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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.

Machine Learning with R-Brett Lantz 2015-07-31 Build machine learning algorithms, prepare data, and dig deep into data prediction techniques with R About This Book Harness the power of R for statistical computing and data science Explore, forecast, and classify data with R Use R to apply common machine learning algorithms to real-world scenarios Who This Book Is For 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. What You Will Learn Harness the power of R to build common machine learning algorithms with real-world data science applications Get to grips with techniques in R to clean and prepare your data for analysis and visualize your results Discover the different types of machine learning models and learn what is best to meet your data needs and solve data analysis problems Classify your data with Bayesian and nearest neighbour methods Predict values using R to build decision trees, rules, and support vector machines Forecast numeric values with linear regression and model your data with neural networks Evaluate and improve the performance of machine learning models Learn specialized machine learning techniques for text mining, social network data, and big data In Detail Machine learning, at its core, is concerned with transforming data into actionable knowledge. This makes machine learning well suited to the present-day era of big data. Given the growing prominence of R's cross-platform, zero-cost statistical programming environment, there has never been a better time to start applying machine learning to your data. Machine learning with R offers a powerful set of methods to quickly and easily gain insight from your data to both, veterans and beginners in data analytics. Want to turn your data into actionable knowledge, predict outcomes that make real impact, and have constantly developing insights? R gives you access to all the power you need to master exceptional machine learning techniques. The second edition of Machine Learning with R provides you with an introduction to the essential skills required in 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 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. Transform the way you think about data; discover machine learning with R. Style and approach How can we use machine learning to transform data into action? This book uses a series of simple steps to show you. Using practical examples, the book illustrates how to prepare data for analysis, choose a machine learning method, and measure its success.

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.

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.

Practical Machine Learning in R-Fred Nwanganga 2020-06-10 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.

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 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 Algorithms-Giuseppe Bonaccorso 2017-07-24 Build strong foundation for entering the world of Machine Learning and data science with the help of this comprehensive guide About This Book Get started in the field of Machine Learning with the help of this solid, concept-rich, yet highly practical guide. Your one-stop solution for everything that matters in mastering the whats and whys of Machine Learning algorithms and their implementation. Get a solid foundation for your entry into Machine Learning by strengthening your roots (algorithms) with this comprehensive guide. Who This Book Is For This book is for IT professionals who want to enter the field of data science and are very new to Machine Learning. Familiarity with languages such as R and Python will be invaluable here. What You Will Learn Acquaint yourself with important elements of Machine Learning Understand the feature selection and feature engineering process Assess performance and error trade-offs for Linear Regression Build a data model and understand how it works by using different types of algorithm Learn to tune the parameters of Support Vector machines Implement clusters to a dataset Explore the concept of Natural Processing Language and Recommendation Systems Create a ML architecture from scratch. In Detail As the amount of data continues to grow at an almost incomprehensible rate, being able to understand and process data is becoming a key differentiator for competitive organizations. Machine learning applications are everywhere, from self-driving cars, spam detection, document search, and trading strategies, to speech recognition. This makes machine learning well-suited to the present-day era of Big Data and Data Science. The main challenge is how to transform data into actionable knowledge. In this book you will learn all the important Machine Learning algorithms that are commonly used in the field of data science. These algorithms can be used for supervised as well as unsupervised learning, reinforcement learning, and semi-supervised learning. A few famous algorithms that are covered in this book are Linear regression, Logistic Regression, SVM, Naive Bayes, K-Means, Random Forest, TensorFlow, and Feature engineering. In this book you will also learn how these algorithms work and their practical implementation to resolve your problems. This book will also introduce you to the Natural Processing Language and Recommendation systems, which help you run multiple algorithms simultaneously. On completion of the book you will have mastered selecting Machine Learning algorithms for clustering, classification, or regression based on for your problem. Style and approach An easy-to-follow, step-by-step guide that will help you get to grips with real-world applications of Algorithms for Machine 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

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.

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.

Hands-On Machine Learning with R-Brad Boehmke 2019 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-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.

Data Mining with R-Luis Torgo 2016-12-02 Data Mining with R: Learning with Case Studies, Second Editionuses practical examples to illustrate the power of R and data mining. Providing an extensive update to the best-selling first edition, this new edition is divided into two parts. The first part will feature introductory material, including a new chapter that provides an introduction to data mining, to complement the already existing introduction to R. The second part includes case studies, and the new edition strongly revises the R code of the case studies making it more up-to-date with recent packages that have emerged in R. The book does not assume any prior knowledge about R. Readers who are new to R and data mining should be able to follow the case studies, and they are designed to be self-contained so the reader can start anywhere in the document. The book is accompanied by a set of freely available R source files that can be obtained at the book's web site. These files include all the code used in the case studies, and they facilitate the "do-it-yourself" approach followed in the book. Designed for users of data analysis tools, as well as researchers and developers, the book should be useful for anyone interested in entering the "world" of R and data mining. About the Author Luís Torgo is an associate professor in the Department of Computer Science at the University of Porto in Portugal. Heãeteaches Data Mining in R in the NYU Stern School of Business' MS in Business Analytics program. An active researcher in machine learning and data mining for more than 20 years, Dr. Torgo is also a researcher in the Laboratory of Artificial Intelligence and Data Analysis (LIAAD) of INESC Porto LA.

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 with R-Abhijit Ghatak 2017-12-07 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.

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.

Machine Learning with R Cookbook - Second Edition-Ashishsingh Bhatia 2017-10-20 Explore over 110 recipes to analyze data and build predictive models with simple and easy-to-use R codeAbout This Book* Apply R to simplify predictive modeling with short and simple code* Use machine learning to solve problems ranging from small to big data* Build a training and testing dataset, applying different classification methods.Who This Book Is ForThis book is for data science professionals, data analysts, or people who have used R for data analysis and machine learning who now wish to become the go-to person for machine learning with R. Those who wish to improve the efficiency of their machine learning models and need to work with different kinds of data set will find this book very insightful.What You Will Learn* Create and inspect transaction datasets and perform association analysis with the Apriori algorithm* Visualize patterns and associations using a range of graphs and find frequent item-sets using the Eclat algorithm* Compare differences between each regression method to discover how they solve problems* Detect and impute missing values in air quality data* Predict possible churn users with the classification approach* Plot the autocorrelation function with time series analysis* Use the Cox proportional hazards model for survival analysis* Implement the clustering method to segment customer data* Compress images with the dimension reduction method* Incorporate R and Hadoop to solve machine learning problems on big dataIn DetailBig data has become a popular buzzword across many industries. An increasing number of people have been exposed to the term and are looking at how to leverage big data in their own businesses, to improve sales and profitability. However, collecting, aggregating, and visualizing data is just one part of the equation. Being able to extract useful information from data is another task, and a much more challenging one. Machine Learning with R Cookbook, Second Edition uses a practical approach to teach you how to perform machine learning with R. Each chapter is divided into several simple recipes. Through the step-by-step instructions provided in each recipe, you will be able to construct a predictive model by using a variety of machine learning packages. In this book, you will first learn to set up the R environment and use simple R commands to explore data. The next topic covers how to perform statistical analysis with machine learning analysis and assess created models, covered in detail later on in the book. You'll also learn how to integrate R and Hadoop to create a big data analysis platform. The detailed illustrations provide all the information required to start applying machine learning to individual projects. With Machine Learning with R Cookbook, machine learning has never been easier.Style and approachThis is an easy-to-follow guide packed with hands-on examples of machine learning tasks. Each topic includes step-by-step instructions on tackling difficulties faced when applying R to machine learning.

Scala for Machine Learning, Second Edition-Patrick R. Nicolas 2017-09-26 Leverage Scala and Machine Learning to study and construct systems that can learn from dataAbout This Book* Explore a broad variety of data processing, machine learning, and genetic algorithms through diagrams, mathematical formulation, and updated source code in Scala* Take your expertise in Scala programming to the next level by creating and customizing AI applications* Experiment with different techniques and evaluate their benefits and limitations using real-world applications in a tutorial styleWho This Book Is ForIf you're a data scientist or a data analyst with a fundamental knowledge of Scala who wants to learn and implement various Machine learning techniques, this book is for you. All you need is a good understanding of the Scala programming language, a basic knowledge of statistics, a keen interest in Big Data processing, and this book!What You Will Learn* Build dynamic workflows for scientific computing* Leverage open source libraries to extract patterns from time series* Write your own classification, clustering, or evolutionary algorithm* Perform relative performance tuning and evaluation of Spark* Master probabilistic models for sequential data* Experiment with advanced techniques such as regularization and kernelization* Dive into neural networks and some deep learning architecture* Apply some basic multiarm-bandit algorithms* Solve big data problems with Scala parallel collections, Akka actors, and Apache Spark clusters* Apply key learning strategies to a technical analysis of financial marketsIn DetailThe discovery of information through data clustering and classification is becoming a key differentiator for competitive organizations. Machine learning applications are everywhere, from self-driving cars, engineering design, logistics, manufacturing, and trading strategies, to detection of genetic anomalies.The book is your one stop guide that introduces you to the functional capabilities of the Scala programming language that are critical to the creation of machine learning algorithms such as dependency injection and implicits. You start by learning data preprocessing and filtering techniques. Following this, you'll move on to unsupervised learning techniques such as clustering and dimension reduction, followed by probabilistic graphical models such as Naive Bayes, hidden Markov models and Monte Carlo inference. Further, it covers the discriminative algorithms such as linear, logistic regression with regularization, kernelization, support vector machines, neural networks, and deep learning. You'll move on to evolutionary computing, multibandit algorithms, and reinforcement learning.Finally, the book includes a comprehensive overview of parallel computing in Scala and Akka followed by a description of Apache Spark and its ML library. With updated codes based on the latest version of Scala and comprehensive examples, this book will ensure that you have more than just a solid fundamental knowledge in machine learning with Scala.Style and approachThis book is designed as a tutorial with hands-on exercises using technical analysis of financial markets and corporate data. The approach of each chapter is such that it allows you to understand key concepts easily.

The Elements of Statistical Learning-Trevor Hastie 2013-11-11 During the past decade there has been an explosion in computation and information technology. With it have come vast amounts of data in a variety of fields such as medicine, biology, finance, and marketing. The challenge of understanding these data has led to the development of new tools in the field of statistics, and spawned new areas such as data mining, machine learning, and bioinformatics. Many of these tools have common underpinnings but are often expressed with different terminology. This book describes the important ideas in these areas in a common conceptual framework. While the approach is statistical, the emphasis is on concepts rather than mathematics. Many examples are given, with a liberal use of color graphics. It should be a valuable resource for statisticians and anyone interested in data mining in science or industry. The book's coverage is broad, from supervised learning (prediction) to unsupervised learning. The many topics include neural networks, support vector machines, classification trees and boosting—the first comprehensive treatment of this topic in any book. This major new edition features many topics not covered in the original, including graphical models, random forests, ensemble methods, least angle regression & path algorithms for the lasso, non-negative matrix factorization, and spectral clustering. There is also a chapter on methods for “wide” data (p bigger than n), including multiple testing and false discovery rates. Trevor Hastie, Robert Tibshirani, and Jerome Friedman are professors of statistics at Stanford University. They are prominent researchers in this area: Hastie and Tibshirani developed generalized additive models and wrote a popular book of that title. Hastie co-developed much of the statistical modeling software and environment in R/S-PLUS and invented principal curves and surfaces. Tibshirani proposed the lasso and is co-author of the very successful An Introduction to the Bootstrap. Friedman is the co-inventor of many data-mining tools including CART, MARS, projection pursuit and gradient boosting.

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

The Big R-Book-Philippe J. S. De Brouwer 2020-11-10 Introduces professionals and scientists to statistics and machine learning using the programming language R Written by and for practitioners, this book provides an overall introduction to R, focusing on tools and methods commonly used in data science, and placing emphasis on practice and business use. It covers a wide range of topics in a single volume, including big data, databases, statistical machine learning, data wrangling, data visualization, and the reporting of results. The topics covered are all important for someone with a science/math background that is looking to quickly learn several practical technologies to enter or transition to the growing field of data science. The Big R-Book for Professionals: From Data Science to Learning Machines and Reporting with R includes nine parts, starting with an introduction to the subject and followed by an overview of R and elements of statistics. The third part revolves around data, while the fourth focuses on data wrangling. Part 5 teaches readers about exploring data. In Part 6 we learn to build models, Part 7 introduces the reader to the reality in companies, Part 8 covers reports and interactive applications and finally Part 9 introduces the reader to big data and performance computing. It also includes some helpful appendices. Provides a practical guide for non-experts with a focus on business users Contains a unique combination of topics including an introduction to R, machine learning, mathematical models, data wrangling, and reporting Uses a practical tone and integrates multiple topics in a coherent framework Demystifies the hype around machine learning and AI by enabling readers to understand the provided models and program them in R Shows readers how to visualize results in static and interactive reports Supplementary materials includes PDF slides based on the book's content, as well as all the extracted R-code and is available to everyone on a Wiley Book Companion Site The Big R-Book is an excellent guide for science technology, engineering, or mathematics

students who wish to make a successful transition from the academic world to the professional. It will also appeal to all young data scientists, quantitative analysts, and analytics professionals, as well as those who make mathematical models.

Hands-On Ensemble Learning with R-Prabhanjan Narayanachar Tattar 2018-07-27 Explore powerful R packages to create predictive models using ensemble methods Key Features Implement machine learning algorithms to build ensemble-efficient models Explore powerful R packages to create predictive models using ensemble methods Learn to build ensemble models on large datasets using a practical approach Book Description Ensemble techniques are used for combining two or more similar or dissimilar machine learning algorithms to create a stronger model. Such a model delivers superior prediction power and can give your datasets a boost in accuracy. Hands-On Ensemble Learning with R begins with the important statistical resampling methods. You will then walk through the central trilogy of ensemble techniques - bagging, random forest, and boosting - then you'll learn how they can be used to provide greater accuracy on large datasets using popular R packages. You will learn how to combine model predictions using different machine learning algorithms to build ensemble models. In addition to this, you will explore how to improve the performance of your ensemble models. By the end of this book, you will have learned how machine learning algorithms can be combined to reduce common problems and build simple efficient ensemble models with the help of real-world examples. What you will learn Carry out an essential review of re-sampling methods, bootstrap, and jackknife Explore the key ensemble methods: bagging, random forests, and boosting Use multiple algorithms to make strong predictive models Enjoy a comprehensive treatment of boosting methods Supplement methods with statistical tests, such as ROC Walk through data structures in classification, regression, survival, and time series data Use the supplied R code to implement ensemble methods Learn stacking method to combine heterogeneous machine learning models Who this book is for This book is for you if you are a data scientist or machine learning developer who wants to implement machine learning techniques by building ensemble models with the power of R. You will learn how to combine different machine learning algorithms to perform efficient data processing. Basic knowledge of machine learning techniques and programming knowledge of R would be an added advantage.

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

Foundations of Machine Learning-Mehryar Mohri 2012-08-17 This graduate-level textbook introduces fundamental concepts and methods in machine learning. It describes several important modern algorithms, provides the theoretical underpinnings of these algorithms, and illustrates key aspects for their application. The authors aim to present novel theoretical tools and concepts while giving concise proofs even for relatively advanced topics. Foundations of Machine Learning fills the need for a general textbook that also offers theoretical details and an emphasis on proofs. Certain topics that are often treated with insufficient attention are discussed in more detail here; for example, entire chapters are devoted to regression, multi-class classification, and ranking. The first three chapters lay the theoretical foundation for what follows, but each remaining chapter is mostly self-contained. The appendix offers a concise probability review, a short introduction to convex optimization, tools for concentration bounds, and several basic properties of matrices and norms used in the book. The book is intended for graduate students and researchers in machine learning, statistics, and related areas; it can be used either as a textbook or as a reference text for a research seminar.

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.

Introduction to Machine Learning-Ethem Alpaydin 2014-08-29 The goal of machine learning is to program computers to use example data or past experience to solve a given problem. Many successful applications of machine learning exist already, including systems that analyze past sales data to predict customer behavior, optimize robot behavior so that a task can be completed using minimum resources, and extract knowledge from bioinformatics data. Introduction to Machine Learning is a comprehensive textbook on the subject, covering a broad array of topics not usually included in introductory machine learning texts. Subjects include supervised learning; Bayesian decision theory; parametric, semi-parametric, and nonparametric methods; multivariate analysis; hidden Markov models; reinforcement learning; kernel machines; graphical models; Bayesian estimation; and statistical testing. Machine learning is rapidly becoming a skill that computer science students must master before graduation. The third edition of Introduction to Machine Learning reflects this shift, with added support for beginners, including selected solutions for exercises and additional example data sets (with code available online). Other substantial changes include discussions of outlier detection; ranking algorithms for perceptrons and support vector machines; matrix decomposition and spectral methods; distance estimation; new kernel algorithms; deep learning in multilayered perceptrons; and the nonparametric approach to Bayesian methods. All learning algorithms are explained so that students can easily move from the equations in the book to a computer program. The book can be used by both advanced undergraduates and graduate students. It will also be of interest to professionals who are concerned with the application of machine learning methods.

Practical Data Science with R-Nina Zumel 2019-12-07 This invaluable addition to any data scientist's library shows you how to apply the R programming language and useful statistical techniques to everyday business situations as well as how to effectively present results to audiences of all levels. To answer the ever-increasing demand for machine learning and analysis, this new edition boasts additional R tools, modeling techniques, and more. Practical Data Science with R, Second Edition takes a practice-oriented approach to explaining basic principles in the ever-expanding field of data science. You'll jump right to real-world use cases as you apply the R programming language and statistical analysis techniques to carefully explained examples based in marketing, business intelligence, and decision support. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications.

Deep Learning with R-Abhijit Ghatak 2019-04-13 Deep Learning with R introduces deep learning and neural networks using the R programming language. The book builds on the understanding of the theoretical and mathematical constructs and enables the reader to create applications on computer vision, natural language processing and transfer learning. The book starts with an introduction to machine learning and moves on to describe the basic architecture, different activation functions, forward propagation, cross-entropy loss and backward propagation of a simple neural network. It goes on to create different code segments to construct deep neural networks. It discusses in detail the initialization of network parameters, optimization techniques, and some

of the common issues surrounding neural networks such as dealing with NaNs and the vanishing/exploding gradient problem. Advanced variants of multilayered perceptrons namely, convolutional neural networks and sequence models are explained, followed by application to different use cases. The book makes extensive use of the Keras and TensorFlow frameworks.

Just Enough R!-Richard J. Roiger 2020 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.

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.

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

Machine Learning for Hackers-Drew Conway 2012-02-13 If you're an experienced programmer interested in crunching data, this book will get you started with machine learning—a toolkit of algorithms that enables computers to train themselves to automate useful tasks. Authors Drew Conway and John Myles White help you understand machine learning and statistics tools through a series of hands-on case studies, instead of a traditional math-heavy presentation. Each chapter focuses on a specific problem in machine learning, such as classification, prediction, optimization, and recommendation. Using the R programming language, you'll learn how to analyze sample datasets and write simple machine learning algorithms. Machine Learning for Hackers is ideal for programmers from any background, including business, government, and academic research. Develop a naïve Bayesian classifier to determine if an email is spam, based only on its text Use linear regression to predict the number of page views for the top 1,000 websites Learn optimization techniques by attempting to break a simple letter cipher Compare and contrast U.S. Senators statistically, based on their voting records Build a “whom to follow” recommendation system from Twitter data

Mastering Predictive Analytics with R - Second Edition-James D. Miller 2017-08-18 Master the craft of predictive modeling in R by developing strategy, intuition, and a solid foundation in essential concepts>About This Book* Grasping the major methods of predictive modeling and moving beyond black box thinking to a deeper level of understanding* Leveraging the flexibility and modularity of R to experiment with a range of different techniques and data types* Packed with practical advice and tips explaining important concepts and best practices to help you understand quickly and easilyWho This Book Is ForAlthough budding data scientists, predictive modelers, or quantitative analysts with only basic exposure to R and statistics will find this book to be useful, the experienced data scientist professional wishing to attain master level status , will also find this book extremely valuable.. This book assumes familiarity with the fundamentals of R, such as the main data types, simple functions, and how to move data around. Although no prior experience with machine learning or predictive modeling is required, there are some advanced topics provided that will require more than novice exposure.What You Will Learn* Master the steps involved in the predictive modeling process* Grow your expertise in using R and its diverse range of packages* Learn how to classify predictive models and distinguish which models are suitable for a particular problem* Understand steps for tidying data and improving the performing metrics* Recognize the assumptions, strengths, and weaknesses of a predictive model* Understand how and why each predictive model works in R* Select appropriate metrics to assess the performance of different types of predictive model* Explore word embedding and recurrent neural networks in R* Train models in R that can work on very large datasetsIn DetailR offers a free and open source environment that is perfect for both learning and deploying predictive modeling solutions. With its constantly growing community and plethora of packages, R offers the functionality to deal with a truly vast array of problems.The book begins with a dedicated chapter on the language of models and the predictive modeling process. You will understand the learning curve and the process of tidying data. Each subsequent chapter tackles a particular type of model, such as neural networks, and focuses on the three important questions of how the model works, how to use R to train it, and how to measure and assess its performance using real-world datasets. How do you train models that can handle really large datasets? This book will also show you just that. Finally, you will tackle the really important topic of deep learning by implementing applications on word embedding and recurrent neural networks.By the end of this book, you will have explored and tested the most popular modeling techniques in use on real- world datasets and mastered a diverse range of techniques in predictive analytics using R.Style and approachThis book takes a step-by-step approach in explaining the intermediate to advanced concepts in predictive analytics. Every concept is explained in depth, supplemented with practical examples applicable in a real-world setting.

Bayesian Networks-Marco Scutari 2014-06-20 Understand the Foundations of Bayesian Networks—Core Properties and Definitions Explained Bayesian Networks: With Examples in R introduces Bayesian networks using a hands-on approach. Simple yet meaningful examples in R illustrate each step of the modeling process. The examples start from the simplest notions and gradually increase in complexity. The authors also distinguish the probabilistic models from their estimation with data sets. The first three chapters explain the whole process of Bayesian network modeling, from structure learning to parameter learning to inference. These chapters cover discrete Bayesian, Gaussian Bayesian, and hybrid networks, including arbitrary random variables. The book then gives a concise but rigorous treatment of the fundamentals of Bayesian networks and offers an introduction to causal Bayesian networks. It also presents an overview of R and other software packages appropriate for Bayesian networks. The final chapter evaluates two real-world examples: a landmark causal protein signaling network paper and graphical modeling approaches for predicting the composition of different body parts. Suitable for graduate students and non-statisticians, this text provides an introductory overview of Bayesian networks. It gives readers a clear, practical understanding of the general approach and steps involved.

Deep Learning-Ian Goodfellow 2016-11-10 An introduction to a broad range of topics in deep learning, covering mathematical and conceptual background, deep learning techniques used in industry, and research perspectives. “Written by three experts in the field, Deep Learning is the only comprehensive book on the subject.” —Elon

Musk, cochair of OpenAI; cofounder and CEO of Tesla and SpaceX Deep learning is a form of machine learning that enables computers to learn from experience and understand the world in terms of a hierarchy of concepts. Because the computer gathers knowledge from experience, there is no need for a human computer operator to formally specify all the knowledge that the computer needs. The hierarchy of concepts allows the computer to learn complicated concepts by building them out of simpler ones; a graph of these hierarchies would be many layers deep. This book introduces a broad range of topics in deep learning. The text offers mathematical and conceptual background, covering relevant concepts in linear algebra, probability theory and information theory, numerical computation, and machine learning. It describes deep learning techniques used by practitioners in industry, including deep feedforward networks, regularization, optimization algorithms, convolutional networks, sequence modeling, and practical methodology; and it surveys such applications as natural language processing, speech recognition, computer vision, online recommendation systems, bioinformatics, and videogames. Finally, the book offers research perspectives, covering such theoretical topics as linear factor models, autoencoders, representation learning, structured probabilistic models, Monte Carlo methods, the partition function, approximate inference, and deep generative models. Deep Learning can be used by undergraduate or graduate students planning careers in either industry or research, and by software engineers who want to begin using deep learning in their products or platforms. A website offers supplementary material for both readers and instructors.

Ensemble Classification Methods with Applications in R-Esteban Alfaro 2018-11-05 An essential guide to two burgeoning topics in machine learning – classification trees and ensemble learning Ensemble Classification Methods with Applications in R introduces the concepts and principles of ensemble classifiers methods and includes a review of the most commonly used techniques. This important resource shows how ensemble classification has become an extension of the individual classifiers. The text puts the emphasis on two areas of machine learning: classification trees and ensemble learning. The authors explore ensemble classification methods’ basic characteristics and explain the types of problems that can emerge in its application. Written by a team of noted experts in the field, the text is divided into two main sections. The first section outlines the theoretical underpinnings of the topic and the second section is designed to include examples of practical applications. The book contains a wealth of illustrative cases of business failure prediction, zoology, ecology and others. This vital guide: Offers an important text that has been tested both in the classroom and at tutorials at conferences Contains authoritative information written by leading experts in the field Presents a comprehensive text that can be applied to courses in machine learning, data mining and artificial intelligence Combines in one volume two of the most intriguing topics in machine learning: ensemble learning and classification trees Written for researchers from many fields such as biostatistics, economics, environment, zoology, as well as students of data mining and machine learning, Ensemble Classification Methods with Applications in R puts the focus on two topics in machine learning: classification trees and ensemble learning.

Supervised Machine Learning-Tanya Kolosova 2020-09-22 AI framework intended to solve a problem of bias-variance tradeoff for supervised learning methods in real-life applications. The AI framework comprises of bootstrapping to create multiple training and testing data sets with various characteristics, design and analysis of statistical experiments to identify optimal feature subsets and optimal hyper-parameters for ML methods, data contamination to test for the robustness of the classifiers. Key Features: Using ML methods by itself doesn’t ensure building classifiers that generalize well for new data Identifying optimal feature subsets and hyper-parameters of ML methods can be resolved using design and analysis of statistical experiments Using a bootstrapping approach to massive sampling of training and tests datasets with various data characteristics (e.g.: contaminated training sets) allows dealing with bias Developing of SAS-based table-driven environment allows managing all meta-data related to the proposed AI framework and creating interoperability with R libraries to accomplish variety of statistical and machine-learning tasks Computer programs in R and SAS that create AI framework are available on GitHub

Machine Learning with Spark-Nick Pentreath 2015-02-20 If you are a Scala, Java, or Python developer with an interest in machine learning and data analysis and are eager to learn how to apply common machine learning techniques at scale using the Spark framework, this is the book for you. While it may be useful to have a basic understanding of Spark, no previous experience is required.

Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow-Aurélien Géron 2019-09-05 Through a series of recent breakthroughs, deep learning has boosted the entire field of machine learning. Now, even programmers who know close to nothing about this technology can use simple, efficient tools to implement programs capable of learning from data. This practical book shows you how. By using concrete examples, minimal theory, and two production-ready Python frameworks—Scikit-Learn and TensorFlow—author Aurélien Géron helps you gain an intuitive understanding of the concepts and tools for building intelligent systems. You’ll learn a range of techniques, starting with simple linear regression and progressing to deep neural networks. With exercises in each chapter to help you apply what you’ve learned, all you need is programming experience to get started. Explore the machine learning landscape, particularly neural nets Use Scikit-Learn to track an example machine-learning project end-to-end Explore several training models, including support vector machines, decision trees, random forests, and ensemble methods Use the TensorFlow library to build and train neural nets Dive into neural net architectures, including convolutional nets, recurrent nets, and deep reinforcement learning Learn techniques for training and scaling deep neural nets