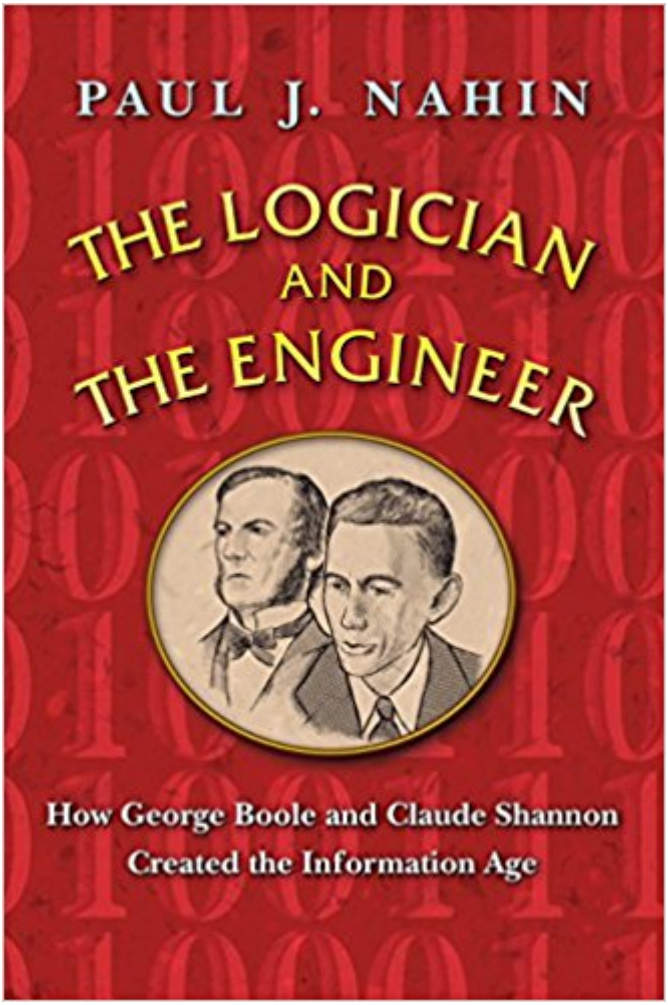
The Logician And The Engineer: How George Boole And Claude Shannon Created The Information Age



Synopsis

Boolean algebra, also called Boolean logic, is at the heart of the electronic circuitry in everything we useâ ”from our computers and cars, to home appliances. How did a system of mathematics established in the Victorian era become the basis for such incredible technological achievements a century later? In The Logician and the Engineer, Paul Nahin combines engaging problems and a colorful historical narrative to tell the remarkable story of how two men in different erasâ ”mathematician and philosopher George Boole and electrical engineer and pioneering information theorist Claude Shannonâ ”advanced Boolean logic and became founding fathers of the electronic communications age. Nahin takes readers from fundamental concepts to a deeper and more sophisticated understanding of modern digital machines, in order to explore computing and its possible limitations in the twenty-first century and beyond.

Book Information

File Size: 5147 KB

Print Length: 244 pages

Publisher: Princeton University Press (October 28, 2012)

Publication Date: October 28, 2012

Sold by:Â Digital Services LLC

Language: English

ASIN: B0091XBUTM

Text-to-Speech: Enabled

X-Ray: Not Enabled

Word Wise: Enabled

Lending: Not Enabled

Enhanced Typesetting: Enabled

Best Sellers Rank: #165,929 Paid in Kindle Store (See Top 100 Paid in Kindle Store) #20 inÂ Kindle Store > Kindle eBooks > Computers & Technology > Business > History #52 inÂ Kindle Store > Kindle eBooks > Engineering & Transportation > Engineering > Electrical & Electronics > Electricity Principles #76 inÂ Books > Biographies & Memoirs > Professionals & Academics > Computers & Technology

Customer Reviews

The Logician and the Engineer provides the interested reader with a short history of George Boole and Claude Shannon as well as a brief overview of how Boolean logic can be used to craft circuits

for computation. The book covers much ground and doesn't assume too much background to the reader, though it does require more than high school math to appreciate many aspects (despite the authors claims otherwise).I actually started the book being frustrated as the author poses to the reader an example of an electrical circuit to the reader and claims one should at least understand that before continuing. After having read that the book requires only high school math and then being shown a problem which is poorly worded and hard to understand I was immediately annoyed with the author (for whom I own other books from). Nonetheless I moved on from that and the book went into the history of both Boole and Shannon. These sections are short but informative, there are some aspects of the writing which don't add to the content but I guess it is the author's style which unfortunately aren't the most coherent, for example discussing how a comment from Shannon's first wife was evidence she knew he might have mental problems 40 yrs later. The author then moves on to more math and engineering. The author provides the reader with the ideas of Boolean Algebra and how to use Karnaugh maps. This is clear and well written. The author then moves on to circuits and how they can be used to represent logical statements if constructed properly. The author goes in to some basic probability theory and sets up the reader in the next chapter for some ideas in information theory which was one of Shannon's main research focus. The author discusses flip flops next and sequential state digital circuits. The material here is not nearly as clear as can be found elsewhere. The author switches gears towards the end and introduces the ideas of universal computation and Turing machines. The examples used are interesting but the author goes in to some tangent about an eager beaver program and how it takes exponential time to halt which doesn't add to understanding Turing machines and is just a random diversion that happens to interest the author. The author then moves in to some more complex ideas and how heat generated by computers can be considered a result of thermodynamics and information theory. He also discusses quantum computation briefly.This book will give the patient reader a sense of what goes in to circuit design and how computation can be done via using electricity to represent Boolean logic. Without assuming knowledge from the reader, the author is able to communicate some basic ideas fairly clearly. I think the author can be arrogant and testing with the reader (in a bad way). There are times when he brings up some nostalgic story about his early days in graduate school designing a circuit and the nuances in connecting wires but given his target audience including this is both likely to be uninteresting and a distraction. The book has many parts in which the author tries to show how clever he is which is totally unnecessary as he is supposedly writing for a layperson audience. Given some chapters are excellent introductions to the subject but the general writing is really bad I gave 4 stars but would lean lower to be honest. I am glad I read it though, but would skip

much of the material on a second read.

I’m familiar with Boolean logic/algebra, butI had no idea who George Boole was. His story is fascinating. Adding Shannon to the mix made a very interesting read.

A definitive explanation for the invention of the computer in its evolving forms.

well done

I enjoyed the parts of this book that were biographical and a bit psycho-philosophical, and I even enjoyed the more technical parts, but the problem is that Dr. Nahin doesn’t segue between the personal and the technical very well at all. When he starts to talk about the technical, he just starts shoveling jargon at you abruptly, when he could just as easily have clarified little things for the reader, such as the fact that the current being talked about in the various circuits is actually an antiquated notion of POSITIVE current that began with Benjamin Franklin, who happened to get it wrong because what actually flows in a circuit is not positive charge, but NEGATIVE charge. Because of this, the newbie and conceptually rusty reader is left feeling confused and even stupid.Also, would it have killed Nahin to have just simply come out and said that diodes serve as one-way valves for current flow? How hard is it, really, to dispense with all the technical fetishism for a sentence or two, and just spill the beans that diodes are used to force a one-way flow of current? Not at all, but clearly Nahin would rather alienate "unworthy" readers with the deliberate withholding of easily-expressed down to earth language here and there.

Whenever I see a title of a book authored by P. Nahin, I am looking eagerly to by it and I won’t be disappointed. This book is no exception and actually from its title, as a mathematician, I was more confidence that this book is more interesting for me. Nahin shows in this book how a pure logic thoughts of the 19th English logician George Boole are the backbone of the spine of the incredible technology advances of present world. Nahin’s admirable style is lucid, informative, and charming. No doubts the book deserve the highest rate, the five stars and more ..

Paul Nahin has become one of my favorite science/math writers. Clearly written. Good explanations of the important concepts.

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