly with him. All in all, by purchasing this book you not only get a source-book of the practical application of DSP, but a wealth of support, and I have no hesitation in awarding it a 5-star rating.

I am a sophomore undergrad EE student and I prefer to read the material then go to lectures. Unfortunately, the books for my courses do not explain things very clearly intentionally to make the reader "think" so it can be very frustrating when trying to solve a problem. This book brings thing down from the almighty prestigious mystical rigorous pedestal and is like having grandpa explain things. It is an excellent reference and many times I ended up saying "that's it...? That is all I had to do?" after reading a few pages.The down side is that there are no selected answers in the back of the book, the solution manual is locked down, and even Chegg does not have guided answers. So if you want to reach yourself DSP, you will probably need a more traditional textbook with a solution manual (usually an older edition).

There's a quote by Einstein that I really like: "Everybody is a genius. But if you judge a fish by its ability to swim, it will live its whole life believing that it is stupid." How does that quote apply to this book? Because we are all perfectly capable of learning digital signal processing. But no other book comes close to explaining the subject of DSP better than this one. If you prefer Dragnet's style of getting "just the facts, ma'am", then other books might be better for you. But I truly *understand* digital signal processing techniques such as the DFT, FFT, digital filters, decimation, all thanks to the author of this book investing time and love (yes, I said love) in carefully explaining and illustrating this difficult and sometimes unintuitive subject.The organization of this book is also astounding. First, in the preface, Mr. Lyons shows a nice block diagram of the main techniques of DSP, and how they relate to one another. Then, the book begins with a deep introduction of analog and discrete signals, and basic manipulations of discrete signals, and periodic sampling. And this is the best part: In chapter 3 the book covers the DFT, and then the FFT in chapter 4, whereas other authors make you wait until much later in the book to cover those important subjects. Then you reach digital filters in chapter 5, again, with a natural explanation, using the metaphor of cars on a bridge. (If you're a software engineer like me, you understand the power of metaphors as a learning and teaching tool.) So he gets to the heart of DSP in the right order, and in a logical and natural way.This should be the book used by all instructors who want their students to truly understand

digital signal processing.

This book is exactly what I was looking for: a practical book for engineers on digital communications.You can tell the author has years of hands on professional experience.I skipped the first chapters on basic DSP theory, but skimmed enough of it to see that it's well presented.I highly recommend the last chapter: "Digital Signal Processing Tricks".Thank a bunch , Mr. Lyons! :)

India edition at about 1/3 cost. It's a text book - works great - you'll spend most of your time trying to understand the concepts and the thinner pages are the least of your worries. I do like Lyons presentation and I have (or I am) marking the book up heavily and this is a keeper reference manual.

I have just begun reading this book for self study aided by my engineering company. The book states that the solution manual is available to teachers (with proper credentials) by the editor which as far as I can tell is pearson and not prentice hall. Unfortunately, the people at pearson are not communicating with my "instructors" in regards to obtaining solution manual. This drawback, ie not being able to verify that problems are being done correctly limits the usefulness of this text and subsequently I have to reluctantly give this book only 2 stars for a rating.

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