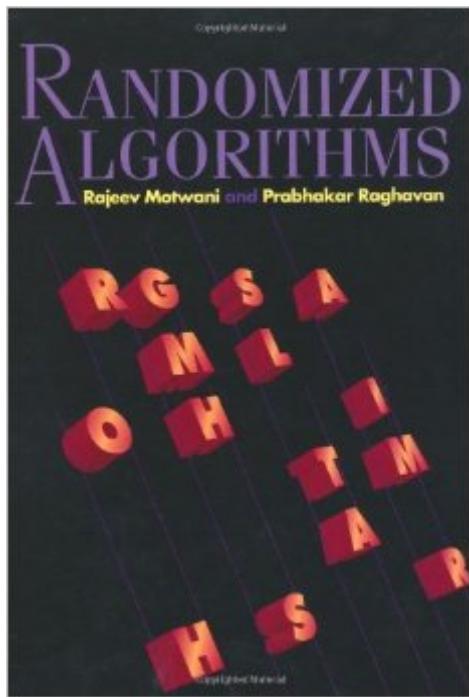


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Randomized Algorithms



Synopsis

For many applications, a randomized algorithm is either the simplest or the fastest algorithm available, and sometimes both. This book introduces the basic concepts in the design and analysis of randomized algorithms. The first part of the text presents basic tools such as probability theory and probabilistic analysis that are frequently used in algorithmic applications. Algorithmic examples are also given to illustrate the use of each tool in a concrete setting. In the second part of the book, each chapter focuses on an important area to which randomized algorithms can be applied, providing a comprehensive and representative selection of the algorithms that might be used in each of these areas. Although written primarily as a text for advanced undergraduates and graduate students, this book should also prove invaluable as a reference for professionals and researchers.

Book Information

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Customer Reviews

This book is a jewel. It demonstrates how clever and beautifully simple probabilistic ideas can lead to the design of very efficient algorithms. I like its very verbal intuitive style, with proof strategies being always transparently explained. For computer scientists, this is *the* reference work in randomized algorithms, by now a major paradigm of algorithms design. For classical probabilists, this could serve as an eye-opener on unsuspected applications of their field to important areas of computer science.

I've taken two CS classes that use this book and I always felt like this book was very informative.

The algorithms and concepts that Motwani brings forth are extremely insightful and interesting. However, the presentation of the proofs has a lot of room for improvement. Notation is carried over from previous chapters and is sometimes unexplained, which makes it very difficult for someone who does not have a lot of familiarity with the material presented. The book presents very interesting topics and leaves a lot of open (unresolved) questions to the reader's curiosity and challenge.

Overall, the authors explain core concepts, the examples and the possible applications well. However, the readability of their proof is far from that of the above three. Honestly some proofs should be re-written completely. For example, in page 116, they try to use the induction method to prove Lovasz Local Lemma. After reading that page many times, I still didn't understand the structure of their proof. I was TA for under-grad level algorithm course, got A+ in advanced Calculus II and A in intro. to PDE (both in under-grad level), really knew something about induction method and a little bit about algorithm. I am not smart, but far from stupid. In the end, I google the internet and found a 3-page proof for the same thing. That's easy to catch in few minutes, and then, I understand the 1-page proof in the book. Is it ironic?

The book has an exhaustive amount of algorithms. Not everything is proved. Sometimes the proof contains to few steps to be understood. There are many algorithms explained well. After reading this book it is easy to create your own randomized algorithms.

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