



Neural Smithing: Supervised Learning in Feedforward Artificial Neural Networks (MIT Press)

By Russell Reed, Robert J Marks II

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Artificial neural networks are nonlinear mapping systems whose structure is loosely based on principles observed in the nervous systems of humans and animals. The basic idea is that massive systems of simple units linked together in appropriate ways can generate many complex and interesting behaviors. This book focuses on the subset of feedforward artificial neural networks called multilayer perceptrons (MLP). These are the mostly widely used neural networks, with applications as diverse as finance (forecasting), manufacturing (process control), and science (speech and image recognition).

This book presents an extensive and practical overview of almost every aspect of MLP methodology, progressing from an initial discussion of what MLPs are and how they might be used to an in-depth examination of technical factors affecting performance. The book can be used as a tool kit by readers interested in applying networks to specific problems, yet it also presents theory and references outlining the last ten years of MLP research.

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Editorial Review

Amazon.com Review

A practical book, *Neural Smithing* is aimed at the reader who intends to design and build neural networks for applications from forecasting to pattern recognition. The authors concentrate on multilayer perceptrons (MLPs) as the most commonly used neural network model, which adds to the book's overall clarity and focus.

This textbook-style reference begins with simple, single-layer networks and the elements of supervised learning. It then builds on these basics with such topics as error surfaces, genetic algorithms, and generalization. Examples and illustrations guide the reader through the discussion, but the authors don't suggest problems for further study--a small omission in an otherwise well-constructed book.

Readers must know calculus and statistics to make sense of the text, but they don't need much knowledge of neural computing. Whether used as an introductory textbook or as a professional reference, *Neural Smithing* is highly useful. Tightly focused and easy to use, it should have a place next to every neural toolbox. --*Rob Lightner*

About the Author

Russell D. Reed is Research Assistant Professor of Electrical Engineering, and Robert J. Marks II is Professor of Electrical Engineering, both at the University of Washington.

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