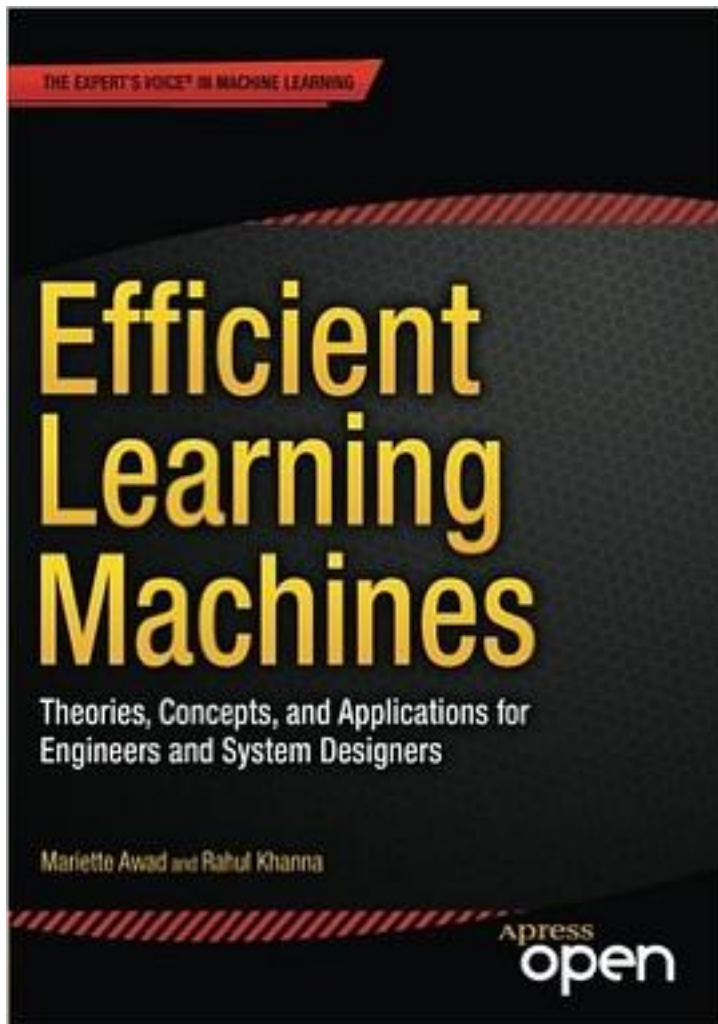


Efficient Learning Machines: Theories, Concepts, and Applications for Engineers and System Designers



[Efficient Learning Machines: Theories, Concepts, and Applications for Engineers and System Designers_ 下载链接1](#)

著者:Mariette Awad

出版者:Apress

出版时间:2015-4-30

装帧:Paperback

Machine learning techniques provide cost-effective alternatives to traditional methods for extracting underlying relationships between information and data and for predicting future events by processing existing information to train models. Efficient Learning Machines explores the major topics of machine learning, including knowledge discovery, classifications, genetic algorithms, neural networking, kernel methods, and biologically-inspired techniques.

Mariette Awad and Rahul Khanna's synthetic approach weaves together the theoretical exposition, design principles, and practical applications of efficient machine learning. Their experiential emphasis, expressed in their close analysis of sample algorithms throughout the book, aims to equip engineers, students of engineering, and system designers to design and create new and more efficient machine learning systems. Readers of Efficient Learning Machines will learn how to recognize and analyze the problems that machine learning technology can solve for them, how to implement and deploy standard solutions to sample problems, and how to design new systems and solutions.

Advances in computing performance, storage, memory, unstructured information retrieval, and cloud computing have coevolved with a new generation of machine learning paradigms and big data analytics, which the authors present in the conceptual context of their traditional precursors. Awad and Khanna explore current developments in the deep learning techniques of deep neural networks, hierarchical temporal memory, and cortical algorithms.

Nature suggests sophisticated learning techniques that deploy simple rules to generate highly intelligent and organized behaviors with adaptive, evolutionary, and distributed properties. The authors examine the most popular biologically-inspired algorithms, together with a sample application to distributed datacenter management. They also discuss machine learning techniques for addressing problems of multi-objective optimization in which solutions in real-world systems are constrained and evaluated based on how well they perform with respect to multiple objectives in aggregate. Two chapters on support vector machines and their extensions focus on recent improvements to the classification and regression techniques at the core of machine learning.

What you'll learn

Efficient Learning Machines systematically guides readers to an understanding and practical mastery of the following techniques:

the machine learning techniques most commonly used to solve complex real-world problems
recent improvements to classification and regression techniques
the application of bio-inspired techniques to real-life problems
new deep learning techniques that exploit advances in computing performance and storage
machine learning techniques for solving multi-objective optimization problems with nondominated methods that minimize distance to the Pareto front

Who this book is for

Efficient Learning Machines equips engineers, students of engineering, and system

designers with the knowledge and guidance to design and create new and more efficient machine learning systems.

Table of Contents

Chapter 1. Machine Learning

Chapter 2. Machine Learning and Knowledge Discovery

Chapter 3. Support Vector Machines for Classification

Chapter 4. Support Vector Regression

Chapter 5. Hidden Markov Model

Chapter 6. Bio-Inspired Computing: Swarm Intelligence

Chapter 7. Deep Neural Networks

Chapter 8. Cortical Algorithms

Chapter 9. Deep Learning

Chapter 10. Multiobjective Optimization

Chapter 11. Machine Learning in Action: Examples

作者介绍:

About the Author

Rahul Khanna is a platform architect at Intel Corporation involved in development of energy-efficient algorithms. Over the past 17 years he has worked on server system software technologies, including platform automation, power/thermal optimization techniques, reliability, optimization, and predictive methodologies. He has authored numerous technical papers and book chapters in the areas related to energy optimization, platform wireless interconnects, sensor networks, interconnect reliability, predictive modeling, motion estimation, and security. He holds 27 patents. He is the co-inventor of the Intel IBIST methodology for High-Speed interconnect testing. His research interests include machine learning-based power/thermal optimization algorithms, narrow-channel high-speed wireless interconnects, and information retrieval in dense sensor networks. Rahul is member of IEEE and the recipient of three Intel Achievement Awards for his contributions in areas related to advancements of platform technologies. He is the author of *A Vision for Platform Autonomy: Robust Frameworks for Systems*.

Mariette Awad is an assistant professor in the Electrical and Computer Engineering Department of the American University of Beirut. She received her PhD in electrical engineering from the University of Vermont and was a visiting professor at Virginia Commonwealth University, Intel Mobile Group, and MIT. She worked in the IBM System and Technology group as a wireless product engineer. She is the recipient of numerous patents and business awards. Her published research interests include machine learning, data analytics, and energy-aware computing.

目录:

[Efficient Learning Machines: Theories, Concepts, and Applications for Engineers and System Designers_ 下载链接1](#)

标签

摄影

TML

评论

[Efficient Learning Machines: Theories, Concepts, and Applications for Engineers and System Designers_ 下载链接1](#)

书评

[Efficient Learning Machines: Theories, Concepts, and Applications for Engineers and System Designers_ 下载链接1](#)