A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Music

By Ken Steiglitz

A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Music By Ken Steiglitz

This text is directed at the market of DSP users brought about by the development of powerful and inexpensive software tools to analyze signals. These tools allow sophisticated manipulation of signals but do not provide an understanding of the theory or the foundation for the techniques. This work develops an approach to the development of the mathematics of DSP and uses examples from areas of the spectrum familiar to beginners, together with questions and suggested experiments

A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Music

By Ken Steiglitz

A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Music By Ken Steiglitz

This text is directed at the market of DSP users brought about by the development of powerful and inexpensive software tools to analyze signals. These tools allow sophisticated manipulation of signals but do not provide an understanding of the theory or the foundation for the techniques. This work develops an approach to the development of the mathematics of DSP and uses examples from areas of the spectrum familiar to beginners, together with questions and suggested experiments

A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Music By Ken Steiglitz Bibliography

- Sales Rank: #990020 in Books
- Brand: Brand: Prentice Hall
- Published on: 1996-01-15
- Original language: English
- Number of items: 1
- Dimensions: 9.20" h x .70" w x 7.40" l, 1.20 pounds
- Binding: Paperback
- 300 pages

↓ **Download** A Digital Signal Processing Primer: With Applicati ...pdf

🗈 **Read Online** A Digital Signal Processing Primer: With Applica ...pdf

Editorial Review

From the Inside Flap
Using computer technology to store, change, and manufacture sounds and pictures -- digital signal processing -- is one of the most significant achievements of the late twentieth century. This book is an informal, and I hope friendly, introduction to the field, emphasizing digital audio and applications to computer music. It will tell you how DSP works, how to use it, and what the intuition is behind its basic ideas. By keeping the mathematics simple and selecting topics carefully, I hope to reach a broad audience, including:

beginning students of signal processing in engineering and computer science courses; composers of computer music and others who work with digital sound; World Wide Web and internet practitioners, who will be needing DSP more and more for multimedia applications; general readers with a background in science who want an introduction to the key ideas of modern digital signal processing. We'll start with sine waves. They are found everywhere in our world and for a good reason: they arise in the very simplest vibrating physical systems. We'll see, in Chapter 1, that a sine wave can be viewed as a phasor, a point moving in a circle. This representation is used throughout the book, and makes it much easier to understand the frequency response of digital filters, aliasing, and other important frequency-domain concepts. In the second chapter we'll see how sine waves also arise very naturally in more complicated systems -- vibrating strings and organ pipes, for example -- governed by the fundamental wave equation. This leads to the cornerstone of signal processing: the idea that all signals can be expressed as sums of sine waves. From there we take up sampling and the simplest digital filters, then continue to Fourier series, the FFT algorithm, practical spectrum measurement, the z-transform, and the basics of the most useful digital filter design algorithms. The final chapter is a tour of some important applications, including the CD player, FM synthesis, and the phase vocoder. At several points I return to ideas to develop them more fully. For example, the important problem of aliasing is treated first in Chapter 3, then in greater depth in Chapter 11. Similarly, digital filtering is reexamined several times with increasing sophistication. This is why you should read this book from the beginning to the end. Not all books are meant to be read that way, but this one definitely is. Some comments about mechanics: All references to figures and equations refer to the current chapter unless stated otherwise. Absolutely fundamental results are enclosed in boxes. Each chapter ends with a Notes section, which includes historical comments and references to more advanced books and papers, and a set of problems. Read the problems over, even if you don't work them the first time around. They aren't drill exercises, but instead mention generalizations, improvements, and wrinkles you will encounter in practice or in more advanced work. A few problems suggest computer experiments. If you have access to a practical signal-processing laboratory, use it. Hearing is believing. Many people helped me with this book. First I thank my wife Sandy, who supports me in all that I do, and who helped me immeasurably by just being. For his generous help, both tangible and intangible, I am indebted to Paul Lansky, professor of music and composer at Princeton. The course on computer music that we teach together was the original stimulus for this book. I am indebted to many others in many ways. Perry Cook, Julius Smith, Tim Snyder, and Richard Squier read drafts with critical acumen, and their comments significantly improved the result. And I also thank, for assistance of various flavors, Steve Beck, Jack Gelfand, Jim Kaiser, Brian Kernighan, Jim McClellan, Gakushi Nakamura, Matt Norcross, Chris Pirazzi, John Puterbaugh, Jim Roberts, and Dan Wallach. Ken Steiglitz Princeton, N.J.

From the Back Cover

This new book by Ken Steigliz offers an informal and easy-to-understand introduction to digital signal processing, emphasizing digital audio and applications to computer music. A DSP Primer covers important topics such as phasors and tuning forks; the wave equation; sampling and quantizing; feedforward and feedback filters; comb and string filters; periodic sounds; transform methods; and filter design. Steiglitz uses an intuitive and qualitative approach to develop the mathematics critical to understanding DSP.

A DSP Primer is written for a broad audience including:

- Students of DSP in Engineering and Computer Science courses.
- Composers of computer music and those who work with digital sound.
- WWW and Internet developers who work with multimedia.
- General readers interested in science that want an introduction to DSP.

Features:

- Offers a simple and uncluttered step-by-step approach to DSP for first-time users, especially beginners in computer music.
- Designed to provide a working knowledge and understanding of frequency domain methods, including FFT and digital filtering.
- Contains thought-provoking questions and suggested experiments that help the reader to understand and apply DSP theory and techniques.

About the Author

Ken Steiglitz is a Professor in the Computer Science Department at Princeton University where he is also Associate Chair. He received his M.E.E. and Eng.Sc.D. degrees from New York University. His current research interests inlude parallel computer architectures, economic simulations, and tools for computer music.

Users Review

From reader reviews:

Gregory Goolsby:

Do you have favorite book? In case you have, what is your favorite's book? Publication is very important thing for us to be aware of everything in the world. Each publication has different aim or goal; it means that book has different type. Some people truly feel enjoy to spend their time to read a book. These are reading whatever they acquire because their hobby is actually reading a book. Think about the person who don't like reading a book? Sometime, man feel need book if they found difficult problem or perhaps exercise. Well, probably you will require this A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Music.

Nettie Powers:

Do you one of people who can't read pleasurable if the sentence chained in the straightway, hold on guys this

aren't like that. This A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Music book is readable by you who hate those straight word style. You will find the data here are arrange for enjoyable looking at experience without leaving perhaps decrease the knowledge that want to supply to you. The writer connected with A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Music content conveys thinking easily to understand by lots of people. The printed and e-book are not different in the content but it just different as it. So , do you nonetheless thinking A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Music is not loveable to be your top checklist reading book?

Jeffery Herring:

Hey guys, do you really wants to finds a new book to study? May be the book with the concept A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Music suitable to you? Often the book was written by renowned writer in this era. The book untitled A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Musicis one of several books that everyone read now. This particular book was inspired many men and women in the world. When you read this guide you will enter the new age that you ever know previous to. The author explained their concept in the simple way, consequently all of people can easily to understand the core of this guide. This book will give you a wide range of information about this world now. So that you can see the represented of the world in this book.

Fernande Hairston:

As we know that book is significant thing to add our understanding for everything. By a book we can know everything you want. A book is a range of written, printed, illustrated or maybe blank sheet. Every year has been exactly added. This guide A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Music was filled concerning science. Spend your free time to add your knowledge about your scientific disciplines competence. Some people has various feel when they reading the book. If you know how big selling point of a book, you can feel enjoy to read a e-book. In the modern era like at this point, many ways to get book you wanted.

Download and Read Online A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Music By Ken Steiglitz #XCOD6LRF5N7

Read A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Music By Ken Steiglitz for online ebook

A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Music By Ken Steiglitz Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Music By Ken Steiglitz books to read online.

Online A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Music By Ken Steiglitz ebook PDF download

A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Music By Ken Steiglitz Doc

A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Music By Ken Steiglitz Mobipocket

A Digital Signal Processing Primer: With Applications to Digital Audio and Computer Music By Ken Steiglitz EPub