



The Algorithm Design Manual

By Steven S Skiena

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This newly expanded and updated second edition of the best-selling classic continues to take the "mystery" out of designing algorithms, and analyzing their efficacy and efficiency. Expanding on the first edition, the book now serves as the primary textbook of choice for algorithm design courses while maintaining its status as the premier practical reference guide to algorithms for programmers, researchers, and students.

The reader-friendly *Algorithm Design Manual* provides straightforward access to combinatorial algorithms technology, stressing design over analysis. The first part, *Techniques*, provides accessible instruction on methods for designing and analyzing computer algorithms. The second part, *Resources*, is intended for browsing and reference, and comprises the catalog of algorithmic resources, implementations and an extensive bibliography.

NEW to the second edition:

- **Doubles the tutorial material and exercises** over the first edition
- Provides **full online support** for lecturers, and a **completely updated and improved** website component with lecture slides, audio and video
- Contains a **unique catalog** identifying the 75 algorithmic problems that arise most often in practice, leading the reader down the right path to solve them
- Includes several **NEW** "war stories" relating experiences from **real-world applications**
- Provides up-to-date links leading to the very best algorithm *implementations* available in C, C++, and Java

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- Binding: Hardcover
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Editorial Review

Review

From the reviews of the second edition:

“This is detailed and timeless book that I keep reaching for. A useful book that I can not keep access to long enough. It is a important book to have in your library. Unlike other algorithm books that I have the algorithms are written independent of any programming language.” (Mary Anne, Cats and Dogs with Data, maryannedata.com, April, 2014)

“The Algorithm Design Manual by Steven Skiena is aimed at two groups of people: students and professionals. ... It is written in an informal style that I found pleasant and engaging. ... The book’s unique structure makes it more likely to be immediately useful to the practitioner who has problem to solve and wants to quickly make progress the book succeeds admirably. ... would be helpful to the student who has never seen this material before. ... Overall, I recommend this book warmly.” (Neelakantan Kartha, The Book Review Column, 2011)

“Algorithms are the very heart of computing This book is about right for most people. ... Each of the topics is treated in a readable informal style with lots of asides and accounts of personal experiences - ‘war stories’ in implementing algorithms. ... If you want to use it as a course textbook then there are lots of exercises at the end of every chapter. Highly recommended.” (Mike James, I Programmer, September, 2009)

"Addressing the main difficulties of solving problems, this book goes far beyond the design of algorithms. It is essential for scientists, engineers, and any professionals who aim to solve problems, with a noticeable emphasis on real problems. It will not only serve as a valuable undergraduate textbook, but it will also become an irreplaceable reference guide for most professionals in the area." (Carlos Linares Lopez, Computing Reviews, February, 2009)

"Skiena focuses on the practical aspects of algorithm design and use. ... this work fills an important gap in the knowledge of CS practitioners and students. ... this book is suitable as a text for an undergraduate algorithms class, but also as an invaluable reference for the practicing programmer. ... This second edition has updated the bibliography to include recent works, making it an extensive bibliography. The index is also thorough and very useful for finding specific problems." (William Fahle, ACM Computing Reviews, December, 2008)

"For a decade, Steven Skiena’s Algorithm Design Manual retained its title as the best and most comprehensive practical algorithm guide to help identify and solve problems. It is now available in an improved second edition that is worth buying simply for the updates. ... Every programmer should read this book, and anyone working in the field should keep it close to hand. ... Would I recommend it? Absolutely. This is the best investment ... a programmer or aspiring programmer can make." (Harold Thimbleby, Times Higher Education, November, 2008)

"My absolute favorite for this kind of interview preparation is Steven Skiena’s The Algorithm Design Manual. More than any other book it helped me understand just how astonishingly commonplace ... graph problems are -- they should be part of every working programmer’s toolkit. The book also covers basic data structures and sorting algorithms, which is a nice bonus. ... every 1 – pager has a simple picture, making it

easy to remember. This is a great way to learn how to identify hundreds of problem types." (Steve Yegge, Steve Yegge's Blog, March, 2008)

"...the book is an algorithm implementation treasure trove, and putting all of these implementations in one place was no small feat. The list of implementations, an extensive bibliography ... make the book an invaluable resource for everyone interested in the subject." (ACM Computing Reviews)

From the Back Cover

....The most comprehensive guide to designing practical and efficient algorithms!....

The Algorithm Design Manual, Second Edition

"...the book is an algorithm-implementation treasure trove, and putting all of these implementations in one place was no small feat. The list of implementations [and] extensive bibliography make the book an invaluable resource for everyone interested in the subject." --**ACM Computing Reviews**

"It has all the right ingredients: rich contents, friendly, personal language, subtle humor, the right references, and a plethora of pointers to resources." -- **P. Takis Metaxas, Wellesley College**

"This is the most approachable book on algorithms I have." -- **Megan Squire, Elon University, USA**

This newly expanded and updated second edition of the best-selling classic continues to take the "mystery" out of designing algorithms, and analyzing their efficacy and efficiency. Expanding on the first edition, the book now serves as the primary textbook of choice for algorithm design courses while maintaining its status as the premier practical reference guide to algorithms for programmers, researchers, and students.

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ADDITIONAL Learning Tools:

- Exercises include "job interview problems" from major software companies
- Highlighted take-home lesson boxes emphasize essential concepts
- Provides comprehensive references to both survey articles and the primary literature
- Exercises point to relevant programming contest challenge problems
- Many algorithms presented with actual code (written in C) as well as pseudo-code
- A full set of lecture slides and additional material available at www.algorist.com

Written by a well-known algorithms researcher who received the IEEE Computer Science and Engineering Teaching Award, this new edition of *The Algorithm Design Manual* is an essential learning tool for students needing a solid grounding in algorithms, as well as a special text/reference for professionals who need an authoritative and insightful guide. Professor Skiena is also author of the popular Springer text, *Programming Challenges: The Programming Contest Training Manual*.

About the Author

Steven Skiena is Professor of Computer Science at Stony Brook University. His research interests include the design of graph, string, and geometric algorithms, and their applications (particularly to biology). He is the author of four books, including "The Algorithm Design Manual" and "Calculated Bets: Computers, Gambling, and Mathematical Modeling to Win". He is recipient of the ONR Young Investigator Award and the IEEE Computer Science and Engineering Undergraduate Teaching Award.

Users Review

From reader reviews:

Federico Crouch:

Now a day individuals who Living in the era exactly where everything reachable by talk with the internet and the resources inside can be true or not involve people to be aware of each info they get. How people have to be smart in acquiring any information nowadays? Of course the correct answer is reading a book. Studying a book can help people out of this uncertainty Information specifically this The Algorithm Design Manual book because book offers you rich details and knowledge. Of course the knowledge in this book hundred per cent guarantees there is no doubt in it everbody knows.

Moses Bean:

Reading can called mind hangout, why? Because while you are reading a book specially book entitled The Algorithm Design Manual your mind will drift away trough every dimension, wandering in every aspect that maybe unidentified for but surely can be your mind friends. Imaging every single word written in a book then become one form conclusion and explanation this maybe you never get just before. The The Algorithm Design Manual giving you one more experience more than blown away your mind but also giving you useful data for your better life in this particular era. So now let us teach you the relaxing pattern is your body and

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