

Machine Learning With R

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Machine Learning with R - Brett Lantz
2015-07-31

Updated and upgraded to the latest libraries and most modern thinking, Machine Learning with R, Second Edition provides you with a rigorous introduction to this essential skill of professional data science. Without shying away from technical theory, it is written to provide focused and practical knowledge to get you building

algorithms and crunching your data, with minimal previous experience. With this book, you'll discover all the analytical tools you need to gain insights from complex data and learn how to choose the correct algorithm for your specific needs. Through full engagement with the sort of real-world problems data-wranglers face, you'll learn to apply machine learning methods to deal with common tasks, including classification,

prediction, forecasting, market analysis, and clustering.

Data Science, Analytics and Machine Learning with R - Luiz Paulo Favero

2022-07-15

Data Science, Analytics, and Machine Learning with R explains the principles of data mining and machine learning techniques and accentuates the importance of applied and multivariate modeling. The book emphasizes the fundamentals of each technique, with step-by-step codes and real-world examples with data from areas such as medicine and health, biology, engineering, technology, and related sciences. The authors want to mitigate the readers' feeling that they may be sitting in front of a black box. Toward this end, examples use the most recent R language syntax, with recognized robust, widespread and current packages. Code scripts are exhaustively commented, making it clear to readers what happens in each command. For data collection, readers are instructed how to

build their own robots from the very beginning (not only API type, but also handcrafted ones). An entire chapter focuses on the concept of spatial analysis, allowing readers to build their own maps through geo-referenced data (such as in epidemiologic research) and some basic statistical techniques. Other chapters cover ensemble and uplift modelling, and GLMM (Generalized Linear Mixed Models) estimations, both linear and nonlinear. The book will serve computer and data scientists working with researchers, clinicians, and engineers, as well as the researchers and engineers themselves who find themselves working in multidisciplinary teams and need a more in-depth understanding of machine learning, data mining and AI than is normally taught in their courses. Presents a comprehensive and practical overview of machine learning, data mining and AI techniques for a broad multidisciplinary audience Serves both readers who are interested in statistics, analytics and modeling and those

who wish to deepen their knowledge in programming through the use of R Teaches readers how to apply machine learning techniques to a wide range of data and subject areas Presents data in a graphically appealing way, promoting greater information transparency and interactive learning

Machine Learning with R, the tidyverse, and mlr - Hefin I. Rhys 2020-03-31

Summary Machine learning (ML) is a collection of programming techniques for discovering relationships in data. With ML algorithms, you can cluster and classify data for tasks like making recommendations or fraud detection and make predictions for sales trends, risk analysis, and other forecasts. Once the domain of academic data scientists, machine learning has become a mainstream business process, and tools like the easy-to-learn R programming language put high-quality data analysis in the hands of any programmer. Machine Learning with R, the tidyverse, and mlr teaches you

widely used ML techniques and how to apply them to your own datasets using the R programming language and its powerful ecosystem of tools. This book will get you started! Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the book Machine Learning with R, the tidyverse, and mlr gets you started in machine learning using R Studio and the awesome mlr machine learning package. This practical guide simplifies theory and avoids needlessly complicated statistics or math. All core ML techniques are clearly explained through graphics and easy-to-grasp examples. In each engaging chapter, you'll put a new algorithm into action to solve a quirky predictive analysis problem, including Titanic survival odds, spam email filtering, and poisoned wine investigation. What's inside Using the tidyverse packages to process and plot your data Techniques for supervised and unsupervised learning Classification, regression, dimension

reduction, and clustering algorithms Statistics primer to fill gaps in your knowledge About the reader For newcomers to machine learning with basic skills in R. About the author Hefin I. Rhys is a senior laboratory research scientist at the Francis Crick Institute. He runs his own YouTube channel of screencast tutorials for R and RStudio. Table of contents: PART 1 - INTRODUCTION 1. Introduction to machine learning 2. Tidying, manipulating, and plotting data with the tidyverse PART 2 - CLASSIFICATION 3. Classifying based on similarities with k-nearest neighbors 4. Classifying based on odds with logistic regression 5. Classifying by maximizing separation with discriminant analysis 6. Classifying with naive Bayes and support vector machines 7. Classifying with decision trees 8. Improving decision trees with random forests and boosting PART 3 - REGRESSION 9. Linear regression 10. Nonlinear regression with generalized additive models 11. Preventing

overfitting with ridge regression, LASSO, and elastic net 12. Regression with kNN, random forest, and XGBoost PART 4 - DIMENSION REDUCTION 13. Maximizing variance with principal component analysis 14. Maximizing similarity with t-SNE and UMAP 15. Self-organizing maps and locally linear embedding PART 5 - CLUSTERING 16. Clustering by finding centers with k-means 17. Hierarchical clustering 18. Clustering based on density: DBSCAN and OPTICS 19. Clustering based on distributions with mixture modeling 20. Final notes and further reading

Machine Learning with R - Abhijit Ghatak
2017-11-23

This book helps readers understand the mathematics of machine learning, and apply them in different situations. It is divided into two basic parts, the first of which introduces readers to the theory of linear algebra, probability, and data distributions and it's applications to machine learning. It also includes a detailed

introduction to the concepts and constraints of machine learning and what is involved in designing a learning algorithm. This part helps readers understand the mathematical and statistical aspects of machine learning. In turn, the second part discusses the algorithms used in supervised and unsupervised learning. It works out each learning algorithm mathematically and encodes it in R to produce customized learning applications. In the process, it touches upon the specifics of each algorithm and the science behind its formulation. The book includes a wealth of worked-out examples along with R codes. It explains the code for each algorithm, and readers can modify the code to suit their own needs. The book will be of interest to all researchers who intend to use R for machine learning, and those who are interested in the practical aspects of implementing learning algorithms for data analysis. Further, it will be particularly useful and informative for anyone who has struggled to relate the concepts of

mathematics and statistics to machine learning.
Hands-On Machine Learning with R - Brad Boehmke 2019

"This book is designed to introduce the concept of advanced business analytic approaches and would be the first to cover the gamut of how to use the R programming language to apply descriptive, predictive, and prescriptive analytic methodologies for problem solving"--
Supervised Machine Learning for Text Analysis in R - Emil Hvitfeldt 2021-10-22

Text data is important for many domains, from healthcare to marketing to the digital humanities, but specialized approaches are necessary to create features for machine learning from language. *Supervised Machine Learning for Text Analysis in R* explains how to preprocess text data for modeling, train models, and evaluate model performance using tools from the tidyverse and tidymodels ecosystem. Models like these can be used to make predictions for new observations, to understand

what natural language features or characteristics contribute to differences in the output, and more. If you are already familiar with the basics of predictive modeling, use the comprehensive, detailed examples in this book to extend your skills to the domain of natural language processing. This book provides practical guidance and directly applicable knowledge for data scientists and analysts who want to integrate unstructured text data into their modeling pipelines. Learn how to use text data for both regression and classification tasks, and how to apply more straightforward algorithms like regularized regression or support vector machines as well as deep learning approaches. Natural language must be dramatically transformed to be ready for computation, so we explore typical text preprocessing and feature engineering steps like tokenization and word embeddings from the ground up. These steps influence model results in ways we can measure, both in terms of model

metrics and other tangible consequences such as how fair or appropriate model results are.

Machine Learning with R Quick Start Guide

- Iván Pastor Sanz 2019-03-29

This book is ideal for people wanting to get up-and-running with the core concepts of machine learning using R 3.5. This book follows a step-by-step approach to implementing an end-to-end pipeline, addressing data collection and processing, various types of data analysis, and machine learning use cases.

Practical Machine Learning in R - Fred

Nwanganga 2020-05-27

Guides professionals and students through the rapidly growing field of machine learning with hands-on examples in the popular R programming language. Machine learning—a branch of Artificial Intelligence (AI) which enables computers to improve their results and learn new approaches without explicit instructions—allows organizations to reveal patterns in their data and incorporate predictive

analytics into their decision-making process. Practical Machine Learning in R provides a hands-on approach to solving business problems with intelligent, self-learning computer algorithms. Bestselling author and data analytics experts Fred Nwanganga and Mike Chapple explain what machine learning is, demonstrate its organizational benefits, and provide hands-on examples created in the R programming language. A perfect guide for professional self-taught learners or students in an introductory machine learning course, this reader-friendly book illustrates the numerous real-world business uses of machine learning approaches. Clear and detailed chapters cover data wrangling, R programming with the popular RStudio tool, classification and regression techniques, performance evaluation, and more. Explores data management techniques, including data collection, exploration and dimensionality reduction Covers unsupervised learning, where readers identify and summarize

patterns using approaches such as apriori, eclat and clustering Describes the principles behind the Nearest Neighbor, Decision Tree and Naive Bayes classification techniques Explains how to evaluate and choose the right model, as well as how to improve model performance using ensemble methods such as Random Forest and XGBoost Practical Machine Learning in R is a must-have guide for business analysts, data scientists, and other professionals interested in leveraging the power of AI to solve business problems, as well as students and independent learners seeking to enter the field.

Hands-On Machine Learning with R - Brad Boehmke 2019-11-07

Hands-on Machine Learning with R provides a practical and applied approach to learning and developing intuition into today's most popular machine learning methods. This book serves as a practitioner's guide to the machine learning process and is meant to help the reader learn to apply the machine learning stack within R,

which includes using various R packages such as glmnet, h2o, ranger, xgboost, keras, and others to effectively model and gain insight from their data. The book favors a hands-on approach, providing an intuitive understanding of machine learning concepts through concrete examples and just a little bit of theory. Throughout this book, the reader will be exposed to the entire machine learning process including feature engineering, resampling, hyperparameter tuning, model evaluation, and interpretation. The reader will be exposed to powerful algorithms such as regularized regression, random forests, gradient boosting machines, deep learning, generalized low rank models, and more! By favoring a hands-on approach and using real word data, the reader will gain an intuitive understanding of the architectures and engines that drive these algorithms and packages, understand when and how to tune the various hyperparameters, and be able to interpret model results. By the end of this book,

the reader should have a firm grasp of R's machine learning stack and be able to implement a systematic approach for producing high quality modeling results. Features:

- Offers a practical and applied introduction to the most popular machine learning methods.
- Topics covered include feature engineering, resampling, deep learning and more.
- Uses a hands-on approach and real world data.

Deep Learning with R - J.J. Allaire 2018-01-22
Summary Deep Learning with R introduces the world of deep learning using the powerful Keras library and its R language interface. The book builds your understanding of deep learning through intuitive explanations and practical examples. Continue your journey into the world of deep learning with Deep Learning with R in Motion, a practical, hands-on video course available exclusively at Manning.com (www.manning.com/livevideo/deep-learning-with-r-in-motion). Purchase of the print book includes a free eBook in PDF, Kindle, and

ePub formats from Manning Publications. About the Technology Machine learning has made remarkable progress in recent years. Deep-learning systems now enable previously impossible smart applications, revolutionizing image recognition and natural-language processing, and identifying complex patterns in data. The Keras deep-learning library provides data scientists and developers working in R a state-of-the-art toolset for tackling deep-learning tasks. About the Book Deep Learning with R introduces the world of deep learning using the powerful Keras library and its R language interface. Initially written for Python as Deep Learning with Python by Keras creator and Google AI researcher François Chollet and adapted for R by RStudio founder J. J. Allaire, this book builds your understanding of deep learning through intuitive explanations and practical examples. You'll practice your new skills with R-based applications in computer vision, natural-language processing, and

generative models. What's Inside Deep learning from first principles Setting up your own deep-learning environment Image classification and generation Deep learning for text and sequences About the Reader You'll need intermediate R programming skills. No previous experience with machine learning or deep learning is assumed. About the Authors François Chollet is a deep-learning researcher at Google and the author of the Keras library. J.J. Allaire is the founder of RStudio and the author of the R interfaces to TensorFlow and Keras. Table of Contents PART 1 - FUNDAMENTALS OF DEEP LEARNING What is deep learning? Before we begin: the mathematical building blocks of neural networks Getting started with neural networks Fundamentals of machine learning PART 2 - DEEP LEARNING IN PRACTICE Deep learning for computer vision Deep learning for text and sequences Advanced deep-learning best practices Generative deep learning Conclusions **Pro Machine Learning Algorithms** - V Kishore

Ayyadevara 2018-06-30

Bridge the gap between a high-level understanding of how an algorithm works and knowing the nuts and bolts to tune your models better. This book will give you the confidence and skills when developing all the major machine learning models. In Pro Machine Learning Algorithms, you will first develop the algorithm in Excel so that you get a practical understanding of all the levers that can be tuned in a model, before implementing the models in Python/R. You will cover all the major algorithms: supervised and unsupervised learning, which include linear/logistic regression; k-means clustering; PCA; recommender system; decision tree; random forest; GBM; and neural networks. You will also be exposed to the latest in deep learning through CNNs, RNNs, and word2vec for text mining. You will be learning not only the algorithms, but also the concepts of feature engineering to maximize the performance of a

model. You will see the theory along with case studies, such as sentiment classification, fraud detection, recommender systems, and image recognition, so that you get the best of both theory and practice for the vast majority of the machine learning algorithms used in industry. Along with learning the algorithms, you will also be exposed to running machine-learning models on all the major cloud service providers. You are expected to have minimal knowledge of statistics/software programming and by the end of this book you should be able to work on a machine learning project with confidence. What You Will Learn Get an in-depth understanding of all the major machine learning and deep learning algorithms Fully appreciate the pitfalls to avoid while building models Implement machine learning algorithms in the cloud Follow a hands-on approach through case studies for each algorithm Gain the tricks of ensemble learning to build more accurate models Discover the basics of programming in R/Python and the

Keras framework for deep learning Who This Book Is For Business analysts/ IT professionals who want to transition into data science roles. Data scientists who want to solidify their knowledge in machine learning.

Practical Machine Learning with R and Python: Third Edition - Tinniam V. Ganesh 2019

This is the 3rd edition of the book. All the code sections are formatted with fixed-width font Consolas for better readability. This book implements many common Machine Learning algorithms in equivalent R and Python. The book touches on R and Python implementations of different regression models, classification algorithms including logistic regression, KNN classification, SVMs, b-splines, random forest, boosting etc. Other techniques like best-fit, forward fit, backward fit, and lasso and ridge regression are also covered. The book further touches on classification metrics for computing accuracy, recall, precision etc. There are

implementations of validation, ROC and AUC curves in both R and Python. Finally, the book covers unsupervised learning methods like K-Means, PCA and Hierarchical clustering. The book is well suited for the novice and the expert. The first two chapters discuss the most important programming constructs in R and Python. The third chapter highlights equivalent programming phrases in R and Python. Hence, those with no knowledge of R and Python will find these introductory chapters useful. Those who are proficient in one of the language can further their knowledge on the other. Those are familiar with both R and Python will find the equivalent implementations useful to internalize the algorithms. This book should serve as a useful and handy reference for Machine Learning algorithms in both R and Python Just Enough R! - Richard J. Roiger 2020-05-20 Just Enough R! An Interactive Approach to Machine Learning and Analytics presents just enough of the R language, machine learning

algorithms, statistical methodology, and analytics for the reader to learn how to find interesting structure in data. The approach might be called "seeing then doing" as it first gives step-by-step explanations using simple, understandable examples of how the various machine learning algorithms work independent of any programming language. This is followed by detailed scripts written in R that apply the algorithms to solve nontrivial problems with real data. The script code is provided, allowing the reader to execute the scripts as they study the explanations given in the text. Features Gets you quickly using R as a problem-solving tool Uses RStudio's integrated development environment Shows how to interface R with SQLite Includes examples using R's Rattle graphical user interface Requires no prior knowledge of R, machine learning, or computer programming Offers over 50 scripts written in R, including several problem-solving templates that, with slight modification, can be used again and again

Covers the most popular machine learning techniques, including ensemble-based methods and logistic regression Includes end-of-chapter exercises, many of which can be solved by modifying existing scripts Includes datasets from several areas, including business, health and medicine, and science About the Author Richard J. Roiger is a professor emeritus at Minnesota State University, Mankato, where he taught and performed research in the Computer and Information Science Department for over 30 years.

The Art of Machine Learning - Norman Matloff
2023-02-14

Learn to expertly apply a range of machine learning methods to real data with this practical guide. Machine learning without advanced math! This book presents a serious, practical look at machine learning, preparing you for valuable insights on your own data. The Art of Machine Learning is packed with real dataset examples and sophisticated advice on how to make full use

of powerful machine learning methods. Readers will need only an intuitive grasp of charts, graphs, and the slope of a line, as well as familiarity with the R programming language. You'll become skilled in a range of machine learning methods, starting with the simple k-Nearest Neighbors method (k-NN), then on to random forests, gradient boosting, linear/logistic models, support vector machines, the LASSO, and neural networks. Final chapters introduce text and image classification, as well as time series. You'll learn not only how to use machine learning methods, but also why these methods work, providing the strong foundational background you'll need in practice. Additional features: How to avoid common problems, such as dealing with "dirty" data and factor variables with large numbers of levels A look at typical misconceptions, such as dealing with unbalanced data Exploration of the famous Bias-Variance Tradeoff, central to machine learning, and how it plays out in practice for each

machine learning method Dozens of illustrative examples involving real datasets of varying size and field of application Standard R packages are used throughout, with a simple wrapper interface to provide convenient access. After finishing this book, you will be well equipped to start applying machine learning techniques to your own datasets.

R Machine Learning Projects - Dr. Sunil Kumar Chinnamgari 2019-01-14

Master a range of machine learning domains with real-world projects using TensorFlow for R, H2O, MXNet, and more Key Features Master machine learning, deep learning, and predictive modeling concepts in R 3.5 Build intelligent end-to-end projects for finance, retail, social media, and a variety of domains Implement smart cognitive models with helpful tips and best practices Book Description R is one of the most popular languages when it comes to performing computational statistics (statistical computing) easily and exploring the mathematical side of

machine learning. With this book, you will leverage the R ecosystem to build efficient machine learning applications that carry out intelligent tasks within your organization. This book will help you test your knowledge and skills, guiding you on how to build easily through to complex machine learning projects. You will first learn how to build powerful machine learning models with ensembles to predict employee attrition. Next, you'll implement a joke recommendation engine and learn how to perform sentiment analysis on Amazon reviews. You'll also explore different clustering techniques to segment customers using wholesale data. In addition to this, the book will get you acquainted with credit card fraud detection using autoencoders, and reinforcement learning to make predictions and win on a casino slot machine. By the end of the book, you will be equipped to confidently perform complex tasks to build research and commercial projects for automated operations.

What you will learn
Explore deep neural networks and various frameworks that can be used in R
Develop a joke recommendation engine to recommend jokes that match users' tastes
Create powerful ML models with ensembles to predict employee attrition
Build autoencoders for credit card fraud detection
Work with image recognition and convolutional neural networks
Make predictions for casino slot machine using reinforcement learning
Implement NLP techniques for sentiment analysis and customer segmentation
Who this book is for
If you're a data analyst, data scientist, or machine learning developer who wants to master machine learning concepts using R by building real-world projects, this is the book for you. Each project will help you test your skills in implementing machine learning algorithms and techniques. A basic understanding of machine learning and working knowledge of R programming is necessary to get the most out of this book.

Mathematics and Programming for Machine Learning with R - William B. Claster

2020-10-26

Based on the author's experience in teaching data science for more than 10 years, *Mathematics and Programming for Machine Learning with R: From the Ground Up* reveals how machine learning algorithms do their magic and explains how these algorithms can be implemented in code. It is designed to provide readers with an understanding of the reasoning behind machine learning algorithms as well as how to program them. Written for novice programmers, the book progresses step-by-step, providing the coding skills needed to implement machine learning algorithms in R. The book begins with simple implementations and fundamental concepts of logic, sets, and probability before moving to the coverage of powerful deep learning algorithms. The first eight chapters deal with probability-based machine learning algorithms, and the last eight

chapters deal with machine learning based on artificial neural networks. The first half of the book does not require mathematical sophistication, although familiarity with probability and statistics would be helpful. The second half assumes the reader is familiar with at least one semester of calculus. The text guides novice R programmers through algorithms and their application and along the way; the reader gains programming confidence in tackling advanced R programming challenges. Highlights of the book include: More than 400 exercises A strong emphasis on improving programming skills and guiding beginners to the implementation of full-fledged algorithms Coverage of fundamental computer and mathematical concepts including logic, sets, and probability In-depth explanations of machine learning algorithms

Behavior Analysis with Machine Learning Using R - Enrique Garcia Ceja 2021-11-26

Behavior Analysis with Machine Learning Using

R introduces machine learning and deep learning concepts and algorithms applied to a diverse set of behavior analysis problems. It focuses on the practical aspects of solving such problems based on data collected from sensors or stored in electronic records. The included examples demonstrate how to perform common data analysis tasks such as: data exploration, visualization, preprocessing, data representation, model training and evaluation. All of this, using the R programming language and real-life behavioral data. Even though the examples focus on behavior analysis tasks, the covered underlying concepts and methods can be applied in any other domain. No prior knowledge in machine learning is assumed. Basic experience with R and basic knowledge in statistics and high school level mathematics are beneficial. Features: Build supervised machine learning models to predict indoor locations based on WiFi signals, recognize physical activities from smartphone sensors and 3D

skeleton data, detect hand gestures from accelerometer signals, and so on. Program your own ensemble learning methods and use Multi-View Stacking to fuse signals from heterogeneous data sources. Use unsupervised learning algorithms to discover criminal behavioral patterns. Build deep learning neural networks with TensorFlow and Keras to classify muscle activity from electromyography signals and Convolutional Neural Networks to detect smiles in images. Evaluate the performance of your models in traditional and multi-user settings. Build anomaly detection models such as Isolation Forests and autoencoders to detect abnormal fish behaviors. This book is intended for undergraduate/graduate students and researchers from ubiquitous computing, behavioral ecology, psychology, e-health, and other disciplines who want to learn the basics of machine learning and deep learning and for the more experienced individuals who want to apply machine learning to analyze behavioral data.

Practical Machine Learning with R - Brindha Priyadarshini Jeyaraman 2019-08-30

Understand how machine learning works and get hands-on experience of using R to build algorithms that can solve various real-world problems

Key Features Gain a comprehensive overview of different machine learning techniques Explore various methods for selecting a particular algorithm Implement a machine learning project from problem definition through to the final model

Book Description With huge amounts of data being generated every moment, businesses need applications that apply complex mathematical calculations to data repeatedly and at speed. With machine learning techniques and R, you can easily develop these kinds of applications in an efficient way. *Practical Machine Learning with R* begins by helping you grasp the basics of machine learning methods, while also highlighting how and why they work. You will understand how to get these algorithms to work in practice, rather than focusing on

mathematical derivations. As you progress from one chapter to another, you will gain hands-on experience of building a machine learning solution in R. Next, using R packages such as rpart, random forest, and multiple imputation by chained equations (MICE), you will learn to implement algorithms including neural net classifier, decision trees, and linear and non-linear regression. As you progress through the book, you'll delve into various machine learning techniques for both supervised and unsupervised learning approaches. In addition to this, you'll gain insights into partitioning the datasets and mechanisms to evaluate the results from each model and be able to compare them. By the end of this book, you will have gained expertise in solving your business problems, starting by forming a good problem statement, selecting the most appropriate model to solve your problem, and then ensuring that you do not overtrain it. What you will learn

Define a problem that can be solved by training a machine learning

model Obtain, verify and clean data before transforming it into the correct format for use Perform exploratory analysis and extract features from data Build models for neural net, linear and non-linear regression, classification, and clustering Evaluate the performance of a model with the right metrics Implement a classification problem using the neural net package Employ a decision tree using the random forest library Who this book is for If you are a data analyst, data scientist, or a business analyst who wants to understand the process of machine learning and apply it to a real dataset using R, this book is just what you need. Data scientists who use Python and want to implement their machine learning solutions using R will also find this book very useful. The book will also enable novice programmers to start their journey in data science. Basic knowledge of any programming language is all you need to get started.

Machine Learning Using R - Karthik

Ramasubramanian 2018-12-12

Examine the latest technological advancements in building a scalable machine-learning model with big data using R. This second edition shows you how to work with a machine-learning algorithm and use it to build a ML model from raw data. You will see how to use R programming with TensorFlow, thus avoiding the effort of learning Python if you are only comfortable with R. As in the first edition, the authors have kept the fine balance of theory and application of machine learning through various real-world use-cases which gives you a comprehensive collection of topics in machine learning. New chapters in this edition cover time series models and deep learning. What You'll Learn Understand machine learning algorithms using R Master the process of building machine-learning models Cover the theoretical foundations of machine-learning algorithms See industry focused real-world use cases Tackle time series modeling in R Apply deep learning

using Keras and TensorFlow in R Who This Book is For Data scientists, data science professionals, and researchers in academia who want to understand the nuances of machine-learning approaches/algorithms in practice using R.

Machine Learning with R - Brett Lantz

2013-10-25

Written as a tutorial to explore and understand the power of R for machine learning. This practical guide that covers all of the need to know topics in a very systematic way. For each machine learning approach, each step in the process is detailed, from preparing the data for analysis to evaluating the results. These steps will build the knowledge you need to apply them to your own data science tasks. Intended for those who want to learn how to use R's machine learning capabilities and gain insight from your data. Perhaps you already know a bit about machine learning, but have never used R; or perhaps you know a little R but are new to machine learning. In either case, this book will

get you up and running quickly. It would be helpful to have a bit of familiarity with basic programming concepts, but no prior experience is required.

R Machine Learning by Example - Raghav Bali

2016-03-28

Understand the fundamentals of machine learning with R and build your own dynamic algorithms to tackle complicated real-world problems successfully About This Book- Get to grips with the concepts of machine learning through exciting real-world examples- Visualize and solve complex problems by using power-packed R constructs and its robust packages for machine learning- Learn to build your own machine learning system with this example-based practical guide Who This Book Is For If you are interested in mining useful information from data using state-of-the-art techniques to make data-driven decisions, this is a go-to guide for you. No prior experience with data science is required, although basic knowledge of R is

highly desirable. Prior knowledge in machine learning would be helpful but is not necessary. What You Will Learn- Utilize the power of R to handle data extraction, manipulation, and exploration techniques- Use R to visualize data spread across multiple dimensions and extract useful features- Explore the underlying mathematical and logical concepts that drive machine learning algorithms- Dive deep into the world of analytics to predict situations correctly- Implement R machine learning algorithms from scratch and be amazed to see the algorithms in action- Write reusable code and build complete machine learning systems from the ground up- Solve interesting real-world problems using machine learning and R as the journey unfolds- Harness the power of robust and optimized R packages to work on projects that solve real-world problems in machine learning and data science In Detail Data science and machine learning are some of the top buzzwords in the technical world

today. From retail stores to Fortune 500 companies, everyone is working hard to making machine learning give them data-driven insights to grow their business. With powerful data manipulation features, machine learning packages, and an active developer community, R empowers users to build sophisticated machine learning systems to solve real-world data problems. This book takes you on a data-driven journey that starts with the very basics of R and machine learning and gradually builds upon the concepts to work on projects that tackle real-world problems. You'll begin by getting an understanding of the core concepts and definitions required to appreciate machine learning algorithms and concepts. Building upon the basics, you will then work on three different projects to apply the concepts of machine learning, following current trends and cover major algorithms as well as popular R packages in detail. These projects have been neatly divided into six different chapters covering the

worlds of e-commerce, finance, and social-media, which are at the very core of this data-driven revolution. Each of the projects will help you to understand, explore, visualize, and derive insights depending upon the domain and algorithms. Through this book, you will learn to apply the concepts of machine learning to deal with data-related problems and solve them using the powerful yet simple language, R. Style and approach The book is an enticing journey that starts from the very basics to gradually pick up pace as the story unfolds. Each concept is first defined in the larger context of things succinctly, followed by a detailed explanation of their application. Each topic is explained with the help of a project that solves a real real-world problem involving hands-on work thus giving you a deep insight into the world of machine learning.

Mastering Machine Learning with R - Cory Lesmeister 2019-01-31

Machine learning is a field of AI where we build systems that learn from data. This book explains

complicated concepts with real-world applications. It demonstrates the power of R and machine learning extensively while highlighting the constraints. Finally, it will walk you through topics such as text analysis, time series, and deep learning.

Introduction to Machine Learning with R - Scott V. Burger 2018-03-07

Machine learning is an intimidating subject until you know the fundamentals. If you understand basic coding concepts, this introductory guide will help you gain a solid foundation in machine learning principles. Using the R programming language, you'll first start to learn with regression modelling and then move into more advanced topics such as neural networks and tree-based methods. Finally, you'll delve into the frontier of machine learning, using the caret package in R. Once you develop a familiarity with topics such as the difference between regression and classification models, you'll be able to solve an array of machine learning

problems. Author Scott V. Burger provides several examples to help you build a working knowledge of machine learning. Explore machine learning models, algorithms, and data training Understand machine learning algorithms for supervised and unsupervised cases Examine statistical concepts for designing data for use in models Dive into linear regression models used in business and science Use single-layer and multilayer neural networks for calculating outcomes Look at how tree-based models work, including popular decision trees Get a comprehensive view of the machine learning ecosystem in R Explore the powerhouse of tools available in R's caret package

Machine Learning with R - Brett Lantz

2019-04-15

Solve real-world data problems with R and machine learning Key Features Third edition of the bestselling, widely acclaimed R machine learning book, updated and improved for R 3.6 and beyond Harness the power of R to build

flexible, effective, and transparent machine learning models Learn quickly with a clear, hands-on guide by experienced machine learning teacher and practitioner, Brett Lantz Book Description Machine learning, at its core, is concerned with transforming data into actionable knowledge. R offers a powerful set of machine learning methods to quickly and easily gain insight from your data. Machine Learning with R, Third Edition provides a hands-on, readable guide to applying machine learning to real-world problems. Whether you are an experienced R user or new to the language, Brett Lantz teaches you everything you need to uncover key insights, make new predictions, and visualize your findings. This new 3rd edition updates the classic R data science book to R 3.6 with newer and better libraries, advice on ethical and bias issues in machine learning, and an introduction to deep learning. Find powerful new insights in your data; discover machine learning with R. What you will learn Discover the

origins of machine learning and how exactly a computer learns by example Prepare your data for machine learning work with the R programming language Classify important outcomes using nearest neighbor and Bayesian methods Predict future events using decision trees, rules, and support vector machines Forecast numeric data and estimate financial values using regression methods Model complex processes with artificial neural networks — the basis of deep learning Avoid bias in machine learning models Evaluate your models and improve their performance Connect R to SQL databases and emerging big data technologies such as Spark, H2O, and TensorFlow Who this book is for Data scientists, students, and other practitioners who want a clear, accessible guide to machine learning with R.

Machine Learning for Knowledge Discovery with R - Kao-Tai Tsai 2021-09-15

Machine Learning for Knowledge Discovery with R contains methodologies and examples for

statistical modelling, inference, and prediction of data analysis. It includes many recent supervised and unsupervised machine learning methodologies such as recursive partitioning modelling, regularized regression, support vector machine, neural network, clustering, and causal-effect inference. Additionally, it emphasizes statistical thinking of data analysis, use of statistical graphs for data structure exploration, and result presentations. The book includes many real-world data examples from life-science, finance, etc. to illustrate the applications of the methods described therein. Key Features: Contains statistical theory for the most recent supervised and unsupervised machine learning methodologies. Emphasizes broad statistical thinking, judgment, graphical methods, and collaboration with subject-matter-experts in analysis, interpretation, and presentations. Written by statistical data analysis practitioner for practitioners. The book is suitable for upper-level-undergraduate or

graduate-level data analysis course. It also serves as a useful desk-reference for data analysts in scientific research or industrial applications.

Machine Learning with R - Brett Lantz
2013-07

Written as a tutorial to explore and understand the power of R for machine learning. This practical guide that covers all of the need to know topics in a very systematic way. For each machine learning approach, each step in the process is detailed, from preparing the data for analysis to evaluating the results. These steps will build the knowledge you need to apply them to your own data science tasks. Intended for those who want to learn how to use R's machine learning capabilities and gain insight from your data. Perhaps you already know a bit about machine learning, but have never used R; or perhaps you know a little R but are new to machine learning. In either case, this book will get you up and running quickly. It would be

helpful to have a bit of familiarity with basic programming concepts, but no prior experience is required.

Machine Learning Using R - Karthik Ramasubramanian
2016-12-22

Examine the latest technological advancements in building a scalable machine learning model with Big Data using R. This book shows you how to work with a machine learning algorithm and use it to build a ML model from raw data. All practical demonstrations will be explored in R, a powerful programming language and software environment for statistical computing and graphics. The various packages and methods available in R will be used to explain the topics. For every machine learning algorithm covered in this book, a 3-D approach of theory, case-study and practice will be given. And where appropriate, the mathematics will be explained through visualization in R. All the images are available in color and hi-res as part of the code download. This new paradigm of teaching

machine learning will bring about a radical change in perception for many of those who think this subject is difficult to learn. Though theory sometimes looks difficult, especially when there is heavy mathematics involved, the seamless flow from the theoretical aspects to example-driven learning provided in this book makes it easy for someone to connect the dots..

What You'll Learn

- Use the model building process flow
- Apply theoretical aspects of machine learning
- Review industry-based case studies
- Understand ML algorithms using R
- Build machine learning models using Apache Hadoop and Spark

Who This Book is For

Data scientists, data science professionals and researchers in academia who want to understand the nuances of machine learning approaches/algorithms along with ways to see them in practice using R. The book will also benefit the readers who want to understand the technology behind implementing a scalable machine learning model using Apache Hadoop, Hive, Pig and Spark.

Machine Learning For Dummies - John Paul Mueller 2021-02-09

One of Mark Cuban's top reads for better understanding A.I. (inc.com, 2021)

Your comprehensive entry-level guide to machine learning

While machine learning expertise doesn't quite mean you can create your own Turing Test-proof android—as in the movie *Ex Machina*—it is a form of artificial intelligence and one of the most exciting technological means of identifying opportunities and solving problems fast and on a large scale. Anyone who masters the principles of machine learning is mastering a big part of our tech future and opening up incredible new directions in careers that include fraud detection, optimizing search results, serving real-time ads, credit-scoring, building accurate and sophisticated pricing models—and way, way more. Unlike most machine learning books, the fully updated 2nd Edition of *Machine Learning For Dummies* doesn't assume you have years of experience

using programming languages such as Python (R source is also included in a downloadable form with comments and explanations), but lets you in on the ground floor, covering the entry-level materials that will get you up and running building models you need to perform practical tasks. It takes a look at the underlying—and fascinating—math principles that power machine learning but also shows that you don't need to be a math whiz to build fun new tools and apply them to your work and study. Understand the history of AI and machine learning Work with Python 3.8 and TensorFlow 2.x (and R as a download) Build and test your own models Use the latest datasets, rather than the worn out data found in other books Apply machine learning to real problems Whether you want to learn for college or to enhance your business or career performance, this friendly beginner's guide is your best introduction to machine learning, allowing you to become quickly confident using this amazing and fast-developing

technology that's impacting lives for the better all over the world.

Machine Learning Mastery With R - Jason Brownlee 2016-01-30

R has been the gold standard in applied machine learning for a long time. Surveys show that it is the most popular platform used by professional data scientists. It is also preferred by the best data scientists in the world. In this Ebook, learn how to get started, practice and apply machine learning using the R platform.

Deep Learning with R - Francois Chollet 2018 Introduces deep learning systems using the powerful Keras library and its R language interface. The book builds your understanding of deep learning through intuitive explanations and practical examples.

Mastering Machine Learning with R - Cory Lesmeister 2015-10-28

Master machine learning techniques with R to deliver insights for complex projects About This Book Get to grips with the application of

Machine Learning methods using an extensive set of R packages Understand the benefits and potential pitfalls of using machine learning methods Implement the numerous powerful features offered by R with this comprehensive guide to building an independent R-based ML system Who This Book Is For If you want to learn how to use R's machine learning capabilities to solve complex business problems, then this book is for you. Some experience with R and a working knowledge of basic statistical or machine learning will prove helpful. What You Will Learn Gain deep insights to learn the applications of machine learning tools to the industry Manipulate data in R efficiently to prepare it for analysis Master the skill of recognizing techniques for effective visualization of data Understand why and how to create test and training data sets for analysis Familiarize yourself with fundamental learning methods such as linear and logistic regression Comprehend advanced learning methods such as

support vector machines Realize why and how to apply unsupervised learning methods In Detail Machine learning is a field of Artificial Intelligence to build systems that learn from data. Given the growing prominence of R—a cross-platform, zero-cost statistical programming environment—there has never been a better time to start applying machine learning to your data. The book starts with introduction to Cross-Industry Standard Process for Data Mining. It takes you through Multivariate Regression in detail. Moving on, you will also address Classification and Regression trees. You will learn a couple of “Unsupervised techniques”. Finally, the book will walk you through text analysis and time series. The book will deliver practical and real-world solutions to problems and variety of tasks such as complex recommendation systems. By the end of this book, you will gain expertise in performing R machine learning and will be able to build complex ML projects using R and its

packages. Style and approach This is a book explains complicated concepts with easy to follow theory and real-world, practical applications. It demonstrates the power of R and machine learning extensively while highlighting the constraints.

Advanced Deep Learning with R -

Bharatendra Rai 2019-12-17

Discover best practices for choosing, building, training, and improving deep learning models using Keras-R, and TensorFlow-R libraries Key Features Implement deep learning algorithms to build AI models with the help of tips and tricks Understand how deep learning models operate using expert techniques Apply reinforcement learning, computer vision, GANs, and NLP using a range of datasets Book Description Deep learning is a branch of machine learning based on a set of algorithms that attempt to model high-level abstractions in data. Advanced Deep Learning with R will help you understand popular deep learning architectures and their

variants in R, along with providing real-life examples for them. This deep learning book starts by covering the essential deep learning techniques and concepts for prediction and classification. You will learn about neural networks, deep learning architectures, and the fundamentals for implementing deep learning with R. The book will also take you through using important deep learning libraries such as Keras-R and TensorFlow-R to implement deep learning algorithms within applications. You will get up to speed with artificial neural networks, recurrent neural networks, convolutional neural networks, long short-term memory networks, and more using advanced examples. Later, you'll discover how to apply generative adversarial networks (GANs) to generate new images; autoencoder neural networks for image dimension reduction, image de-noising and image correction and transfer learning to prepare, define, train, and model a deep neural network. By the end of this book, you will be

ready to implement your knowledge and newly acquired skills for applying deep learning algorithms in R through real-world examples. What you will learn Learn how to create binary and multi-class deep neural network models Implement GANs for generating new images Create autoencoder neural networks for image dimension reduction, image de-noising and image correction Implement deep neural networks for performing efficient text classification Learn to define a recurrent convolutional network model for classification in Keras Explore best practices and tips for performance optimization of various deep learning models Who this book is for This book is for data scientists, machine learning practitioners, deep learning researchers and AI enthusiasts who want to develop their skills and knowledge to implement deep learning techniques and algorithms using the power of R. A solid understanding of machine learning and working knowledge of the R programming

language are required.

Advanced Machine Learning with R - Cory Lesmeister 2019-05-16

Master machine learning techniques with real-world projects that interface TensorFlow with R, H2O, MXNet, and other languages Key Features Gain expertise in machine learning, deep learning and other techniques Build intelligent end-to-end projects for finance, social media, and a variety of domains Implement multi-class classification, regression, and clustering Book Description R is one of the most popular languages when it comes to exploring the mathematical side of machine learning and easily performing computational statistics. This Learning Path shows you how to leverage the R ecosystem to build efficient machine learning applications that carry out intelligent tasks within your organization. You'll tackle realistic projects such as building powerful machine learning models with ensembles to predict employee attrition. You'll explore different

clustering techniques to segment customers using wholesale data and use TensorFlow and Keras-R for performing advanced computations. You'll also be introduced to reinforcement learning along with its various use cases and models. Additionally, it shows you how some of these black-box models can be diagnosed and understood. By the end of this Learning Path, you'll be equipped with the skills you need to deploy machine learning techniques in your own projects. This Learning Path includes content from the following Packt products: R Machine Learning Projects by Dr. Sunil Kumar Chinnamgari Mastering Machine Learning with R - Third Edition by Cory Lesmeister What you will learn Develop a joke recommendation engine to recommend jokes that match users' tastes Build autoencoders for credit card fraud detection Work with image recognition and convolutional neural networks Make predictions for casino slot machine using reinforcement learning Implement NLP techniques for

sentiment analysis and customer segmentation Produce simple and effective data visualizations for improved insights Use NLP to extract insights for text Implement tree-based classifiers including random forest and boosted tree Who this book is for If you are a data analyst, data scientist, or machine learning developer this is an ideal Learning Path for you. Each project will help you test your skills in implementing machine learning algorithms and techniques. A basic understanding of machine learning and working knowledge of R programming is necessary to get the most out of this Learning Path.

Machine Learning with R Cookbook - Yu-Wei, Chiu (David Chiu) 2015-03-26

The R language is a powerful open source functional programming language. At its core, R is a statistical programming language that provides impressive tools to analyze data and create high-level graphics. This book covers the basics of R by setting up a user-friendly

programming environment and performing data ETL in R. Data exploration examples are provided that demonstrate how powerful data visualization and machine learning is in discovering hidden relationships. You will then dive into important machine learning topics, including data classification, regression, clustering, association rule mining, and dimension reduction.

Interpretable Machine Learning - Christoph Molnar 2020

This book is about making machine learning models and their decisions interpretable. After exploring the concepts of interpretability, you will learn about simple, interpretable models such as decision trees, decision rules and linear regression. Later chapters focus on general model-agnostic methods for interpreting black box models like feature importance and accumulated local effects and explaining individual predictions with Shapley values and LIME. All interpretation methods are explained

in depth and discussed critically. How do they work under the hood? What are their strengths and weaknesses? How can their outputs be interpreted? This book will enable you to select and correctly apply the interpretation method that is most suitable for your machine learning project.

Machine Learning with R - Brett Lantz 2015
Perhaps you already know a bit about machine learning but have never used R, or perhaps you know a little R but are new to machine learning. In either case, this book will get you up and running quickly. It would be helpful to have a bit of familiarity with basic programming concepts, but no prior experience is required.

An Introduction to Statistical Learning - Gareth James 2013-06-24

An Introduction to Statistical Learning provides an accessible overview of the field of statistical learning, an essential toolset for making sense of the vast and complex data sets that have emerged in fields ranging from biology to

finance to marketing to astrophysics in the past twenty years. This book presents some of the most important modeling and prediction techniques, along with relevant applications. Topics include linear regression, classification, resampling methods, shrinkage approaches, tree-based methods, support vector machines, clustering, and more. Color graphics and real-world examples are used to illustrate the methods presented. Since the goal of this textbook is to facilitate the use of these statistical learning techniques by practitioners in science, industry, and other fields, each chapter contains a tutorial on implementing the analyses and methods presented in R, an extremely popular open source statistical software platform. Two of the authors co-wrote *The Elements of Statistical Learning* (Hastie, Tibshirani and Friedman, 2nd edition 2009), a popular reference book for statistics and machine learning researchers. *An Introduction to Statistical Learning* covers many of the same

topics, but at a level accessible to a much broader audience. This book is targeted at statisticians and non-statisticians alike who wish to use cutting-edge statistical learning techniques to analyze their data. The text assumes only a previous course in linear regression and no knowledge of matrix algebra.

R for Data Science - Hadley Wickham
2016-12-12

Learn how to use R to turn raw data into insight, knowledge, and understanding. This book introduces you to R, RStudio, and the tidyverse, a collection of R packages designed to work together to make data science fast, fluent, and fun. Suitable for readers with no previous programming experience, *R for Data Science* is designed to get you doing data science as quickly as possible. Authors Hadley Wickham and Garrett Grolemund guide you through the steps of importing, wrangling, exploring, and modeling your data and communicating the results. You'll get a complete, big-picture

understanding of the data science cycle, along with basic tools you need to manage the details. Each section of the book is paired with exercises to help you practice what you've learned along the way. You'll learn how to:

Wrangle—transform your datasets into a form convenient for analysis
Program—learn powerful R tools for solving data problems with greater clarity and ease
Explore—examine your data, generate hypotheses, and quickly test them
Model—provide a low-dimensional summary that captures true "signals" in your dataset
Communicate—learn R Markdown for integrating prose, code, and results

R Machine Learning By Example - Raghav Bali 2016-03-31

Understand the fundamentals of machine learning with R and build your own dynamic algorithms to tackle complicated real-world problems successfully
About This Book Get to grips with the concepts of machine learning through exciting real-world examples
Visualize

and solve complex problems by using power-packed R constructs and its robust packages for machine learning
Learn to build your own machine learning system with this example-based practical guide
Who This Book Is For If you are interested in mining useful information from data using state-of-the-art techniques to make data-driven decisions, this is a go-to guide for you. No prior experience with data science is required, although basic knowledge of R is highly desirable. Prior knowledge in machine learning would be helpful but is not necessary.
What You Will Learn Utilize the power of R to handle data extraction, manipulation, and exploration techniques
Use R to visualize data spread across multiple dimensions and extract useful features
Explore the underlying mathematical and logical concepts that drive machine learning algorithms
Dive deep into the world of analytics to predict situations correctly
Implement R machine learning algorithms from scratch and be amazed to see the algorithms in

action Write reusable code and build complete machine learning systems from the ground up Solve interesting real-world problems using machine learning and R as the journey unfolds Harness the power of robust and optimized R packages to work on projects that solve real-world problems in machine learning and data science In Detail Data science and machine learning are some of the top buzzwords in the technical world today. From retail stores to Fortune 500 companies, everyone is working hard to making machine learning give them data-driven insights to grow their business. With powerful data manipulation features, machine learning packages, and an active developer community, R empowers users to build sophisticated machine learning systems to solve real-world data problems. This book takes you on a data-driven journey that starts with the very basics of R and machine learning and gradually builds upon the concepts to work on projects that tackle real-world problems. You'll begin by

getting an understanding of the core concepts and definitions required to appreciate machine learning algorithms and concepts. Building upon the basics, you will then work on three different projects to apply the concepts of machine learning, following current trends and cover major algorithms as well as popular R packages in detail. These projects have been neatly divided into six different chapters covering the worlds of e-commerce, finance, and social-media, which are at the very core of this data-driven revolution. Each of the projects will help you to understand, explore, visualize, and derive insights depending upon the domain and algorithms. Through this book, you will learn to apply the concepts of machine learning to deal with data-related problems and solve them using the powerful yet simple language, R. Style and approach The book is an enticing journey that starts from the very basics to gradually pick up pace as the story unfolds. Each concept is first defined in the larger context of things succinctly,

followed by a detailed explanation of their application. Each topic is explained with the help of a project that solves a real real-world problem involving hands-on work thus giving you a deep insight into the world of machine learning.

Applied Supervised Learning with R - Karthik Ramasubramanian 2019-05-31

Learn the ropes of supervised machine learning with R by studying popular real-world use-cases, and understand how it drives object detection in driver less cars, customer churn, and loan default prediction. Key Features Study supervised learning algorithms by using real-world datasets Fine tune optimal parameters with hyperparameter optimization Select the best algorithm using the model evaluation framework Book Description R provides excellent visualization features that are essential for exploring data before using it in automated learning. Applied Supervised Learning with R helps you cover the complete process of employing R to develop applications using

supervised machine learning algorithms for your business needs. The book starts by helping you develop your analytical thinking to create a problem statement using business inputs and domain research. You will then learn different evaluation metrics that compare various algorithms, and later progress to using these metrics to select the best algorithm for your problem. After finalizing the algorithm you want to use, you will study the hyperparameter optimization technique to fine-tune your set of optimal parameters. To prevent you from overfitting your model, a dedicated section will even demonstrate how you can add various regularization terms. By the end of this book, you will have the advanced skills you need for modeling a supervised machine learning algorithm that precisely fulfills your business needs. What you will learn Develop analytical thinking to precisely identify a business problem Wrangle data with dplyr, tidyr, and reshape2 Visualize data with ggplot2 Validate

your supervised machine learning model using k-fold
Optimize hyperparameters with grid and random search, and Bayesian optimization
Deploy your model on Amazon Web Services (AWS) Lambda with plumber
Improve your model's performance with feature selection and dimensionality reduction
Who this book is for
This book is specially designed for novice and

intermediate-level data analysts, data scientists, and data engineers who want to explore different methods of supervised machine learning and its various use cases. Some background in statistics, probability, calculus, linear algebra, and programming will help you thoroughly understand and follow the content of this book.