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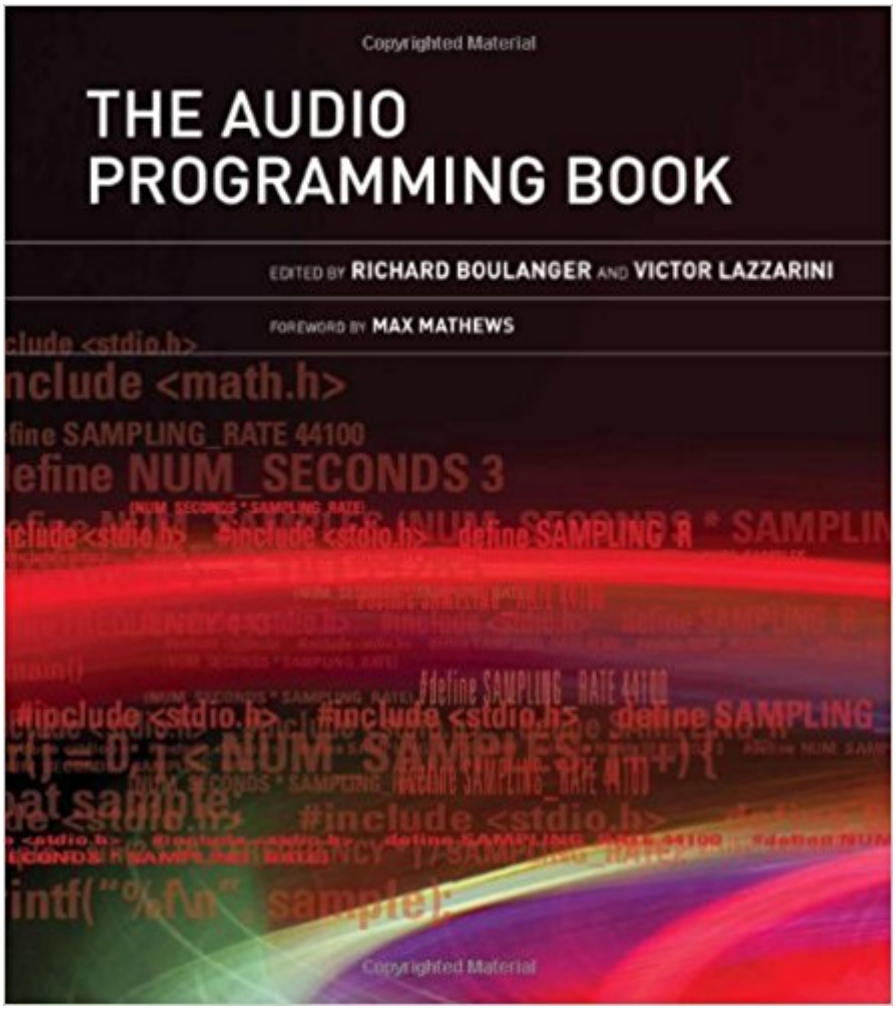
The Audio Programming Book (MIT Press)



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Synopsis

This comprehensive handbook of mathematical and programming techniques for audio signal processing will be an essential reference for all computer musicians, computer scientists, engineers, and anyone interested in audio. Designed to be used by readers with varying levels of programming expertise, it not only provides the foundations for music and audio development but also tackles issues that sometimes remain mysterious even to experienced software designers. Exercises and copious examples (all cross-platform and based on free or open source software) make the book ideal for classroom use. Fifteen chapters and eight appendixes cover such topics as programming basics for C and C++ (with music-oriented examples), audio programming basics and more advanced topics, spectral audio programming; programming Csound opcodes, and algorithmic synthesis and music programming. Appendixes cover topics in compiling, audio and MIDI, computing, and math. An accompanying DVD provides an additional 40 chapters, covering musical and audio programs with micro-controllers, alternate MIDI controllers, video controllers, developing Apple Audio Unit plug-ins from Csound opcodes, and audio programming for the iPhone.The sections and chapters of the book are arranged progressively and topics can be followed from chapter to chapter and from section to section. At the same time, each section can stand alone as a self-contained unit. Readers will find The Audio Programming Book a trustworthy companion on their journey through making music and programming audio on modern computers.

Book Information

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Customer Reviews

I particularly like the way in which the authors treat Csound both as a tool and as a computer program whose internals are worthy of study and understanding. Again, the material here should be useful to experienced programmers who are just beginning with digital audio, as well as to those with a good understanding of digital sound who want to learn more about C programming. (Paul LaFollette Computing Reviews) The Audio Programming Book is an invaluable resource for composers, sound designers, and programmers. The contributors have done an outstanding job of communicating not only the technology but also the artistry of programming audio applications. That art will surely flourish further, thanks to their efforts. (Robert Rowe, Director, Steinhardt Music Composition Program, New York University)Thanks to The Audio Programming Book, it has become practical for musicians to compose music and sounds themselves and to explore their own sonic world without limitations. (Jean-Claude Risset, composer)The essential reference in digital audio programming, linking the rich knowledge and techniques of our past and present to a rapidly evolving future, The Audio Programming Book provides its reader with a comprehensive body of programs and processes and teaches the programming skills and math to use them. (John Chowning, Professor of Music, Emeritus, the Center for Computer Research in Music and Acoustics (CCRMA), Stanford University)This book represents the meeting point of divergent lines of study that young computer musicians are desperate for. There is an extrodinary demand for a book where computer science, digital signal processing, music synthesis, electronic music, and algorithmic composition all come together. This is the only book you'll ever need if you want to learn to make your own plug-ins. An essential read, at the perfect time. (BT (aka Brian Transeau), composer/technologist)

Richard Boulanger is Professor of Electronic Production and Design at the Berklee College of Music and editor of The Csound Book: Perspectives in Software Synthesis, Sound Design, Signal Processing, and Programming (MIT Press, 2000). Victor Lazzarini is Senior Lecturer in the Music Department and Director of the Music Technology Laboratory at the National University of Ireland, Maynooth.Victor Lazzarini is Senior Lecturer in the Music Department and Director of the Music Technology Laboratory at the National University of Ireland, Maynooth.

First and foremost this, book is a great resource for understanding how to program audio. It is area is the severely lacking in the computing world, so every little bit helps.But there are some issues.1. If you get the Kindle version you don't get the accompanying DVD data. However, if you contact MIT

Press, like I did, they are pretty good at getting you a copy of the disc for free. And you must get the DVD, there is a lot of great information on it.2. The book does start out on the right foot with an introduction to C. I think this is important because I think the bulk of people interested in this book are probably Digital Audio Production guys who are Power Users but might not have done real programming. But even if you are coming from an experienced C programmer angel I don't think it hurts. However, I believe it is important that the book starts off giving an introduction to C because it sets the tone for the book, and where the book should stand out. There are no GOOD intro to audio programming books. Most books for the audio programming are usually geared toward advanced programming or signal processing, or are so watered down the as you give a non-audio interested programer the basis to get a job done. This is a problem, because sure you can fine plenty of intro to programming books that are happy to teach you some graphics programming along the way, but never for audio. It is ambitious this book tries to take this route.3. Unfortunately, the code style doesn't skill to that newbie-to-digital-audio style.First, this is an edited anthology book and it seems that every author for every section decided to do their own coding style for each section. And not just for the code itself, but also for compiling the code [the book switches from MAKE to Scons and back and never explains why]. The problem is, as should as you understand the code from one section, you end up having to relearn everything for the next because the next author has changed the code style. I don't understand why the authors didn't try to correct for this. Plus the authors don't stick to proper code conventions. A good example of each of these problem is the change between chapter 5 to 6. The code from C to C++ without any reason, but what makes it extra annoying, is that that C++ in improperly formatted (Example: All the headers for all the classes are in 1 file.) It is hard to tell, if it was supposed to be poorly written C code in C++ files, or a C++ program poorly organized and written to act like C without making use of classes.Second, the code style itself, doesn't stick to simple easy to read conventions. The authors get into a bad habit of using more advanced C/C++ tricks to write less code [highly abbreviated variable names, Ternary operations instead of true If/Else code blocks]. Sure it is good for them, bad for the learner when you are trying to learn everything step-by-step [And for you 'advance programmers' who scoff at reading someone complaining about those things, remember you were a newbie once too] You should NEVER write optimized code in any form when you are trying to teach something! That is irresponsible, and disrespectful toward your students who are trying to learn.Third the end goals seem to change, as they are teaching you. You first learn how to generate a simple realtime sound with PortAudio [the ultimate goal], but then everything become about generating a wave file for output and the reader is left pondering how to generated more then one sound at a time and keep it

going. When they do get to how to make a realtime plug-in, you aren't taught how to create a simple synthesizer, you just end up making a delay line. Sure a delay line is important, but it doesn't teach me, how I need to manage MIDI and generate sound continuously...Anyway, if you can deal with those 3 things then you will get a lot out of this book and don't get me wrong there in this book.However, this book really needed a few more revisions to be everything it could be. Maybe someday that will happen.

Not so much a book as it is a collection of chapters that relate to the subject of programming audio applications. There isn't really a clear direction and subjects tend to change drastically from chapter to chapter. Still, it is full of really cool algorithms and contains lots of information (with great graphics) to get you started in audio DSP. My only real complaint is the example code uses horrible style and is devoid of comments.An example where multiple variables are declared using vague names:double r, rsq, rr, costh, scal;Or sometimes they use comments but the variable names are meaningless.:a = exp(-k/T); //calc the constant ratio value

I've just reviewedÂ Designing Audio Objects for Max/MSP and PdÂ and referenced this book so it's only fair I review this as well. This book is not very beginner friendly despite the learning C chapters in the beginning. If anything it's more of a refresher on C. So, that being said I highly recommend this book as a pure beginner introÂ C Primer Plus (5th Edition)Â to C very big but thorough. This book is such an essential part of my library now and such a valuable resource in the world of DSP and what goes on in the engine of your favorite DSP environments. If you are interested in how Csound or Max works under the hood or just want to start trying to contribute to open source projects yourself this is such a great place to start! My appreciation goes to all of the authors involved in this project!

This is not for beginners! The book contains great information about creating audio with C BUT the code rarely works since this book was released 6+ years ago. I wish there was an updated version or at least errdata page and the header files doesn't work(portf.h)I don't think I can continue with this book as NOTHING works.

This may be the only book you'll need on audio programming. It has a C primer in Chp 1, then it goes into each of the cornerstones of audio programming... faders, effects, FFT,... everything! This is one hefty book. It should keep you busy for a long time. The enclosed DVD is also very thorough.

Just get this book before you buy anything else.

This book can take you from knowing nothing about programming at all to being able to completely code your own audio-related software. If you're interested in programming audio software I would start with this book and branch out from it if you need more in depth information on some subjects. After buying and reading it, I would buy it again without any hesitation.

Amazing information. Easy to read and understand, even if you don't know C/C++ programming language. Still reading and enjoying. It's really worth.

Worthy of its price

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