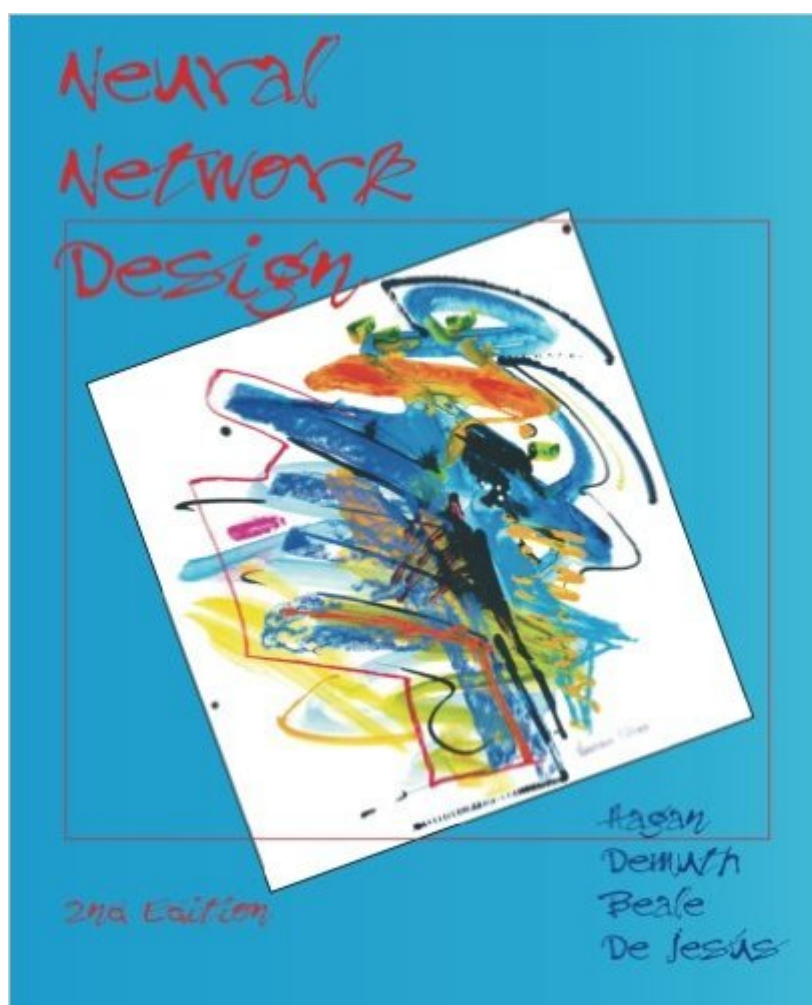# Neural Network Design (2nd Edition)

Synopsis

This book, by the authors of the Neural Network Toolbox for MATLAB, provides a clear and detailed coverage of fundamental neural network architectures and learning rules. In it, the authors emphasize a coherent presentation of the principal neural networks, methods for training them and their applications to practical problems. Features Extensive coverage of training methods for both feedforward networks (including multilayer and radial basis networks) and recurrent networks. In addition to conjugate gradient and Levenberg-Marquardt variations of the backpropagation algorithm, the text also covers Bayesian regularization and early stopping, which ensure the generalization ability of trained networks. Associative and competitive networks, including feature maps and learning vector quantization, are explained with simple building blocks. A chapter of practical training tips for function approximation, pattern recognition, clustering and prediction, along with five chapters presenting detailed real-world case studies. Detailed examples and numerous solved problems. Slides and comprehensive demonstration software can be downloaded from hagan.okstate.edu/nnd.html.

Book Information

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Customer Reviews

I read the entire book over a one-semester graduate course in NN. I was amazed by the quality of formalism (notation), which allow me to understand quite easily complex mathematical concepts, algorithms and proofs presented throughout the book. Authors introduced in an effective way all important mathematical concepts before using them. I felt this book is accessible for a beginner in NN field but you will need a good basis (one or more undergraduate courses) in linear algebra and

calculus. Overall, this book constitutes an excellent introduction to NN but you will need an additional book to help you through more practical aspects of NN training. My suggestions are Chris Bishop (1995) Neural Networks for Pattern Recognition (chap. 8-9). or Reed & al. (1999). Neural Smithing : Supervised Learning in Feedforward Artificial Neural Networks.

I took a graduate neural networks course with Dr. Hagan who used this book. The book analyzes the contemporary algorithms for neural nets and shows why neural nets work (and don't work). MATLAB examples are on the supplemental disk but they can be coded easily in other languages. The convergence toward a solution is shown using 2D and 3D plots.

Seems like an excellent book so farI tried about 10 other books on Neural networks, and always got stuck after the first chapter.This book, actually EXPLAINS stuff.It explains the mathematics very nicely before it is used with Neural networks, and there are loads, and loads of worked examples.As long as you go through the worked examples, you can learn the material.The book refers a lot to Matlab, I dont think you need Matlab to understand the book, but will get more out of the book if you have Matlab.I used Mathematica for symbolics, when studying the book, (I suppose I could have used Matlab instead,but you will need some symbolic software)A very excellent and readable book.They also give it away for free on the internet, but I recommend getting the book, as saves hassle of printing stuff out, and you need a hard copy,to write notes on.A curious thing, an excellent textbook (in my opinion the best on the subject), and apparently they have a set of instructional videos to gowith it. Why don't they just post the instructional videos on youtube, then charge 100 bucks for the book. I would still consider the excellent value at that price. I think the goal of the book, is to prop up Matlab's position as number 1 piece of software for Neural networks.But seriously, a book that helps you learn and study neural networks, and the ONLY book that I have come across so far, that seems to do a good job of explaining.Good explanations, Many, many worked examples, well presented, a LINEAR learning curve.(A lot of books seems to have an easy first chapter to sell the book, then go off the cliff, but this seems linear throughout)So, lots of good points, would recommend, especially if you find, like me you got bogged down in other texts.

I knew the very poor Matlab Neural Network Toolbox User's Guide by the same authors and I was kind of expecting the same, and boy was I wrong!This book is simply brilliant, a miracle of pedagogy. It is intended for undergrad classes, but it is so clear that graduate students will benefit enormously from reading it before any other material. Plainly put, this book makes you

UNDERSTAND this difficult topic, more than any other book that I know of (Zurada, Smith, Hassoun, Haykin, Duda-Hart, Caudill, etc)A selection of worked out problems are included at the end of each chapter, a practice that is highly beneficial but alas too rare in books of the kind.I very much appreciated the very clear exposition of backpropagation, and optimization methods such as Levenberg-Marquardt.A note to Matlab users: funky demos are available for free and illustrate the main points of the book.

I purchased this book while looking for an appropriate textbook for use in my class on neural networks. This book is excellent for both beginners and experts. It is a rare book in that it demonstrates complex mathematical manipulations and principles (that are difficult to grasp and visualize - and explain) using examples. The review on mathematical principles is very useful. The book makes it easier to teach the subject now. Given the way everything is presented, this book will also help those that want to code their own networks. I recommend this book to everyone.

This book has an easy way the explain the complex of Neural Networks. Begins by a short resume first chapter that allows you understand the concepts and mathematical background of Neural Networks. Then you read chaptter after chapter and get deep and deep on Neural Networks. First you discover that they can clasify objects on diferent classes. After that you are notified that they can predict values based on historical data. And more interesting they can recognize patterns of objects. All of this with complete support of theory and mathematical explanations. This book is the perfect book for biliografy as theorical and practical background.

I have been fortunate to take Dr.Hagan's neural network class and use this book as the text. He is (in my opinion) one of the most understandable authors on this subject (which comes from his vast knowledge of the field). The book makes use of clear examples and informative diagrams. I may have skipped a few classes (sorry Dr. Hagan) but I had no problem at all learning the material from this book. I now write neural net (among other AI schemas) code on a regular basis and still use Hagan's book as a reference.

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