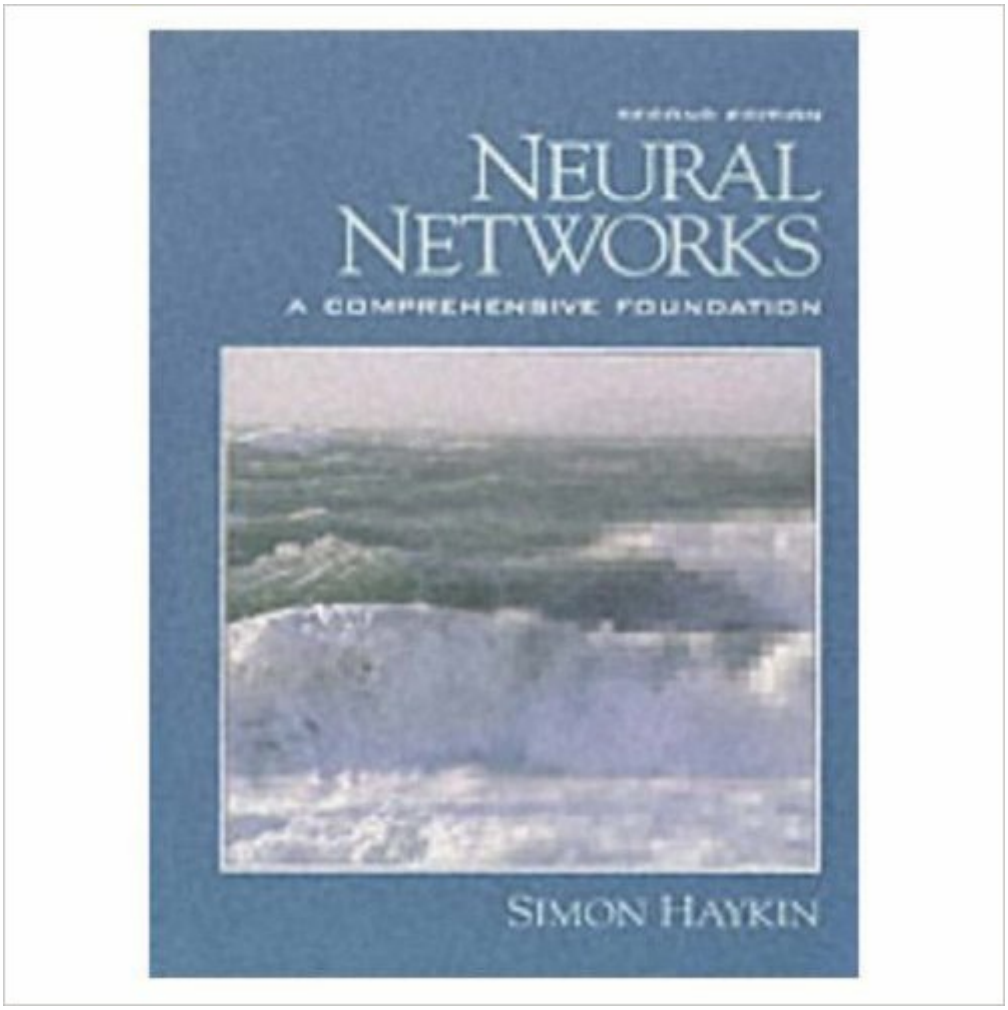
Neural Networks: A Comprehensive Foundation (2nd Edition)



Synopsis

For graduate-level neural network courses offered in the departments of Computer Engineering, Electrical Engineering, and Computer Science. Renowned for its thoroughness and readability, this well-organized and completely up-to-date text remains the most comprehensive treatment of neural networks from an engineering perspective. Thoroughly revised.

Book Information

Hardcover: 842 pages

Publisher: Prentice Hall; 2 edition (July 16, 1998)

Language: English

ISBN-10: 0132733501

ISBN-13: 978-0132733502

Product Dimensions: 6.9 x 1.6 x 9.4 inches

Shipping Weight: 3.1 pounds

Average Customer Review: 4.1 out of 5 starsÂ Â See all reviewsÂ (25 customer reviews)

Best Sellers Rank: #390,282 in Books (See Top 100 in Books) #61 inÂ Books > Computers & Technology > Computer Science > AI & Machine Learning > Neural Networks #64 inÂ Books > Textbooks > Engineering > Electrical & Electronic Engineering #645 inÂ Books > Computers & Technology > Certification

Customer Reviews

This book, excellent for self-study and for use as a textbook, covers a subject that has had enormous impact in science and technology. One can say with confidence that neural networks will increase in importance in the decades ahead, especially in the field of artificial intelligence. The book is a comprehensive overview, and does take some time to read and digest, but it is worth the effort, as there are many applications of neural networks and the author is detailed in his discussion.In the first part of the book, the author introduces neural networks and modeling brain functions. A good overview of the modeling of neural networks and knowledge representation is given, along with a discussion of how they are used in artificial intelligence. Ideas from computational learning are introduced, as well as the important concept of the Vapnik-Chervonenkis (VC) dimension. The VC dimension is defined in this book in terms of the maximum number of training examples that a machine can learn without errors. The author shows it to be a useful parameter, and allows one to avoid the difficult problem of finding an exact formula for the growth function of a hypothesis space.In the next part of the book, the author discusses learning machines

that have a teacher. The single-layer perceptron is introduced and shown to have an error-correction learning algorithm that is convergent. There is a fine discussion of optimization techniques and Bayes classifiers in this part. The least-mean-square algorithm is generalized to the back-propagation algorithm in order to train multi-layer perceptrons along with a discussion on how to optimize its performance using heuristics. The author gives a detailed discussion of the limitations of back-propagation learning.