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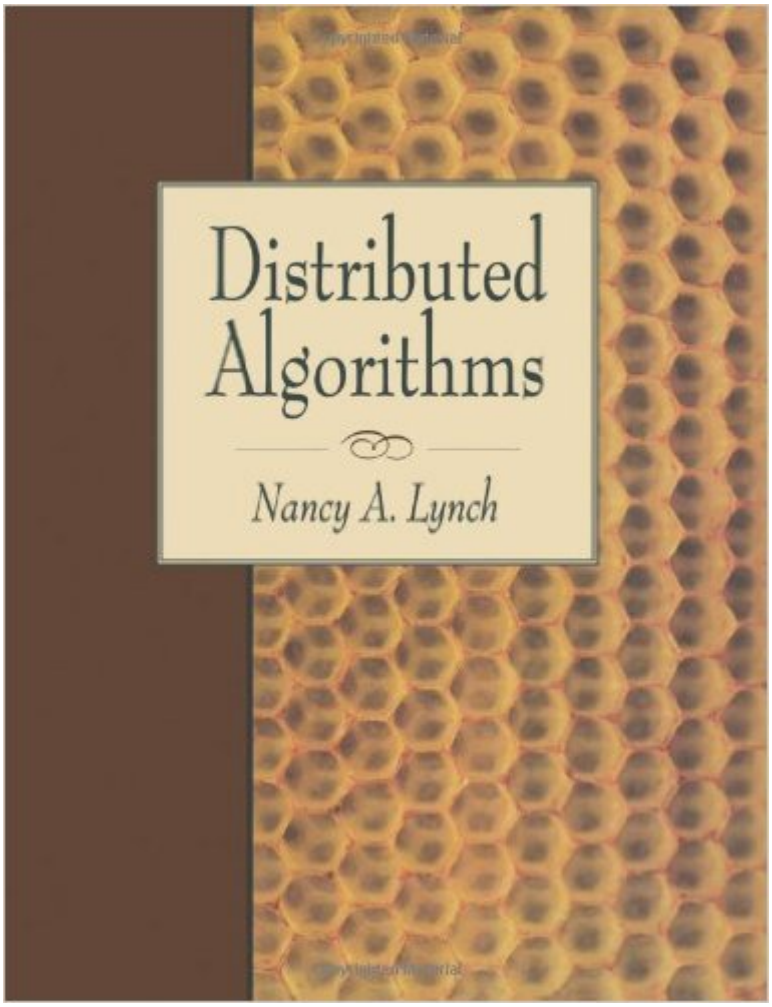
Distributed Algorithms (The Morgan Kaufmann Series In Data Management Systems)



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Synopsis

In Distributed Algorithms, Nancy Lynch provides a blueprint for designing, implementing, and analyzing distributed algorithms. She directs her book at a wide audience, including students, programmers, system designers, and researchers.Distributed Algorithms contains the most significant algorithms and impossibility results in the area, all in a simple automata-theoretic setting. The algorithms are proved correct, and their complexity is analyzed according to precisely defined complexity measures. The problems covered include resource allocation, communication, consensus among distributed processes, data consistency, deadlock detection, leader election, global snapshots, and many others.The material is organized according to the system modelâ •first by the timing model and then by the interprocess communication mechanism. The material on system models is isolated in separate chapters for easy reference.The presentation is completely rigorous, yet is intuitive enough for immediate comprehension. This book familiarizes readers with important problems, algorithms, and impossibility results in the area: readers can then recognize the problems when they arise in practice, apply the algorithms to solve them, and use the impossibility results to determine whether problems are unsolvable. The book also provides readers with the basic mathematical tools for designing new algorithms and proving new impossibility results. In addition, it teaches readers how to reason carefully about distributed algorithmsâ •to model them formally, devise precise specifications for their required behavior, prove their correctness, and evaluate their performance with realistic measures.

Book Information

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Customer Reviews

This book is a classic, and I was excited when I learned that this excellent reference work is also available as a Kindle edition.Unfortunately, the technical quality of the Kindle version is extremely poor. In particular, many parts of it are very difficult to follow because of several technical errors that have been introduced in the conversion of the printed book into Kindle edition.The Kindle edition is barely useful as a reference if you already have read the printed book, and just want to quickly look up some definitions or references. Trying to read any non-trivial fragment of the Kindle version is a painful experience.- - -I am giving here just some examples of the issues that should have been easy to spot before publishing the Kindle version of the book.Throughout the book, there are numerous strange errors in mathematical formulas. There are confusing mistakes such as using $o(n)$ instead of $O(n)$, or replacing the floor notation with brackets "[...]", or replacing the $\ge$ symbol with text "VI". In many places, the book uses ϵ instead of $\in$, "U" instead of $\cup$, "V" instead of $\vee$, "." instead of $\cdot$, etc.There are lots of alignment issues; superscripts and subscripts are often lost. Spacing is wrong, for example, there is often "O (n log n)" instead of "O(n log n)" or "O (logn)" instead of "O(log n)". Hyphens and minus signs are wildly mixed up even within a single paragraph of text. In general, you can expect all kinds of mistakes that happen when you try to apply OCR to mathematical formulas, without carefully proofreading the end result.Many text fragments - more complicated formulas, algorithm listings, etc. - seem to be low-resolution scanned images.

I am happy with the seriousness of the book. This book is written in a very formal, mathematical style. I am happy with the seriousness of the book, and the breadth of material it covers. I like that it organizes material by network models.What I really dislike about this book is that it provides very little intuition for the algorithms it presents. The book will pose a problem, then present a distributed algorithm that solves the problem, with a proof of correctness. It would be very helpful if the book presented naive attempts at solutions, explaining why they didn’t work, and how the final solution addresses and avoids those failures.This would be helpful because with many of the algorithms Prof. Lynch presents, I waste a lot of time trying to figure out why a simpler approach wouldn’t work. I usually do convince myself why the presented solution truly addresses failings of my naive solutions, but it takes a long time. A second reason this would be helpful is that it would help explain the presented algorithms; I spend a lot of time scratching my head, trying to figure out how a

complicated algorithm works. If I could see a simpler, easier to understand, but not entirely correct "partial solution", I could grok that, and then slowly understand a series of evolutionary steps as we improve that algorithm toward a full solution.This makes the book difficult for use for self-study. In a classroom setting, I think you could get more of the intuition from a lecturer, or from having someone to ask questions too. That said, I do feel a great sense of achievement as I make progress through the book; Prof. Lynch doesn't rob you of a sense of discovery by taking you through every baby step.

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