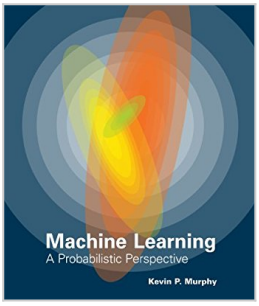

Machine Learning: A Probabilistic Perspective (Adaptive Computation and Machine Learning series)

By Kevin P. Murphy

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Today's Web-enabled deluge of electronic data calls for automated methods of data analysis. Machine learning provides these, developing methods that can automatically detect patterns in data and then use the uncovered patterns to predict future data. This textbook offers a comprehensive and self-contained introduction to the field of machine learning, based on a unified, probabilistic approach. The coverage combines breadth and depth, offering necessary background material on such topics as probability, optimization, and linear algebra as well as discussion of recent developments in the field, including conditional random fields, L1 regularization, and deep learning. The book is written in an informal, accessible style, complete with pseudo-code for the most important algorithms. All topics are copiously illustrated with color images and worked examples drawn from such application domains as biology, text processing, computer vision, and robotics. Rather than providing a cookbook of different heuristic methods, the book stresses a principled model-based approach, often using the language of graphical models to specify models in a concise and intuitive way. Almost all the models described have been implemented in a MATLAB software package -- PMTK (probabilistic modeling toolkit) -- that is freely available online. The book is suitable for upper-level undergraduates with an introductory-level college math background and beginning graduate students.

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Editorial Review

Review

An astonishing machine learning book: intuitive, full of examples, fun to read but still comprehensive, strong and deep! A great starting point for any university student -- and a must have for anybody in the field.

(**Jan Peters**, Darmstadt University of Technology; Max-Planck Institute for Intelligent Systems)

Kevin Murphy excels at unraveling the complexities of machine learning methods while motivating the reader with a stream of illustrated examples and real world case studies. The accompanying software package includes source code for many of the figures, making it both easy and very tempting to dive in and explore these methods for yourself. A must-buy for anyone interested in machine learning or curious about how to extract useful knowledge from big data.

(**John Winn**, Microsoft Research, Cambridge)

This is a wonderful book that starts with basic topics in statistical modeling, culminating in the most advanced topics. It provides both the theoretical foundations of probabilistic machine learning as well as practical tools, in the form of Matlab code.The book should be on the shelf of any student interested in the topic, and any practitioner working in the field.

(**Yoram Singer**, Google Inc.)

This book will be an essential reference for practitioners of modern machine learning. It covers the basic concepts needed to understand the field as whole, and the powerful modern methods that build on those concepts. In *Machine Learning*, the language of probability and statistics reveals important connections between seemingly disparate algorithms and strategies.Thus, its readers will become articulate in a holistic view of the state-of-the-art and poised to build the next generation of machine learning algorithms.

(**David Blei**, Princeton University)

This comprehensive book should be of great interest to learners and practitioners in the field of machine learning.

(*British Computer Society*)

About the Author
Kevin P. Murphy is a Research Scientist at Google. Previously, he was Associate Professor of Computer Science and Statistics at the University of British Columbia.

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