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[Introduction to Data Science](#) Laura Igual 2017-02-22 This accessible and classroom-tested textbook/reference presents an introduction to the fundamentals of the emerging and interdisciplinary field of data science. The coverage spans key concepts adopted from statistics and machine learning, useful techniques for graph analysis and parallel programming, and the practical application of data science for such tasks as building recommender systems or performing sentiment analysis. Topics and features: provides numerous practical case studies using real-world data throughout the book; supports understanding through hands-on experience of solving data science problems using Python; describes techniques and tools for statistical analysis, machine learning, graph analysis, and parallel programming; reviews a range of applications of data science, including recommender systems and sentiment analysis of text data; provides supplementary code resources and data at an associated website.

[R Data Mining](#) Andrea Cirillo 2017-11-29 Mine valuable insights from your data using popular tools and techniques in R About This Book Understand the basics of data mining and why R is a perfect tool for it. Manipulate your data using popular R packages such as ggplot2, dplyr, and so on to gather valuable business insights from it. Apply effective data mining models to perform regression and classification tasks. Who This Book Is For If you are a budding data scientist, or a data analyst with a basic knowledge of R, and want to get into the intricacies of data mining in a practical manner, this is the book for you. No previous experience of data mining is required. What You Will Learn Master relevant packages such as dplyr, ggplot2 and so on for data mining Learn how to effectively organize a data mining project through the CRISP-DM methodology Implement data cleaning and validation tasks to get your data ready for data mining activities Execute Exploratory Data Analysis both the numerical and the graphical way Develop simple and multiple regression models along with logistic regression Apply basic ensemble learning techniques to join together results from different data mining models Perform text mining analysis from unstructured pdf files and textual data Produce reports to effectively communicate objectives, methods, and insights of your analyses In Detail R is widely used to leverage data mining techniques across many different industries, including finance, medicine, scientific research, and more. This book will empower you to produce and present impressive analyses from data, by selecting and implementing the appropriate data mining techniques in R. It will let you gain these powerful skills while immersing in a one of a kind data mining crime case, where you will be requested to help resolving a real fraud case affecting a commercial company, by the mean of both basic and advanced data mining techniques. While moving along the plot of the story you will effectively learn and practice on real data the various R packages commonly employed for this kind of tasks. You will also get the chance of apply some of the most popular and effective data mining models and algos, from the basic multiple linear regression to the most advanced Support Vector Machines. Unlike other data mining learning instruments, this book will effectively expose you the theory behind these models, their relevant assumptions and when they can be applied to the data you are facing. By the end of the book you will hold a new and powerful toolbox of instruments, exactly knowing when and how to employ each of them to solve your data mining problems and get the most out of your data. Finally, to let you maximize the exposure to the concepts described and the learning process, the book comes packed with a reproducible bundle of commented R scripts and a practical set of data mining models cheat sheets. Style and approach This book takes a practical, step-by-step approach to explain the concepts of data mining. Practical

use-cases involving real-world datasets are used throughout the book to clearly explain theoretical concepts.

[Fundamentals of Business Intelligence](#) Wilfried Grossmann 2015-06-02 This book presents a comprehensive and systematic introduction to transforming process-oriented data into information about the underlying business process, which is essential for all kinds of decision-making. To that end, the authors develop step-by-step models and analytical tools for obtaining high-quality data structured in such a way that complex analytical tools can be applied. The main emphasis is on process mining and data mining techniques and the combination of these methods for process-oriented data. After a general introduction to the business intelligence (BI) process and its constituent tasks in chapter 1, chapter 2 discusses different approaches to modeling in BI applications. Chapter 3 is an overview and provides details of data provisioning, including a section on big data. Chapter 4 tackles data description, visualization, and reporting. Chapter 5 introduces data mining techniques for cross-sectional data. Different techniques for the analysis of temporal data are then detailed in Chapter 6. Subsequently, chapter 7 explains techniques for the analysis of process data, followed by the introduction of analysis techniques for multiple BI perspectives in chapter 8. The book closes with a summary and discussion in chapter 9. Throughout the book, (mostly open source) tools are recommended, described and applied; a more detailed survey on tools can be found in the appendix, and a detailed code for the solutions together with instructions on how to install the software used can be found on the accompanying website. Also, all concepts presented are illustrated and selected examples and exercises are provided. The book is suitable for graduate students in computer science, and the dedicated website with examples and solutions makes the book ideal as a textbook for a first course in business intelligence in computer science or business information systems. Additionally, practitioners and industrial developers who are interested in the concepts behind business intelligence will benefit from the clear explanations and many examples. [Machine Learning in Action](#) Peter Harrington 2012-04-03 Summary Machine Learning in Action is unique book that blends the foundational theories of machine learning with the practical realities of building tools for everyday data analysis. You'll use the flexible Python programming language to build programs that implement algorithms for data classification, forecasting, recommendations, and higher-level features like summarization and simplification. About the Book A machine is said to learn when its performance improves with experience. Learning requires algorithms and programs that capture data and ferret out the interesting or useful patterns. Once the specialized domain of analysts and mathematicians, machine learning is becoming a skill needed by many. Machine Learning in Action is a clearly written tutorial for developers. It avoids academic language and takes you straight to the techniques you'll use in your day-to-day work. Many (Python) examples present the core algorithms of statistical data processing, data analysis, and data visualization in code you can reuse. You'll understand the concepts and how they fit in with tactical tasks like classification, forecasting, recommendations, and higher-level features like summarization and simplification. Readers need no prior experience with machine learning or statistical processing. Familiarity with Python is helpful. Purchase of the print book comes with an offer of a free PDF, ePub, and Kindle eBook from Manning. Also available is all code from the book. What's Inside A no-nonsense introduction Examples showing common ML tasks Everyday data analysis Implementing classic algorithms like Apriori and Adaboos Table of Contents PART 1 CLASSIFICATION Machine learning basics Classifying with k-Nearest Neighbors Splitting datasets one feature at a time:

decision trees Classifying with probability theory: naïve Bayes Logistic regression Support vector machines Improving classification with the AdaBoost meta algorithm PART 2 FORECASTING NUMERIC VALUES WITH REGRESSION Predicting numeric values: regression Tree-based regression PART 3 UNSUPERVISED LEARNING Grouping unlabeled items using k-means clustering Association analysis with the Apriori algorithm Efficiently finding frequent itemsets with FP-growth PART 4 ADDITIONAL TOOLS Using principal component analysis to simplify data Simplifying data with the singular value decomposition Big data and MapReduce

**Hands-On Data Science and Python Machine Learning** Frank Kane 2017-07-31 This book covers the fundamentals of machine learning with Python in a concise and dynamic manner. It covers data mining and large-scale machine learning using Apache Spark. About This Book Take your first steps in the world of data science by understanding the tools and techniques of data analysis Train efficient Machine Learning models in Python using the supervised and unsupervised learning methods Learn how to use Apache Spark for processing Big Data efficiently Who This Book Is For If you are a budding data scientist or a data analyst who wants to analyze and gain actionable insights from data using Python, this book is for you. Programmers with some experience in Python who want to enter the lucrative world of Data Science will also find this book to be very useful, but you don't need to be an expert Python coder or mathematician to get the most from this book. What You Will Learn Learn how to clean your data and ready it for analysis Implement the popular clustering and regression methods in Python Train efficient machine learning models using decision trees and random forests Visualize the results of your analysis using Python's Matplotlib library Use Apache Spark's MLlib package to perform machine learning on large datasets In Detail Join Frank Kane, who worked on Amazon and IMDb's machine learning algorithms, as he guides you on your first steps into the world of data science. Hands-On Data Science and Python Machine Learning gives you the tools that you need to understand and explore the core topics in the field, and the confidence and practice to build and analyze your own machine learning models. With the help of interesting and easy-to-follow practical examples, Frank Kane explains potentially complex topics such as Bayesian methods and K-means clustering in a way that anybody can understand them. Based on Frank's successful data science course, Hands-On Data Science and Python Machine Learning empowers you to conduct data analysis and perform efficient machine learning using Python. Let Frank help you unearth the value in your data using the various data mining and data analysis techniques available in Python, and to develop efficient predictive models to predict future results. You will also learn how to perform large-scale machine learning on Big Data using Apache Spark. The book covers preparing your data for analysis, training machine learning models, and visualizing the final data analysis. Style and approach This comprehensive book is a perfect blend of theory and hands-on code examples in Python which can be used for your reference at any time.

**End-to-End Data Science with SAS** James Gearheart 2020-06-26 Learn data science concepts with real-world examples in SAS! End-to-End Data Science with SAS: A Hands-On Programming Guide provides clear and practical explanations of the data science environment, machine learning techniques, and the SAS programming knowledge necessary to develop machine learning models in any industry. The book covers concepts including understanding the business need, creating a modeling data set, linear regression, parametric classification models, and non-parametric classification models. Real-world business examples and example code are used to demonstrate each process step-by-step. Although a significant amount of background information and supporting mathematics are presented, the book is not structured as a textbook, but rather it is a user's guide for the application of data science and machine learning in a business environment. Readers will learn how to think like a data scientist, wrangle messy data, choose a model, and evaluate the model's effectiveness. New data scientists or professionals who want more experience with SAS will find this book to be an invaluable reference. Take your data science career to the next level by mastering SAS programming for machine learning models.

**Using Mixed Methods** David Plowright 2010-12-20 Using Mixed Methods offers an innovative approach to social and educational research. The author sets out the case for research from an holistic perspective, integrating different methods, different data and overall research strategies. This book shows how to use an integrated methodology that meets the needs of the postgraduate researcher who wants to challenge the traditional paradigmatic view of research. The author explores: - The FraIM and its application to social and educational research - The contexts of research - Different methods of data collection - Types of data and their natural integration within the research process This book is for final year undergraduate and postgraduate students on social science and education courses. David Plowright is a lecturer in the Centre for Educational Studies at the University of Hull.

**The Essential Guide to Doing Your Research Project** Zina O'Leary 2013-11-18 The Essential Guide to Doing Your Research Project 2e is the ultimate companion to successfully completing your research project. Warm and pragmatic, it gives you the skills and the confidence needed to succeed no matter what happens along the way. The book guides you through every step of your research project, from getting started to analysing data and writing up. Each stage is clearly set out, highlighting best practice and providing practical tips and down-to-earth advice for actually doing research. Key features include: Fully developed companion website including podcasts, worksheets, examples of real projects and links to journal articles Chapter summaries Boxed definitions of key terms Full glossary Suggestions for further reading Bursting with real world examples and multidisciplinary case studies, this book addresses the key questions posed by anyone hoping to complete a research project. It is the must-have textbook every student needs. Available with Perusall—an eBook that makes it easier to prepare for class Perusall is an award-winning eBook platform featuring social annotation tools that allow students and instructors to collaboratively mark up and discuss their SAGE textbook. Backed by research and supported by technological innovations developed at Harvard University, this process of learning through collaborative annotation keeps your students engaged and makes teaching easier and more effective. Learn more.

**Big Data Optimization: Recent Developments and Challenges** Ali Emrouznejad 2016-05-26 The main objective of this book is to provide the necessary background to work with big data by introducing some novel optimization algorithms and codes capable of working in the big data setting as well as introducing some applications in big data optimization for both academics and practitioners interested, and to benefit society, industry, academia, and government. Presenting applications in a variety of industries, this book will be useful for the researchers aiming to analyse large scale data. Several optimization algorithms for big data including convergent parallel algorithms, limited memory bundle algorithm, diagonal bundle method, convergent parallel algorithms, network analytics, and many more have been explored in this book.

**Real-Time Analytics** Byron Ellis 2014-06-23 Construct a robust end-to-end solution for analyzing and visualizing streaming data Real-time analytics is the hottest topic in data analytics today. In Real-Time Analytics: Techniques to Analyze and Visualize Streaming Data, expert Byron Ellis teaches data analysts technologies to build an effective real-time analytics platform. This platform can then be used to make sense of the constantly changing data that is beginning to outpace traditional batch-based analysis platforms. The author is among a very few leading

experts in the field. He has a prestigious background in research, development, analytics, real-time visualization, and Big Data streaming and is uniquely qualified to help you explore this revolutionary field. Moving from a description of the overall analytic architecture of real-time analytics to using specific tools to obtain targeted results, Real-Time Analytics leverages open source and modern commercial tools to construct robust, efficient systems that can provide real-time analysis in a cost-effective manner. The book includes: A deep discussion of streaming data systems and architectures Instructions for analyzing, storing, and delivering streaming data Tips on aggregating data and working with sets Information on data warehousing options and techniques Real-Time Analytics includes in-depth case studies for website analytics, Big Data, visualizing streaming and mobile data, and mining and visualizing operational data flows. The book's "recipe" layout lets readers quickly learn and implement different techniques. All of the code examples presented in the book, along with their related data sets, are available on the companion website.

**Big Data** Rajkumar Buyya 2016-06-07 Big Data: Principles and Paradigms captures the state-of-the-art research on the architectural aspects, technologies, and applications of Big Data. The book identifies potential future directions and technologies that facilitate insight into numerous scientific, business, and consumer applications. To help realize Big Data's full potential, the book addresses numerous challenges, offering the conceptual and technological solutions for tackling them. These challenges include life-cycle data management, large-scale storage, flexible processing infrastructure, data modeling, scalable machine learning, data analysis algorithms, sampling techniques, and privacy and ethical issues. Covers computational platforms supporting Big Data applications Addresses key principles underlying Big Data computing Examines key developments supporting next generation Big Data platforms Explores the challenges in Big Data computing and ways to overcome them Contains expert contributors from both academia and industry

**Improving E-Commerce Web Applications Through Business Intelligence Techniques** Sreedhar, G. 2018-02-02 As the Internet becomes increasingly interconnected with modern society, the transition to online business has developed into a prevalent form of commerce. While there exist various advantages and disadvantages to online business, it plays a major role in contemporary business methods. Improving E-Commerce Web Applications Through Business Intelligence Techniques provides emerging research on the core areas of e-commerce web applications. While highlighting the use of data mining, search engine optimization, and online marketing to advance online business, readers will learn how the role of online commerce is becoming more prevalent in modern business. This book is an important resource for vendors, website developers, online customers, and scholars seeking current research on the development and use of e-commerce.

**Modeling Techniques in Predictive Analytics with Python and R** Thomas W. Miller 2014-09-29 Master predictive analytics, from start to finish Start with strategy and management Master methods and build models Transform your models into highly-effective code—in both Python and R This one-of-a-kind book will help you use predictive analytics, Python, and R to solve real business problems and drive real competitive advantage. You'll master predictive analytics through realistic case studies, intuitive data visualizations, and up-to-date code for both Python and R—not complex math. Step by step, you'll walk through defining problems, identifying data, crafting and optimizing models, writing effective Python and R code, interpreting results, and more. Each chapter focuses on one of today's key applications for predictive analytics, delivering focus and knowledge to put models to work—and maximize their value. Thomas W. Miller, leader of Northwestern University's pioneering program in predictive analytics, addresses everything you need to succeed: strategy and management, methods and models, and technology and code. If you're new to predictive analytics, you'll gain a strong foundation for achieving accurate, actionable results. If you're already working in the field, you'll master powerful new skills. If you're familiar with either Python or R, you'll discover how these languages complement each other, enabling you to do even more. All data sets, extensive Python and R code, and additional examples available for download at <http://www.ftpress.com/miller/> Python and R offer immense power in predictive analytics, data science, and big data. This book will help you leverage that power to solve real business problems, and drive real competitive advantage. Thomas W. Miller's unique balanced approach combines business context and quantitative tools, illuminating each technique with carefully explained code for the latest versions of Python and R. If you're new to predictive analytics, Miller gives you a strong foundation for achieving accurate, actionable results. If you're already a modeler, programmer, or manager, you'll learn crucial skills you don't already have. Using Python and R, Miller addresses multiple business challenges, including segmentation, brand positioning, product choice modeling, pricing research, finance, sports, text analytics, sentiment analysis, and social network analysis. He illuminates the use of cross-sectional data, time series, spatial, and spatio-temporal data. You'll learn why each problem matters, what data are relevant, and how to explore the data you've identified. Miller guides you through conceptually modeling each data set with words and figures; and then modeling it again with realistic code that delivers actionable insights. You'll walk through model construction, explanatory variable subset selection, and validation, mastering best practices for improving out-of-sample predictive performance. Miller employs data visualization and statistical graphics to help you explore data, present models, and evaluate performance. Appendices include five complete case studies, and a detailed primer on modern data science methods. Use Python and R to gain powerful, actionable, profitable insights about: Advertising and promotion Consumer preference and choice Market baskets and related purchases Economic forecasting Operations management Unstructured text and language Customer sentiment Brand and price Sports team performance And much more

**Big Data in Astronomy** Linghe Kong 2020-06-13 Big Data in Radio Astronomy: Scientific Data Processing for Advanced Radio Telescopes provides the latest research developments in big data methods and techniques for radio astronomy. Providing examples from such projects as the Square Kilometer Array (SKA), the world's largest radio telescope that generates over an Exabyte of data every day, the book offers solutions for coping with the challenges and opportunities presented by the exponential growth of astronomical data. Presenting state-of-the-art results and research, this book is a timely reference for both practitioners and researchers working in radio astronomy, as well as students looking for a basic understanding of big data in astronomy. Bridges the gap between radio astronomy and computer science Includes coverage of the observation lifecycle as well as data collection, processing and analysis Presents state-of-the-art research and techniques in big data related to radio astronomy Utilizes real-world examples, such as Square Kilometer Array (SKA) and Five-hundred-meter Aperture Spherical radio Telescope (FAST)

**Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data** Paul Zikopoulos 2011-10-22 Big Data represents a new era in data exploration and utilization, and IBM is uniquely positioned to help clients navigate this transformation. This book reveals how IBM is leveraging open source Big Data technology, infused with IBM technologies, to deliver a robust, secure, highly available, enterprise-class Big Data platform. The three defining characteristics of Big Data--volume, variety, and velocity--are discussed. You'll get a primer on Hadoop and how IBM is hardening it for the enterprise, and learn when to leverage

IBM InfoSphere BigInsights (Big Data at rest) and IBM InfoSphere Streams (Big Data in motion) technologies. Industry use cases are also included in this practical guide. Learn how IBM hardens Hadoop for enterprise-class scalability and reliability Gain insight into IBM's unique in-motion and at-rest Big Data analytics platform Learn tips and tricks for Big Data use cases and solutions Get a quick Hadoop primer

**Big Data Preprocessing** Julián Luengo 2020-03-16 This book offers a comprehensible overview of Big Data Preprocessing, which includes a formal description of each problem. It also focuses on the most relevant proposed solutions. This book illustrates actual implementations of algorithms that helps the reader deal with these problems. This book stresses the gap that exists between big, raw data and the requirements of quality data that businesses are demanding. This is called Smart Data, and to achieve Smart Data the preprocessing is a key step, where the imperfections, integration tasks and other processes are carried out to eliminate superfluous information. The authors present the concept of Smart Data through data preprocessing in Big Data scenarios and connect it with the emerging paradigms of IoT and edge computing, where the end points generate Smart Data without completely relying on the cloud. Finally, this book provides some novel areas of study that are gathering a deeper attention on the Big Data preprocessing. Specifically, it considers the relation with Deep Learning (as of a technique that also relies in large volumes of data), the difficulty of finding the appropriate selection and concatenation of preprocessing techniques applied and some other open problems. Practitioners and data scientists who work in this field, and want to introduce themselves to preprocessing in large data volume scenarios will want to purchase this book. Researchers that work in this field, who want to know which algorithms are currently implemented to help their investigations, may also be interested in this book.

**Web and Network Data Science** Thomas W. Miller 2015 Master modern web and network data modeling: both theory and applications. In Web and Network Data Science, a top faculty member of Northwestern University's prestigious analytics program presents the first fully-integrated treatment of both the business and academic elements of web and network modeling for predictive analytics. Some books in this field focus either entirely on business issues (e.g., Google Analytics and SEO); others are strictly academic (covering topics such as sociology, complexity theory, ecology, applied physics, and economics). This text gives today's managers and students what they really need: integrated coverage of concepts, principles, and theory in the context of real-world applications. Building on his pioneering Web Analytics course at Northwestern University, Thomas W. Miller covers usability testing, Web site performance, usage analysis, social media platforms, search engine optimization (SEO), and many other topics. He balances this practical coverage with accessible and up-to-date introductions to both social network analysis and network science, demonstrating how these disciplines can be used to solve real business problems.

**Essentials of Business Analytics** Bhimasankaram Pochiraju 2019-07-10 This comprehensive edited volume is the first of its kind, designed to serve as a textbook for long-duration business analytics programs. It can also be used as a guide to the field by practitioners. The book has contributions from experts in top universities and industry. The editors have taken extreme care to ensure continuity across the chapters. The material is organized into three parts: A) Tools, B) Models and C) Applications. In Part A, the tools used by business analysts are described in detail. In Part B, these tools are applied to construct models used to solve business problems. Part C contains detailed applications in various functional areas of business and several case studies. Supporting material can be found in the appendices that develop the pre-requisites for the main text. Every chapter has a business orientation. Typically, each chapter begins with the description of business problems that are transformed into data questions; and methodology is developed to solve these questions. Data analysis is conducted using widely used software, the output and results are clearly explained at each stage of development. These are finally transformed into a business solution. The companion website provides examples, data sets and sample code for each chapter.

**Big Data Analytics with Java** Rajat Mehta 2017-07-31 Learn the basics of analytics on big data using Java, machine learning and other big data tools About This Book Acquire real-world set of tools for building enterprise level data science applications Surpasses the barrier of other languages in data science and learn create useful object-oriented codes Extensive use of Java compliant big data tools like apache spark, Hadoop, etc. Who This Book Is For This book is for Java developers who are looking to perform data analysis in production environment. Those who wish to implement data analysis in their Big data applications will find this book helpful. What You Will Learn Start from simple analytic tasks on big data Get into more complex tasks with predictive analytics on big data using machine learning Learn real time analytic tasks Understand the concepts with examples and case studies Prepare and refine data for analysis Create charts in order to understand the data See various real-world datasets In Detail This book covers case studies such as sentiment analysis on a tweet dataset, recommendations on a movielens dataset, customer segmentation on an ecommerce dataset, and graph analysis on actual flights dataset. This book is an end-to-end guide to implement analytics on big data with Java. Java is the de facto language for major big data environments, including Hadoop. This book will teach you how to perform analytics on big data with production-friendly Java. This book basically divided into two sections. The first part is an introduction that will help the readers get acquainted with big data environments, whereas the second part will contain a hardcore discussion on all the concepts in analytics on big data. It will take you from data analysis and data visualization to the core concepts and advantages of machine learning, real-life usage of regression and classification using Naive Bayes, a deep discussion on the concepts of clustering, and a review of simple neural networks on big data using deepLearning4j or plain Java Spark code. This book is a must-have book for Java developers who want to start learning big data analytics and want to use it in the real world. Style and approach The approach of book is to deliver practical learning modules in manageable content. Each chapter is a self-contained unit of a concept in big data analytics. Book will step by step builds the competency in the area of big data analytics. Examples using real world case studies to give ideas of real applications and how to use the techniques mentioned. The examples and case studies will be shown using both theory and code.

**Modeling Techniques in Predictive Analytics** Thomas W. Miller 2014-10 Today, successful firms win by understanding their data more deeply than competitors do. They compete based on analytics. In Modeling Techniques in Predictive Analytics, Revised Edition, the leader of Northwestern University's prestigious analytics program brings together all the up-to-date concepts, techniques, and R code you need to excel in analytics. Thomas W. Miller's balanced approach combines business context and quantitative tools, appealing to managers, analysts, programmers, and students alike. This Revised Edition is updated with new sources throughout, and has been reorganized to be completely modular. Each chapter now stands completely on its own - thereby supporting even more flexible learning paths, and helping readers quickly access all the knowledge they need to solve any category of problem. Miller addresses multiple business challenges and business cases, including segmentation, brand positioning, product choice modeling, pricing research, finance, sports, Web and text analytics, and social network analysis. He illuminates the use of cross-sectional data, time series, spatial, and even

spatio-temporal data. For each problem, Miller explains: Why the problem is significant What data is relevant How to explore your data How to model your data - first conceptually, with words and figures; and then with mathematics and programs Miller walks through model construction, explanatory variable subset selection, and validation, demonstrating best practices for improving out-of-sample predictive performance. He employs data visualization and statistical graphics in exploring data, presenting models, and evaluating performance. Extensive example code is presented in R, today's #1 system for applied statistics, statistical research, and predictive modeling; all code is set apart from other text so it's easy to find for those who want it (and easy to skip for those who don't).

**Research Methods in Public Administration and Nonprofit Management** David E. McNabb 2017-09-11 Now in a thoroughly revised and refreshed fourth edition, Research Methods in Public Administration and Nonprofit Management is beloved by students and professors alike for its exceptional clarity and accessibility and plentiful illustrations. This new edition integrates quantitative, qualitative, and mixed-methods approaches, as well as specific up-to-date instruction in the use of statistical software programs such as Excel and SPSS. Changes to this edition include: A new section, featuring two new chapters, to explore mixed-methods approaches to research, including fundamentals, research design, data collection, and analyzing and interpreting findings A new, dedicated chapter on Big Data research Updated exhibits and examples throughout the book A new companion website to accompany the book containing PowerPoint slides for each chapter New exhibits, tables, figures, and exercises, as well as key terms and discussion questions at the end of each chapter Research Methods in Public Administration and Nonprofit Management, 4e is an ideal textbook for use in all research methods courses in undergraduate and graduate public administration, public affairs, and nonprofit management courses.

**Hadoop in Practice** Alex Holmes 2014-09-29 Summary Hadoop in Practice, Second Edition provides over 100 tested, instantly useful techniques that will help you conquer big data, using Hadoop. This revised new edition covers changes and new features in the Hadoop core architecture, including MapReduce 2. Brand new chapters cover YARN and integrating Kafka, Impala, and Spark SQL with Hadoop. You'll also get new and updated techniques for Flume, Sqoop, and Mahout, all of which have seen major new versions recently. In short, this is the most practical, up-to-date coverage of Hadoop available anywhere. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Book It's always a good time to upgrade your Hadoop skills! Hadoop in Practice, Second Edition provides a collection of 104 tested, instantly useful techniques for analyzing real-time streams, moving data securely, machine learning, managing large-scale clusters, and taming big data using Hadoop. This completely revised edition covers changes and new features in Hadoop core, including MapReduce 2 and YARN. You'll pick up hands-on best practices for integrating Spark, Kafka, and Impala with Hadoop, and get new and updated techniques for the latest versions of Flume, Sqoop, and Mahout. In short, this is the most practical, up-to-date coverage of Hadoop available. Readers need to know a programming language like Java and have basic familiarity with Hadoop. What's Inside Thoroughly updated for Hadoop 2 How to write YARN applications Integrate real-time technologies like Storm, Impala, and Spark Predictive analytics using Mahout and RR Readers need to know a programming language like Java and have basic familiarity with Hadoop. About the Author Alex Holmes works on tough big-data problems. He is a software engineer, author, speaker, and blogger specializing in large-scale Hadoop projects. Table of Contents PART 1 BACKGROUND AND FUNDAMENTALS Hadoop in a heartbeat Introduction to YARN PART 2 DATA LOGISTICS Data serialization—working with text and beyond Organizing and optimizing data in HDFS Moving data into and out of Hadoop PART 3 BIG DATA PATTERNS Applying MapReduce patterns to big data Utilizing data structures and algorithms at scale Tuning, debugging, and testing PART 4 BEYOND MAPREDUCE SQL on Hadoop Writing a YARN application

**Python for Finance** Yves Hilpisch 2018-12-05 The financial industry has recently adopted Python at a tremendous rate, with some of the largest investment banks and hedge funds using it to build core trading and risk management systems. Updated for Python 3, the second edition of this hands-on book helps you get started with the language, guiding developers and quantitative analysts through Python libraries and tools for building financial applications and interactive financial analytics. Using practical examples throughout the book, author Yves Hilpisch also shows you how to develop a full-fledged framework for Monte Carlo simulation-based derivatives and risk analytics, based on a large, realistic case study. Much of the book uses interactive IPython Notebooks.

**The Data Science Design Manual** Steven S. Skiena 2017-07-01 This engaging and clearly written textbook/reference provides a must-have introduction to the rapidly emerging interdisciplinary field of data science. It focuses on the principles fundamental to becoming a good data scientist and the key skills needed to build systems for collecting, analyzing, and interpreting data. The Data Science Design Manual is a source of practical insights that highlights what really matters in analyzing data, and provides an intuitive understanding of how these core concepts can be used. The book does not emphasize any particular programming language or suite of data-analysis tools, focusing instead on high-level discussion of important design principles. This easy-to-read text ideally serves the needs of undergraduate and early graduate students embarking on an "Introduction to Data Science" course. It reveals how this discipline sits at the intersection of statistics, computer science, and machine learning, with a distinct heft and character of its own. Practitioners in these and related fields will find this book perfect for self-study as well. Additional learning tools: Contains "War Stories," offering perspectives on how data science applies in the real world Includes "Homework Problems," providing a wide range of exercises and projects for self-study Provides a complete set of lecture slides and online video lectures at [www.data-manual.com](http://www.data-manual.com) Provides "Take-Home Lessons," emphasizing the big-picture concepts to learn from each chapter Recommends exciting "Kaggle Challenges" from the online platform Kaggle Highlights "False Starts," revealing the subtle reasons why certain approaches fail Offers examples taken from the data science television show "The Quant Shop" ([www.quant-shop.com](http://www.quant-shop.com))

**Data Science for Economics and Finance** Sergio Consoli 2021 This open access book covers the use of data science, including advanced machine learning, big data analytics, Semantic Web technologies, natural language processing, social media analysis, time series analysis, among others, for applications in economics and finance. In addition, it shows some successful applications of advanced data science solutions used to extract new knowledge from data in order to improve economic forecasting models. The book starts with an introduction on the use of data science technologies in economics and finance and is followed by thirteen chapters showing success stories of the application of specific data science methodologies, touching on particular topics related to novel big data sources and technologies for economic analysis (e.g. social media and news); big data models leveraging on supervised/unsupervised (deep) machine learning; natural language processing to build economic and financial indicators; and forecasting and nowcasting of economic variables through time series analysis. This book is relevant to all stakeholders involved in digital and data-intensive research in economics and finance, helping them to understand the main opportunities and challenges, become familiar with the latest methodological findings, and learn how

to use and evaluate the performances of novel tools and frameworks. It primarily targets data scientists and business analysts exploiting data science technologies, and it will also be a useful resource to research students in disciplines and courses related to these topics. Overall, readers will learn modern and effective data science solutions to create tangible innovations for economic and financial applications.

**The Current State of Quantitative Equity Investing** Ying L. Becker 2018-05-10 Quantitative equity management techniques are helping investors achieve more risk efficient and appropriate investment outcomes. Factor investing, vetted by decades of prior and current research, is growing quickly, particularly in the form of smart-beta and ETF strategies. Dynamic factor-timing approaches, incorporating macroeconomic and investment conditions, are in the early stages but will likely thrive. A new generation of big data approaches are rendering quantitative equity analysis even more powerful and encompassing.

**Introduction to Information Retrieval** Christopher D. Manning 2008-07-07 Class-tested and coherent, this textbook teaches classical and web information retrieval, including web search and the related areas of text classification and text clustering from basic concepts. It gives an up-to-date treatment of all aspects of the design and implementation of systems for gathering, indexing, and searching documents; methods for evaluating systems; and an introduction to the use of machine learning methods on text collections. All the important ideas are explained using examples and figures, making it perfect for introductory courses in information retrieval for advanced undergraduates and graduate students in computer science. Based on feedback from extensive classroom experience, the book has been carefully structured in order to make teaching more natural and effective. Slides and additional exercises (with solutions for lecturers) are also available through the book's supporting website to help course instructors prepare their lectures.

**Introduction to Data Science** Rafael A. Irizarry 2019-11-20 Introduction to Data Science: Data Analysis and Prediction Algorithms with R introduces concepts and skills that can help you tackle real-world data analysis challenges. It covers concepts from probability, statistical inference, linear regression, and machine learning. It also helps you develop skills such as R programming, data wrangling, data visualization, predictive algorithm building, file organization with UNIX/Linux shell, version control with Git and GitHub, and reproducible document preparation. This book is a textbook for a first course in data science. No previous knowledge of R is necessary, although some experience with programming may be helpful. The book is divided into six parts: R, data visualization, statistics with R, data wrangling, machine learning, and productivity tools. Each part has several chapters meant to be presented as one lecture. The author uses motivating case studies that realistically mimic a data scientist's experience. He starts by asking specific questions and answers these through data analysis so concepts are learned as a means to answering the questions. Examples of the case studies included are: US murder rates by state, self-reported student heights, trends in world health and economics, the impact of vaccines on infectious disease rates, the financial crisis of 2007-2008, election forecasting, building a baseball team, image processing of hand-written digits, and movie recommendation systems. The statistical concepts used to answer the case study questions are only briefly introduced, so complementing with a probability and statistics textbook is highly recommended for in-depth understanding of these concepts. If you read and understand the chapters and complete the exercises, you will be prepared to learn the more advanced concepts and skills needed to become an expert.

**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.

**Text Analytics with Python** Dipanjan Sarkar 2016-11-30 Derive useful insights from your data using Python. You will learn both basic and advanced concepts, including text and language syntax, structure, and semantics. You will focus on algorithms and techniques, such as text classification, clustering, topic modeling, and text summarization. Text Analytics with Python teaches you the techniques related to natural language processing and text analytics, and you will gain the skills to know which technique is best suited to solve a particular problem. You will look at each technique and algorithm with both a bird's eye view to understand how it can be used as well as with a microscopic view to understand the mathematical concepts and to implement them to solve your own problems. What You Will Learn: Understand the major concepts and techniques of natural language processing (NLP) and text analytics, including syntax and structure Build a text classification system to categorize news articles, analyze app or game reviews using topic modeling and text summarization, and cluster popular movie synopses and analyze the sentiment of movie reviews Implement Python and popular open source libraries in NLP and text analytics, such as the natural language toolkit (nltk), gensim, scikit-learn, spaCy and Pattern Who This Book Is For : IT professionals, analysts, developers, linguistic experts, data scientists, and anyone with a keen interest in linguistics, analytics, and generating insights from textual data **Big Data Fundamentals** Thomas Erl 2015-12-29 "This text should be required reading for everyone in contemporary business." --Peter Woodhull, CEO, Modus21 "The one

book that clearly describes and links Big Data concepts to business utility." -- Dr. Christopher Starr, PhD "Simply, this is the best Big Data book on the market!" --Sam Rostam, Cascadian IT Group "...one of the most contemporary approaches I've seen to Big Data fundamentals..." --Joshua M. Davis, PhD The Definitive Plain-English Guide to Big Data for Business and Technology Professionals Big Data Fundamentals provides a pragmatic, no-nonsense introduction to Big Data. Best-selling IT author Thomas Erl and his team clearly explain key Big Data concepts, theory and terminology, as well as fundamental technologies and techniques. All coverage is supported with case study examples and numerous simple diagrams. The authors begin by explaining how Big Data can propel an organization forward by solving a spectrum of previously intractable business problems. Next, they demystify key analysis techniques and technologies and show how a Big Data solution environment can be built and integrated to offer competitive advantages. Discovering Big Data's fundamental concepts and what makes it different from previous forms of data analysis and data science Understanding the business motivations and drivers behind Big Data adoption, from operational improvements through innovation Planning strategic, business-driven Big Data initiatives Addressing considerations such as data management, governance, and security Recognizing the 5 "V" characteristics of datasets in Big Data environments: volume, velocity, variety, veracity, and value Clarifying Big Data's relationships with OLTP, OLAP, ETL, data warehouses, and data marts Working with Big Data in structured, unstructured, semi-structured, and metadata formats Increasing value by integrating Big Data resources with corporate performance monitoring Understanding how Big Data leverages distributed and parallel processing Using NoSQL and other technologies to meet Big Data's distinct data processing requirements Leveraging statistical approaches of quantitative and qualitative analysis Applying computational analysis methods, including machine learning **Big Data Processing with Apache Spark** Srini Penchikala 2018-03-13 Apache Spark is a popular open-source big-data processing framework that's built around speed, ease of use, and unified distributed computing architecture. Not only it supports developing applications in different languages like Java, Scala, Python, and R, it's also hundred times faster in memory and ten times faster even when running on disk compared to traditional data processing frameworks. Whether you are currently working on a big data project or interested in learning more about topics like machine learning, streaming data processing, and graph data analytics, this book is for you. You can learn about Apache Spark and develop Spark programs for various use cases in big data analytics using the code examples provided. This book covers all the libraries in Spark ecosystem: Spark Core, Spark SQL, Spark Streaming, Spark ML, and Spark GraphX.

**The Impact of Artificial Intelligence on Governance, Economics and Finance, Volume I** Sezer Bozkus Kahyaoglu 2021-04-26 The book discusses the effects of artificial intelligence in terms of economics and finance. In particular, the book focuses on the effects of the change in the structure of financial markets, institutions and central banks, along with digitalization analyzed based on fintech ecosystems. In addition to finance sectors, other sectors, such as health, logistics, and industry 4.0, all of which are undergoing an artificial intelligence induced rapid transformation, are addressed in this book. Readers will receive an understanding of an integrated approach towards the use of artificial intelligence across various industries and disciplines with a vision to address the strategic issues and priorities in the dynamic business environment in order to facilitate decision-making processes. Economists, board members of central banks, bankers, financial analysts, regulatory authorities, accounting and finance professionals, chief executive officers, chief audit officers and chief financial officers, chief financial officers, as well as business and management academic researchers, will benefit from reading this book.

**Autonomous Horizons** Greg Zacharias 2019-04-05 Dr. Greg Zacharias, former Chief Scientist of the United States Air Force (2015-18), explores next steps in autonomous systems (AS) development, fielding, and training. Rapid advances in AS development and artificial intelligence (AI) research will change how we think about machines, whether they are individual vehicle platforms or networked enterprises. The payoff will be considerable, affording the US military significant protection for aviators, greater effectiveness in employment, and unlimited opportunities for novel and disruptive concepts of operations. Autonomous Horizons: The Way Forward identifies issues and makes recommendations for the Air Force to take full advantage of this transformational technology.

**Machine Learning for Absolute Beginners** Oliver Theobald 2018 "The manner in which computers are now able to mimic human thinking to process information is rapidly exceeding human capabilities in everything from chess to picking the winner of a song contest. In the modern age of machine learning, computers do not strictly need to receive an 'input command' to perform a task, but rather 'input data'. From the input of data they are able to form their own decisions and take actions virtually as a human world. But given it is a machine, it can consider many more scenarios and execute far more complicated calculations to solve complex problems. This is the element that excites data scientists and machine learning engineers the most. The ability to solve complex problems never before attempted. This book will dive in to introduce machine learning, and is ideal for beginners starting out in machine learning."--page 4 of cover.

**Exploring SAS Viya** Sas Education 2019-06-14 This first book in the series covers how to access data files, libraries, and existing code in SAS Studio. You also learn about new procedures in SAS Viya, how to write new code, and how to use some of the pre-installed tasks that come with SAS Visual Data Mining and Machine Learning. In the last chapter, you learn how to use the features in SAS Data Preparation to perform data management tasks using SAS Data Explorer, SAS Data Studio, and SAS Lineage Viewer. Also available free as a PDF from sas.com/books.

**Data Lake for Enterprises** Tomcy John 2017-05-31 A practical guide to implementing your enterprise data lake using Lambda Architecture as the base About This Book Build a full-fledged data lake for your organization with popular big data technologies using the Lambda architecture as the base Delve into the big data technologies required to meet modern day business strategies A highly practical guide to implementing enterprise data lakes with lots of examples and real-world use-cases Who This Book Is For Java developers and architects who would like to implement a data lake for their enterprise will find this book useful. If you want to get hands-on experience with the Lambda Architecture and big data technologies by implementing a practical solution using these technologies, this book will also help you. What You Will Learn Build an enterprise-level data lake using the relevant big data technologies Understand the core of the Lambda architecture and how to apply it in an enterprise Learn the technical details around Sqoop and its functionalities Integrate Kafka with Hadoop components to acquire enterprise data Use flume with streaming technologies for stream-based processing Understand stream-based processing with reference to Apache Spark Streaming Incorporate Hadoop components and know the advantages they provide for enterprise data lakes Build fast, streaming, and high-performance applications using Elasticsearch Make your data ingestion process consistent across various data formats with configurability Process your data to derive intelligence using machine learning algorithms In Detail The term "Data Lake" has recently emerged as a prominent term in the big data industry. Data scientists can make use of it in deriving meaningful insights that can be used by businesses to redefine or transform the way they operate. Lambda architecture is also emerging as one of the very eminent patterns in the big data landscape, as it not only helps to derive useful

information from historical data but also correlates real-time data to enable business to take critical decisions. This book tries to bring these two important aspects – data lake and lambda architecture—together. This book is divided into three main sections. The first introduces you to the concept of data lakes, the importance of data lakes in enterprises, and getting you up-to-speed with the Lambda architecture. The second section delves into the principal components of building a data lake using the Lambda architecture. It introduces you to popular big data technologies such as Apache Hadoop, Spark, Sqoop, Flume, and ElasticSearch. The third section is a highly practical demonstration of putting it all together, and shows you how an enterprise data lake can be implemented, along with several real-world use-cases. It also shows you how other peripheral components can be added to the lake to make it more efficient. By the end of this book, you will be able to choose the right big data technologies using the lambda architectural patterns to build your enterprise data lake. Style and approach The book takes a pragmatic approach, showing ways to leverage big data technologies and lambda architecture to build an enterprise-level data lake.

*Fault-tolerant Computer System Design* Dhiraj K. Pradhan 1996 In the ten years since the publication of the first edition of this book, the field of fault-tolerant design has broadened in appeal, particularly with its emerging application in distributed computing. This new edition specifically deals with this dynamically changing computing environment, incorporating new topics such as fault-tolerance in multiprocessor and distributed systems.

*Data Science and Big Data Analytics* EMC Education Services 2015-01-05 Data Science and Big Data Analytics is about harnessing the power of data for new insights. The book covers the breadth of activities and methods and tools that Data Scientists use. The content focuses on concepts, principles and practical applications that are applicable to any industry and technology environment, and the learning is supported and explained with examples that you can replicate using open-source software. This book will help you: Become a contributor on a data science team Deploy a structured lifecycle approach to data analytics problems Apply appropriate analytic techniques and tools to analyzing big data Learn how to tell

a compelling story with data to drive business action Prepare for EMC Proven Professional Data Science Certification Corresponding data sets are available from the book's page at Wiley which you can find on the Wiley site by searching for the ISBN 9781118876138. Get started discovering, analyzing, visualizing, and presenting data in a meaningful way today!

*Machine Learning Models and Algorithms for Big Data Classification* Shan Suthaharan 2015-10-20 This book presents machine learning models and algorithms to address big data classification problems. Existing machine learning techniques like the decision tree (a hierarchical approach), random forest (an ensemble hierarchical approach), and deep learning (a layered approach) are highly suitable for the system that can handle such problems. This book helps readers, especially students and newcomers to the field of big data and machine learning, to gain a quick understanding of the techniques and technologies; therefore, the theory, examples, and programs (Matlab and R) presented in this book have been simplified, hardcoded, repeated, or spaced for improvements. They provide vehicles to test and understand the complicated concepts of various topics in the field. It is expected that the readers adopt these programs to experiment with the examples, and then modify or write their own programs toward advancing their knowledge for solving more complex and challenging problems. The presentation format of this book focuses on simplicity, readability, and dependability so that both undergraduate and graduate students as well as new researchers, developers, and practitioners in this field can easily trust and grasp the concepts, and learn them effectively. It has been written to reduce the mathematical complexity and help the vast majority of readers to understand the topics and get interested in the field. This book consists of four parts, with the total of 14 chapters. The first part mainly focuses on the topics that are needed to help analyze and understand data and big data. The second part covers the topics that can explain the systems required for processing big data. The third part presents the topics required to understand and select machine learning techniques to classify big data. Finally, the fourth part concentrates on the topics that explain the scaling-up machine learning, an important solution for modern big data problems.