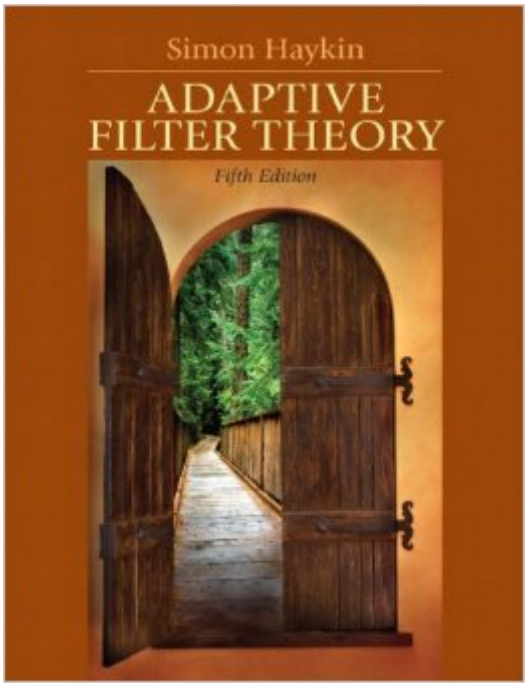
Adaptive Filter Theory (5th Edition)



Synopsis

Adaptive Filter Theory, 5e, is ideal for courses in Adaptive Filters. Haykin examines both the mathematical theory behind various linear adaptive filters and the elements of supervised multilayer perceptrons. In its fifth edition, this highly successful book has been updated and refined to stay current with the field and develop concepts in as unified and accessible a manner as possible.

Book Information

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Customer Reviews

Despite the commonly negative opinion against Simon Haykin's book, I find this book to be a very fun reading. It starts off with a very brief review of DSP (more useful just for getting familiar with the notation, really), properties of random processes, and a small section on linear algebra in the middle of the book.The rest of the book can be viewed as a story of how different approaches and algorithms were developed, and is a little difficult to use as reference due to its lack of structure and over-dependency on the previous chapters, both for technical content and notation.But there's a lot of hidden treasures within this book that should have been more emphasized. For example, Mold's theorem that states that any discrete stationary process can be decomposed into a deterministic component and a random component, which are uncorrelated to each other. I'm sorry, but a reference to a proof in another book is not enough to really motivate me. This is a very fundamental theorem if you're interested in stochastic signal processing. Sure, you don't cover the Fundamental Theorem of Calculus in your very first calculus class, but then again this is supposed to be a fairly advanced book.So if you're interested in learning certain things quickly, this is NOT the book to get.

Consider Munson Hayes' book instead. Save this one when you feel like investing a little time to hear Haykin's story on stochastic signal processing.

This book looks very impressive, but if you try to understand it you'll find it very mechanical. There is not much motivation behind the many pages of formulas and derivations. I'm not even sure how many people actually read those derivations becuase even in its 4th edition the book and its solution manual both have many typos (see, for example, equations 8.11 and 12.5). Even the problems are more focused on derivations than on numerical examples. This is a good cookbook if you just want to implement an algorithm or find some pointers to the original research papers. Like many other reviewers, I beleive that engineering textbooks are losing their depth and becoming more and more like instruction manuals.

a great book for adaptive filters. I like the fact that a large part of the book is appendices that review the math. Anyone can understand Hykin's explanations.The only thing missing the the neural net stuff that was in the 4th edition.

I was introduced to this text in a graduate course. I was not too thrilled about learning from another Haykin book due to a previous experience with his Communication Systems text in an undergraduate course (Horribly confusing... Proakis's text is infinitely better). To my surprise, the book was very detailed and easy to read. The math is very clear and detailed (great for the self learner). Also, the second chapter, which serves as a review of stationary processes and properties, was written much better than most random process textbooks (I applaud Haykin for this given the section was only a review). In chapter 3 or 4, he shows the derivation of the Levison-Durbin Algorithm step-by-step. I strongly disagree with some of the other reviews stating this text is just the typical engineering manual or cookbook with no explainations.However, this is either a love or hate text. If you are looking for a text about practical linear predictive filter design, this is NOT the book for you. This text is heavily geared towards understanding the theory behind the design... hence the title Adaptive Filter THEORY. However, it can make a great reference to engineers in the field of DSP.

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of the book.The rest of the book can be viewed as a story of how different approaches and algorithms were developed, and is a little difficult to use as reference due to its lack of structure and over-dependency on the previous chapters, both for technical content and notation. I have to admit that the notation used in this book is very, very poor and can be a source of frustration. The dependency is also a pain because you always have to keep flipping 100 pages back because Mr. Haykin prefers to say "Eqn. (4.24)" instead of "an AR model".But there's a lot of hidden treasures within this book that should have been more emphasized. For example, Mold's theorem that states that any discrete stationary process can be decomposed into a deterministic component and a random component, which are uncorrelated to each other. I'm sorry, but a reference to a proof in another book is not enough to really motivate me. This is a very fundamental theorem if you're interested in stochastic signal processing. Sure, you don't cover the Fundamental Theorem of Calculus in your very first calculus class, but then again this is supposed to be a fairly advanced book.So if you're interested in learning certain things quickly, this is NOT the book to get. Consider Munson Hayes' book instead. Save this one when you feel like investing a little time to hear Haykin's story on stochastic signal processing.

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