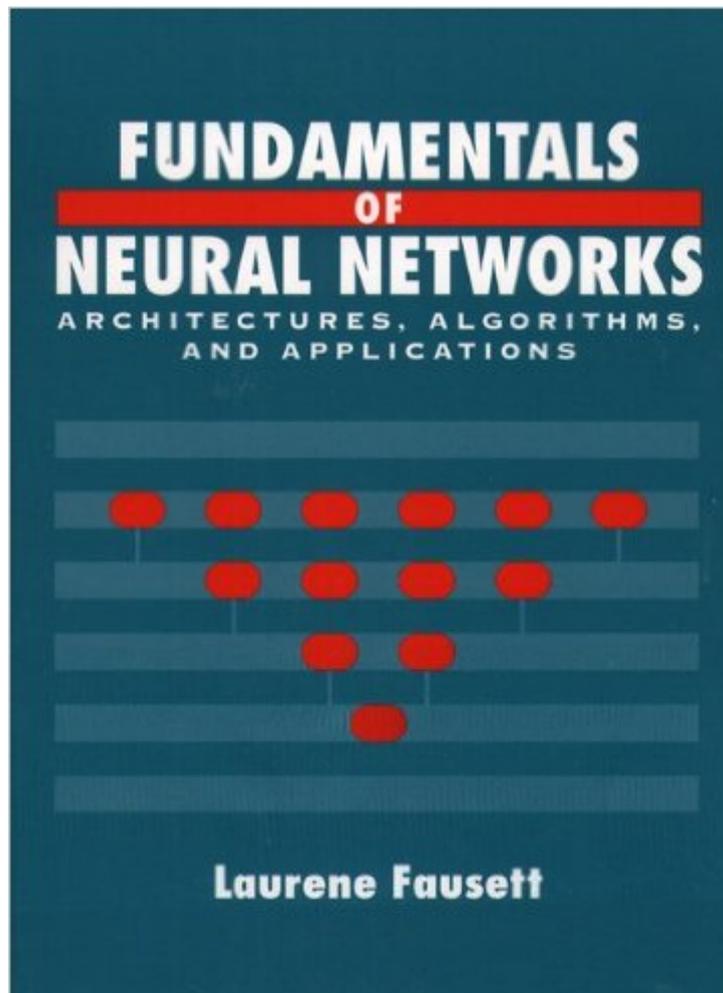# Fundamentals Of Neural Networks: Architectures, Algorithms And Applications

Synopsis

Providing detailed examples of simple applications, this new book introduces the use of neural networks. It covers simple neural nets for pattern classification; pattern association; neural networks based on competition; adaptive-resonance theory; and more. For professionals working with neural networks.

Book Information

Paperback: 461 pages

Publisher: Pearson; 1 edition (December 19, 1993)

Language: English

ISBN-10: 0133341860

ISBN-13: 978-0133341867

Product Dimensions: 6.9 x 1 x 8.9 inches

Shipping Weight: 1.7 pounds (View shipping rates and policies)

Average Customer Review: 4.1 out of 5 stars See all reviews (14 customer reviews)

Best Sellers Rank: #488,570 in Books (See Top 100 in Books) #68 in Books > Computers & Technology > Computer Science > AI & Machine Learning > Neural Networks #75 in Books > Engineering & Transportation > Engineering > Telecommunications & Sensors > Signal Processing #133 in Books > Textbooks > Computer Science > Artificial Intelligence

Customer Reviews

I bought this book as a reference book during a graduate course I took in Neural Computation.The book was clear and useful in presenting the topics, and more importantly, in presenting the algorithms in a clearn simple format which made it very easy to produce a computer program implementing these algorithms just by reading the book.It was also useful by listing various things which have been done in literature to alter the algorithms for various purposes.I suppose that people in the field of Neural Computation might find this book useful as an introduction book and also as a reference book (at least for its clear explenations and algorithms listings), but otherwise need more comprehensive books which cover a lot more math than this books does.Actually, this is a good book for getting to know this dicipline for people who don't like to mess too much with calculus. Other books in this fiels contain more, a lot more, calculus in them, so I would also argue that this book is useful for people who want to understand the ideas, have a clear algorithm so its easy to implement, and at the same time, not worry about the math too much.You don't see proofs here, at least not as much as I expected to, but I suppose that this follows the idea that this book is useful as

a complementary book, rather than the authoritative book in the subject.I only regret the high price of the book.

This text explains the why and how for understanding neural networks, beginning with thier biological counterparts, where NN are used, why, and how. Detailed discussions on the Hebb, Perceptron, and Adaline pattern classification nets are provided, as well as fixed wieght competitive nets, Kohonen Self-Organizing Maps, Learning Vector Quantification, Counter Propagation, and Back Propagation, just to name a few. I received the specific theoretical foundation for neural net deployment on projects with confidence, and have referenced the work in breakthrough research on machine learning.Highly recommended for the serious researcher or scientist/engineer/analyst deploying neural networks.

I'm a senior in a Mechanical Engineering undergraduate program, and am researching ANN's for a professor. I had almost no knowlege of ANN's, and had tried finding a good overview of the subject as well as a clear description of algorithms used in ANN's. After looking at three other books, I was relieved to find this one. Also, it's organizational structure is the most sensible I've seen.

This book covers everything you need to know on neural nets. It covers all the main learning algorithms, architectures and activation functions. Don't think that you can find it all out on the net, you can't. If you don't understand neural networks, buy this book.

This is an excellent textbook for beginners, giving a clear picture of what neural networks are, and where they are used. It also talks about back-propagation, associative neural nets, and more. But the biggest flaw is that the book has little mathematics. And it also doesnt have any working code (only pseudo-code). So if you are considering buying this as a textbook for a NN course you are taking at your university, well, I would suggest you take a good look at the book at your library before you decide to buy it. Most university courses put neural nets on a firm mathematical footing and might also have course projects that have to be done by the student. This book can help you with neither of these. And the book's pretty expensive, I really wonder why.

I picked up this book as a slightly more advanced and technical introduction to neural networks than the pure applied programming or highly conceptual books out there. Hence the title "Neural Networks 151" instead of "Neural Networks 101". I was looking for something that provided a

detailed, behind-the-scenes look at the theory and structure of neural networks without requiring a PhD in math. This book delivered. While there is a great deal of math, it's actually quite straightforward if you look closely. For the most part, the math is simply a representation of what's contained in the text. Reading the text allowed me to grasp the mathematical equivalent quickly and easily. This is distinct from books which put out 20 equations and only have a few lines of text, leaving you to painfully and slowly work through each equation to figure out what's going on (reaching for other textbooks and lots of coffee along the way). Does it help to have a great deal of mathematical knowledge ? Sure. Is it absolutely necessary ? Not in my opinion. E.g., "delta x" simply means "change in x". If that sounds familiar or straightforward, the book shouldn't be too difficult. I skimmed sections that weren't totally applicable to the problems I was looking at, but it was good to see the knowledge was there in case I needed to return to it later. It seems geared towards an instructional setting, but not at a 301 level. As an intermediate book that solidified my understanding and knowledge of neural networks, it was perfect.

This is the book I used in my AI class. I have found it very well written and interesting to read and go through the very first neural networks models such as the Hebb net, the perceptron and the Adaline. Then the book continues by presenting simple neural network applications like pattern association.I remember that our professor did ask the class to do one of the proposed projects in the pattern association chapter which consisted of implementing a small OCR with a neural network and this exercise did really help to better assimilate the principles. Finally, the following chapters present other types of neural networks such as those based on competition and the very important backpropagation neural network.The only thing that you can complain about is its high price tag. For anyone interested in the AI field, it is recommended.

Download to continue reading...

Fundamentals of Neural Networks: Architectures, Algorithms And Applications Identification of Nonlinear Systems Using Neural Networks and Polynomial Models: A Block-Oriented Approach (Lecture Notes in Control and Information Sciences) From Neural Networks and Biomolecular Engineering to Bioelectronics (Electronics and Biotechnology Advanced (Elba) Forum Series) Programming Neural Networks with Encog3 in C# Handbook of Neural Networks for Speech Processing (Artech House Signal Processing Library) Algorithms in C, Parts 1-5 (Bundle): Fundamentals, Data Structures, Sorting, Searching, and Graph Algorithms (3rd Edition) Designing and Deploying 802.11 Wireless Networks: A Practical Guide to Implementing 802.11n and 802.11ac Wireless Networks For Enterprise-Based Applications (2nd Edition) (Networking Technology) DSP

Processor Fundamentals: Architectures and Features Applied Cryptography: Protocols, Algorithms, and Source Code in C [APPLIED CRYPTOGRAPHY: PROTOCOLS, ALGORITHMS, AND SOURCE CODE IN C BY Schneier, Bruce (Author) Nov-01-1995 Combinatorial Optimization: Theory and Algorithms (Algorithms and Combinatorics) Geometric Algorithms and Combinatorial Optimization (Algorithms and Combinatorics) Evolutionary Algorithms in Theory and Practice: Evolution Strategies, Evolutionary Programming, Genetic Algorithms Practical Algorithms in Pediatric Hematology and Oncology: (Practical Algorithms in Pediatrics. Series Editor: Z. Hochberg) Localization Algorithms and Strategies for Wireless Sensor Networks Performance Guarantees in Communication Networks (Telecommunication Networks and Computer Systems) Linked: The New Science Of Networks Science Of Networks Web Services, Service-Oriented Architectures, and Cloud Computing: The Savvy Manager's Guide (The Savvy Manager's Guides) UNIX Systems for Modern Architectures: Symmetric Multiprocessing and Caching for Kernel Programmers Parallel Programming with Microsoft Visual C++: Design Patterns for Decomposition and Coordination on Multicore Architectures (Patterns & Practices) VLSI Test Principles and Architectures: Design for Testability (The Morgan Kaufmann Series in Systems on Silicon)