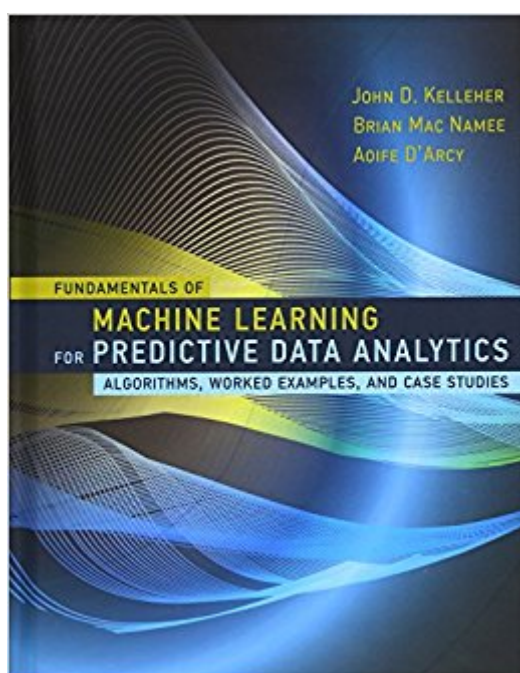


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# Fundamentals Of Machine Learning For Predictive Data Analytics: Algorithms, Worked Examples, And Case Studies (MIT Press)



## Synopsis

Machine learning is often used to build predictive models by extracting patterns from large datasets. These models are used in predictive data analytics applications including price prediction, risk assessment, predicting customer behavior, and document classification. This introductory textbook offers a detailed and focused treatment of the most important machine learning approaches used in predictive data analytics, covering both theoretical concepts and practical applications. Technical and mathematical material is augmented with explanatory worked examples, and case studies illustrate the application of these models in the broader business context. After discussing the trajectory from data to insight to decision, the book describes four approaches to machine learning: information-based learning, similarity-based learning, probability-based learning, and error-based learning. Each of these approaches is introduced by a nontechnical explanation of the underlying concept, followed by mathematical models and algorithms illustrated by detailed worked examples. Finally, the book considers techniques for evaluating prediction models and offers two case studies that describe specific data analytics projects through each phase of development, from formulating the business problem to implementation of the analytics solution. The book, informed by the authors' many years of teaching machine learning, and working on predictive data analytics projects, is suitable for use by undergraduates in computer science, engineering, mathematics, or statistics; by graduate students in disciplines with applications for predictive data analytics; and as a reference for professionals.

## Book Information

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## Customer Reviews

Erudite yet real-world relevant. It's true that predictive analytics and machine learning go hand-in-hand: To put it loosely, prediction depends on learning from past examples. And, while *Fundamentals* succeeds as a comprehensive university textbook covering exactly how that works, the authors also recognize that predictive analytics is today's most booming commercial application of machine learning. So, in an unusual turn, this highly enriching opus brings the concepts to light with industry case studies and best practices, ensuring you'll experience the real-world value and avoid getting lost in abstraction. (Eric Siegel, Ph.D., founder of Predictive Analytics World; author of *Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die*) This book provides excellent descriptions of the key methods used in predictive analytics. However, the unique value of this book is the insight it provides into the practical applications of these methods. The case studies and the sections on data preparation and data quality reflect the real-world challenges in the effective use of predictive analytics. (Pádraig Cunningham, Professor of Knowledge and Data Engineering, School of Computer Science, University College Dublin; coeditor of *Machine Learning Techniques for Multimedia*) This is a wonderful self-contained book that touches upon the essential aspects of machine learning and presents them in a clear and intuitive light. With its incremental discussions ranging from anecdotal accounts underlying the 'big idea' to more complex information theoretic, probabilistic, statistic, and optimization theoretic concepts, its emphasis on how to turn a business problem into an analytics solution, and its pertinent case studies and illustrations, this book makes for an easy and compelling read, which I recommend greatly to anyone interested in finding out more about machine learning and its applications to predictive analytics. (Nathalie Japkowicz, Professor of Computer Science, University of Ottawa; coauthor of *Evaluating Learning Algorithms: A Classification Perspective*)

John D. Kelleher is a Lecturer at the Dublin Institute of Technology, and a founding member of DIT's Applied Intelligence Research Center. Brian Mac Namee is a Lecturer at University College Dublin. Aoife D'Arcy is CEO of The Analytics Store, a data analytics consultancy and training company.

Excellent content and very well written. I consider a must read book to who wants to learn about machine learning algorithms.

Supervised machine learning only. Basically a bunch of applications for an undergrad CS class. Light on theory. Very well structured though and excellent if you want to see some applications of machine learning in action. For deeper treatment see coursera courses by Geoff Hinton of Toronto and the Stanford ML class.

Fantastic book....absolutely nailed it. Read this before you jump into coding using Open source tools like python or use enterprise wide tools like SAS for machine learning.

I am ML specialist and instructor. There are many different types of books in Machine Learning. That cover various aspects of the field. Some books are based on the theoretic side: Learning from the Data. Some books provide a gentle way for programming for Machine Learning in different languages. Some books combine theory and programming. This book "Fundamentals of Machine Learning" is a good written book for practitioners in machine learning. For people that want to know how machine learning experts work. The processes they use, and how they organize their work. In addition, basic properties and ideas of general algorithms are discussed. This book uses excellent plain English, many examples and real cases. But if you need mathematical background or programming background I think you need use another book.

Excellent book

Well written, well laid out and (best of all) an exceedingly useful treatment of machine learning and predictive data analytics. Highly recommended.

Amazing

This is one of the best books on any subject I have read. Every aspect of this book -- approach, flow, content, theory, example, explanation -- is great. Reading this book was an excellent learning opportunity for me. The authors are dealing with a complicated topic of machine learning with such an ease and are practically explaining every concept/equation and its implementation. This will be a permanent addition to my library and will serve as excellent reference whenever I need to check relevant information.

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