
Practical Statistics For Data Scientists

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by Barnett & Blaine

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Practical Statistics for Data Scientists

50+ Essential Concepts Using R and Python *O'Reilly Media*

Statistical methods are a key part of data science, yet few data scientists have formal statistical training. Courses and books on basic statistics rarely cover the topic from a data science perspective. The second edition of this practical guide--now including examples in Python as well as R--explains how to apply various statistical methods to data science, tells you how to avoid their misuse, and gives you advice on what's important and what's not. Many data scientists use statistical methods but lack a deeper statistical perspective. If you're familiar with the R or Python programming languages, and have had some exposure to statistics but want to learn more, this quick reference bridges the gap in an accessible, readable

format. With this updated edition, you'll dive into: Exploratory data analysis Data and sampling distributions Statistical experiments and significance testing Regression and prediction Classification Statistical machine learning Unsupervised learning

Practical Statistics for Data Scientists

50 Essential Concepts *"O'Reilly Media, Inc."*

Statistical methods are a key part of data science, yet very few data scientists have any formal statistics training. Courses and books on basic statistics rarely cover the topic from a data science perspective. This practical guide explains how to apply various statistical methods to data science, tells you how to avoid their misuse, and gives you advice on what's important and what's not. Many data science resources incorporate statistical methods but lack a deeper statistical perspective. If you're familiar with the R programming language, and have some exposure to statistics, this quick reference bridges the gap in an accessible, readable format. With this book, you'll learn: Why exploratory data analysis is a key preliminary step in data science How random sampling can reduce bias and yield a higher quality dataset, even with big data How the principles of experimental design yield definitive answers to questions How to use regression to estimate outcomes and detect anomalies Key classification techniques for predicting which categories a record belongs to Statistical machine learning methods that "learn" from data Unsupervised learning methods for extracting meaning from unlabeled data

Practical Statistics for Data Scientists

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Foundations of Statistics for Data Scientists

With R and Python *CRC Press*

Foundations of Statistics for Data Scientists: With R and Python is designed as a textbook for a one- or two-term introduction to mathematical statistics for students training to become data scientists. It is an in-depth presentation of the topics in statistical science with which any data scientist should be familiar, including probability distributions, descriptive and inferential

statistical methods, and linear modeling. The book assumes knowledge of basic calculus, so the presentation can focus on "why it works" as well as "how to do it." Compared to traditional "mathematical statistics" textbooks, however, the book has less emphasis on probability theory and more emphasis on using software to implement statistical methods and to conduct simulations to illustrate key concepts. All statistical analyses in the book use R software, with an appendix showing the same analyses with Python. The book also introduces modern topics that do not normally appear in mathematical statistics texts but are highly relevant for data scientists, such as Bayesian inference, generalized linear models for non-normal responses (e.g., logistic regression and Poisson loglinear models), and regularized model fitting. The nearly 500 exercises are grouped into "Data Analysis and Applications" and "Methods and Concepts." Appendices introduce R and Python and contain solutions for odd-numbered exercises. The book's website has expanded R, Python, and Matlab appendices and all data sets from the examples and exercises.

Practical Statistics for Data Scientists, 2nd Edition

Statistical methods are a key part of data science, yet few data scientists have formal statistical training. Courses and books on basic statistics rarely cover the topic from a data science perspective. The second edition of this practical guide—now including examples in Python as well as R—explains how to apply various statistical methods to data science, tells you how to avoid their misuse, and gives you advice on what's important and what's not. Many data

scientists use statistical methods but lack a deeper statistical perspective. If you're familiar with the R or Python programming languages, and have had some exposure to statistics but want to learn more, this quick reference bridges the gap in an accessible, readable format. With this updated edition, you'll dive into: Exploratory data analysis Data and sampling distributions Statistical experiments and significance testing Regression and prediction Classification Statistical machine learning Unsupervised learning.

Probability and Statistics for Data Science

Math + R + Data *CRC Press*

Probability and Statistics for Data Science: Math + R + Data covers "math stat"—distributions, expected value, estimation etc.—but takes the phrase "Data Science" in the title quite seriously: * Real datasets are used extensively. * All data analysis is supported by R coding. * Includes many Data Science applications, such as PCA, mixture distributions, random graph models, Hidden Markov models, linear and logistic regression, and neural networks. * Leads the student to think critically about the "how" and "why" of statistics, and to "see the big picture." * Not "theorem/proof"-oriented, but concepts and models are stated in a mathematically precise manner. Prerequisites are calculus, some matrix algebra, and some experience in programming. Norman Matloff is a professor of computer science at the University of California, Davis, and was formerly a statistics professor there. He is on the editorial boards of the Journal of Statistical Software and The R Journal. His book Statistical Regression and

Classification: From Linear Models to Machine Learning was the recipient of the Ziegel Award for the best book reviewed in Technometrics in 2017. He is a recipient of his university's Distinguished Teaching Award.

Doing Data Science

Straight Talk from the Frontline *"O'Reilly Media, Inc."*

Now that people are aware that data can make the difference in an election or a business model, data science as an occupation is gaining ground. But how can you get started working in a wide-ranging, interdisciplinary field that's so clouded in hype? This insightful book, based on Columbia University's Introduction to Data Science class, tells you what you need to know. In many of these chapter-long lectures, data scientists from companies such as Google, Microsoft, and eBay share new algorithms, methods, and models by presenting case studies and the code they use. If you're familiar with linear algebra, probability, and statistics, and have programming experience, this book is an ideal introduction to data science. Topics include: Statistical inference, exploratory data analysis, and the data science process Algorithms Spam filters, Naive Bayes, and data wrangling Logistic regression Financial modeling Recommendation engines and causality Data visualization Social networks and data journalism Data engineering, MapReduce, Pregel, and Hadoop Doing Data Science is collaboration between course instructor Rachel Schutt, Senior VP of Data Science at News Corp, and data science consultant Cathy O'Neil, a senior data scientist at Johnson Research Labs, who attended and blogged about the course.

Practical Statistics for Environmental and Biological Scientists *John Wiley & Sons*

All students and researchers in environmental and biological sciences require statistical methods at some stage of their work. Many have a preconception that statistics are difficult and unpleasant and find that the textbooks available are difficult to understand. Practical Statistics for Environmental and Biological Scientists provides a concise, user-friendly, non-technical introduction to statistics. The book covers planning and designing an experiment, how to analyse and present data, and the limitations and assumptions of each statistical method. The text does not refer to a specific computer package but descriptions of how to carry out the tests and interpret the results are based on the approaches used by most of the commonly used packages, e.g. Excel, MINITAB and SPSS. Formulae are kept to a minimum and relevant examples are included throughout the text.

Statistics for Data Science

Leverage the power of statistics for Data Analysis, Classification, Regression, Machine Learning, and Neural Networks *Packt Publishing Ltd*

Get your statistics basics right before diving into the world of data science About This Book No need to take a degree in statistics, read this book and get a strong statistics base for data science and real-world programs; Implement statistics in data science tasks such as data cleaning, mining, and analysis Learn all about probability, statistics, numerical computations, and more with the help of R programs Who This Book Is For This book is intended for

those developers who are willing to enter the field of data science and are looking for concise information of statistics with the help of insightful programs and simple explanation. Some basic hands on R will be useful. What You Will Learn Analyze the transition from a data developer to a data scientist mindset Get acquainted with the R programs and the logic used for statistical computations Understand mathematical concepts such as variance, standard deviation, probability, matrix calculations, and more Learn to implement statistics in data science tasks such as data cleaning, mining, and analysis Learn the statistical techniques required to perform tasks such as linear regression, regularization, model assessment, boosting, SVMs, and working with neural networks Get comfortable with performing various statistical computations for data science programmatically In Detail Data science is an ever-evolving field, which is growing in popularity at an exponential rate. Data science includes techniques and theories extracted from the fields of statistics; computer science, and, most importantly, machine learning, databases, data visualization, and so on. This book takes you through an entire journey of statistics, from knowing very little to becoming comfortable in using various statistical methods for data science tasks. It starts off with simple statistics and then move on to statistical methods that are used in data science algorithms. The R programs for statistical computation are clearly explained along with logic. You will come across various mathematical concepts, such as variance, standard deviation, probability, matrix calculations, and more. You will learn only what is required to implement statistics in data

science tasks such as data cleaning, mining, and analysis. You will learn the statistical techniques required to perform tasks such as linear regression, regularization, model assessment, boosting, SVMs, and working with neural networks. By the end of the book, you will be comfortable with performing various statistical computations for data science programmatically. Style and approach Step by step comprehensive guide with real world examples

Introduction to Statistical and Machine Learning Methods for Data Science *SAS Institute*

Boost your understanding of data science techniques to solve real-world problems Data science is an exciting, interdisciplinary field that extracts insights from data to solve business problems. This book introduces common data science techniques and methods and shows you how to apply them in real-world case studies. From data preparation and exploration to model assessment and deployment, this book describes every stage of the analytics life cycle, including a comprehensive overview of unsupervised and supervised machine learning techniques. The book guides you through the necessary steps to pick the best techniques and models and then implement those models to successfully address the original business need. No software is shown in the book, and mathematical details are kept to a minimum. This allows you to develop an understanding of the fundamentals of data science, no matter what background or experience level you have.

Practical Statistics for Geographers and Earth Scientists *John Wiley & Sons*

Practical Statistics for Geographers and Earth Scientists provides an introductory guide to the principles and application of statistical analysis in context. This book helps students to gain the level of competence in statistical procedures necessary for independent investigations, field-work and other projects. The aim is to explain statistical techniques using data relating to relevant geographical, geospatial, earth and environmental science examples, employing graphics as well as mathematical notation for maximum clarity. Advice is given on asking the appropriate preliminary research questions to ensure that the correct data is collected for the chosen statistical analysis method. The book offers a practical guide to making the transition from understanding principles of spatial and non-spatial statistical techniques to planning a series analyses and generating results using statistical and spreadsheet computer software. Learning outcomes included in each chapter International focus Explains the underlying mathematical basis of spatial and non-spatial statistics Provides an geographical, geospatial, earth and environmental science context for the use of statistical methods Written in an accessible, user-friendly style Datasets available on accompanying website at www.wiley.com/go/Walford

Practical Data Science with R
Manning Publications

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.

Applied Wavelet Analysis with S-PLUS
Springer Science & Business Media

This book provides an introduction to wavelet analysis with the statistical software system S-PLUS. The book will be of interest primarily to electrical engineers and statisticians. The authors are employees of MathSoft, the publishers of S-PLUS.

Modern Data Science with R
CRC Press

From a review of the first edition: "Modern Data Science with R... is rich with examples and is guided by a strong narrative voice. What's more, it presents an organizing framework that makes a convincing argument that data science is a course distinct from applied statistics" (The American Statistician). Modern Data Science with R is a comprehensive data science textbook for undergraduates that incorporates statistical and computational thinking to solve real-world data problems. Rather than focus exclusively on case studies or programming syntax, this book illustrates how statistical programming in the state-of-the-art R/RStudio

computing environment can be leveraged to extract meaningful information from a variety of data in the service of addressing compelling questions. The second edition is updated to reflect the growing influence of the tidyverse set of packages. All code in the book has been revised and styled to be more readable and easier to understand. New functionality from packages like *sf*, *purrr*, *tidymodels*, and *tidytext* is now integrated into the text. All chapters have been revised, and several have been split, re-organized, or re-imagined to meet the shifting landscape of best practice.

Data Science Live Book

An Intuitive and Practical Approach to Data Analysis, Data Preparation and Machine Learning, Suitable for All Ages!

This book is a practical guide to problems that commonly arise when developing a machine learning project. The book's topics are: Exploratory data analysis Data Preparation Selecting best variables Assessing Model Performance More information on predictive modeling will be included soon. This book tries to demonstrate what it says with short and well-explained examples. This is valid for both theoretical and practical aspects (through comments in the code). This book, as well as the development of a data project, is not linear. The chapters are related among them. For example, the missing values chapter can lead to the cardinality reduction in categorical variables. Or you can read the data type chapter and then change the way you deal with missing values. You'll find references to other websites so you can expand your study, this book is just another step in the learning journey. It's

open-source and can be found at <http://livebook.datascienceheroes.com>

Practical Statistics for Engineers and Scientists *CRC Press*

This book provides direction in constructing regression routines that can be used with worksheet software on personal computers. The book lists useful references for those readers who desire more in-depth understanding of the mathematical bases, and is helpful for science and engineering students.

Head First Statistics *"O'Reilly Media, Inc."*

A comprehensive introduction to statistics that teaches the fundamentals with real-life scenarios, and covers histograms, quartiles, probability, Bayes' theorem, predictions, approximations, random samples, and related topics.

Data Mining for Business Analytics

Concepts, Techniques, and Applications with XLMiner *John Wiley & Sons*

Data Mining for Business Analytics: Concepts, Techniques, and Applications in XLMiner®, Third Edition presents an applied approach to data mining and predictive analytics with clear exposition, hands-on exercises, and real-life case studies. Readers will work with all of the standard data mining methods using the Microsoft® Office Excel® add-in XLMiner® to develop predictive models and learn how to obtain business value from Big Data. Featuring updated topical coverage on text mining, social network analysis, collaborative filtering, ensemble methods, uplift modeling and more, the Third Edition also includes: Real-world examples to build a theoretical and practical understanding

of key data mining methods End-of-chapter exercises that help readers better understand the presented material Data-rich case studies to illustrate various applications of data mining techniques Completely new chapters on social network analysis and text mining A companion site with additional data sets, instructors material that include solutions to exercises and case studies, and Microsoft PowerPoint® slides <https://www.dataminingbook.com> Free 140-day license to use XLMiner for Education software Data Mining for Business Analytics: Concepts, Techniques, and Applications in XLMiner®, Third Edition is an ideal textbook for upper-undergraduate and graduate-level courses as well as professional programs on data mining, predictive modeling, and Big Data analytics. The new edition is also a unique reference for analysts, researchers, and practitioners working with predictive analytics in the fields of business, finance, marketing, computer science, and information technology. Praise for the Second Edition "...full of vivid and thought-provoking anecdotes... needs to be read by anyone with a serious interest in research and marketing."- Research Magazine "Shmueli et al. have done a wonderful job in presenting the field of data mining - a welcome addition to the literature." - ComputingReviews.com "Excellent choice for business analysts...The book is a perfect fit for its intended audience." - Keith McCormick, Consultant and Author of SPSS Statistics For Dummies, Third Edition and SPSS Statistics for Data Analysis and Visualization Galit Shmueli, PhD, is Distinguished Professor at National Tsing Hua University's Institute of Service Science. She has designed and instructed data mining courses since

2004 at University of Maryland, Statistics.com, The Indian School of Business, and National Tsing Hua University, Taiwan. Professor Shmueli is known for her research and teaching in business analytics, with a focus on statistical and data mining methods in information systems and healthcare. She has authored over 70 journal articles, books, textbooks and book chapters. Peter C. Bruce is President and Founder of the Institute for Statistics Education at www.statistics.com. He has written multiple journal articles and is the developer of Resampling Stats software. He is the author of Introductory Statistics and Analytics: A Resampling Perspective, also published by Wiley. Nitin R. Patel, PhD, is Chairman and cofounder of Cytel, Inc., based in Cambridge, Massachusetts. A Fellow of the American Statistical Association, Dr. Patel has also served as a Visiting Professor at the Massachusetts Institute of Technology and at Harvard University. He is a Fellow of the Computer Society of India and was a professor at the Indian Institute of Management, Ahmedabad for 15 years.

R for Political Data Science

A Practical Guide *CRC Press*

R for Political Data Science: A Practical Guide is a handbook for political scientists new to R who want to learn the most useful and common ways to interpret and analyze political data. It was written by political scientists, thinking about the many real-world problems faced in their work. The book has 16 chapters and is organized in three sections. The first, on the use of R, is for those users who are learning R or are migrating from another software. The second section, on econometric models, covers OLS, binary and survival

models, panel data, and causal inference. The third section is a data science toolbox of some of the most useful tools in the discipline: data imputation, fuzzy merge of large datasets, web mining, quantitative text analysis, network analysis, mapping, spatial cluster analysis, and principal component analysis. Key features: Each chapter has the most up-to-date and simple option available for each task, assuming minimal prerequisites and no previous experience in R. Makes extensive use of the Tidyverse, the group of packages that has revolutionized the use of R. Provides a step-by-step guide that you can replicate using your own data. Includes exercises in every chapter for course use or self-study. Focuses on practical-based approaches to statistical inference rather than mathematical formulae. Supplemented by an R package, including all data. As the title suggests, this book is highly applied in nature, and is designed as a toolbox for the reader. It can be used in methods and data science courses, at both the undergraduate and graduate levels. It will be equally useful for a university student pursuing a PhD, political consultants, or a public official, all of whom need to transform their datasets into substantive and easily interpretable conclusions.

Data Science and Machine Learning

Mathematical and Statistical Methods *CRC Press*

"This textbook is a well-rounded, rigorous, and informative work presenting the mathematics behind modern machine learning techniques. It hits all the right notes: the choice of topics is up-to-date and perfect for a

course on data science for mathematics students at the advanced undergraduate or early graduate level. This book fills a sorely-needed gap in the existing literature by not sacrificing depth for breadth, presenting proofs of major theorems and subsequent derivations, as well as providing a copious amount of Python code. I only wish a book like this had been around when I first began my journey!" -Nicholas Hoell, University of Toronto "This is a well-written book that provides a deeper dive into data-scientific methods than many introductory texts. The writing is clear, and the text logically builds up regularization, classification, and decision trees. Compared to its probable competitors, it carves out a unique niche." -Adam Loy, Carleton College The purpose of *Data Science and Machine Learning: Mathematical and Statistical Methods* is to provide an accessible, yet comprehensive textbook intended for students interested in gaining a better understanding of the mathematics and statistics that underpin the rich variety of ideas and machine learning algorithms in data science. Key Features: Focuses on mathematical understanding. Presentation is self-contained, accessible, and comprehensive. Extensive list of exercises and worked-out examples. Many concrete algorithms with Python code. Full color throughout. The Authors: Dirk P. Kroese, PhD, is a Professor of Mathematics and Statistics at The University of Queensland. He has published over 120 articles and five books in a wide range of areas in mathematics, statistics, data science, machine learning, and Monte Carlo methods. He is a pioneer of the well-known Cross-Entropy method—an adaptive Monte Carlo technique, which is being used around the world to help

solve difficult estimation and optimization problems in science, engineering, and finance. Zdravko Botev, PhD, is an Australian Mathematical Science Institute Lecturer in Data Science and Machine Learning with an appointment at the University of New South Wales in Sydney, Australia. He is the recipient of the 2018 Christopher Heyde Medal of the Australian Academy of Science for distinguished research in the Mathematical Sciences. Thomas Taimre, PhD, is a Senior Lecturer of Mathematics and Statistics at The University of Queensland. His research interests range from applied probability and Monte Carlo methods to applied physics and the remarkably universal self-mixing effect in lasers. He has published over 100 articles, holds a patent, and is the coauthor of *Handbook of Monte Carlo Methods* (Wiley). Radislav Vaisman, PhD, is a Lecturer of Mathematics and Statistics at The University of Queensland. His research interests lie at the intersection of applied probability, machine learning, and computer science. He has published over 20 articles and two books.

Statistical Foundations of Data Science *CRC Press*

Statistical Foundations of Data Science gives a thorough introduction to commonly used statistical models, contemporary statistical machine learning techniques and algorithms, along with their mathematical insights and statistical theories. It aims to serve as a graduate-level textbook and a research monograph on high-dimensional statistics, sparsity and covariance learning, machine learning, and statistical inference. It includes ample exercises that involve both

theoretical studies as well as empirical applications. The book begins with an introduction to the stylized features of big data and their impacts on statistical analysis. It then introduces multiple linear regression and expands the techniques of model building via nonparametric regression and kernel tricks. It provides a comprehensive account on sparsity explorations and model selections for multiple regression, generalized linear models, quantile regression, robust regression, hazards regression, among others. High-dimensional inference is also thoroughly addressed and so is feature screening. The book also provides a comprehensive account on high-dimensional covariance estimation, learning latent factors and hidden structures, as well as their applications to statistical estimation, inference, prediction and machine learning problems. It also introduces thoroughly statistical machine learning theory and methods for classification, clustering, and prediction. These include CART, random forests, boosting, support vector machines, clustering algorithms, sparse PCA, and deep learning.

Beginning Data Science in R

Data Analysis, Visualization, and Modelling for the Data Scientist *Apress*

Discover best practices for data analysis and software development in R and start on the path to becoming a fully-fledged data scientist. This book teaches you techniques for both data manipulation and visualization and shows you the best way for developing new software packages for R. *Beginning Data Science in R* details how data science is a combination of statistics, computational science, and machine learning. You'll see

how to efficiently structure and mine data to extract useful patterns and build mathematical models. This requires computational methods and programming, and R is an ideal programming language for this. This book is based on a number of lecture notes for classes the author has taught on data science and statistical programming using the R programming language. Modern data analysis requires computational skills and usually a minimum of programming. What You Will Learn Perform data science and analytics using statistics and the R programming language Visualize and explore data, including working with large data sets found in big data Build an R package Test and check your code Practice version control Profile and optimize your code Who This Book Is For Those with some data science or analytics background, but not necessarily experience with the R programming language.

Practical Data Science with SAP

Machine Learning Techniques for Enterprise Data *O'Reilly Media*

Learn how to fuse today's data science tools and techniques with your SAP enterprise resource planning (ERP) system. With this practical guide, SAP veterans Greg Foss and Paul Modderman demonstrate how to use several data analysis tools to solve interesting problems with your SAP data. Data engineers and scientists will explore ways to add SAP data to their analysis processes, while SAP business analysts will learn practical methods for answering questions about the business. By focusing on grounded explanations of both SAP processes and data science tools, this book gives data scientists and

business analysts powerful methods for discovering deep data truths. You'll explore: Examples of how data analysis can help you solve several SAP challenges Natural language processing for unlocking the secrets in text Data science techniques for data clustering and segmentation Methods for detecting anomalies in your SAP data Data visualization techniques for making your data come to life

Occupational Outlook Handbook

Statistical Inference for Engineers and Data Scientists *Cambridge University Press*

A mathematically accessible textbook introducing all the tools needed to address modern inference problems in engineering and data science.

Longitude

The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time *Bloomsbury Publishing USA*

The dramatic human story of an epic scientific quest and of one man's forty-year obsession to find a solution to the thorniest scientific dilemma of the day-- "the longitude problem." Anyone alive in the eighteenth century would have known that "the longitude problem" was the thorniest scientific dilemma of the day-and had been for centuries. Lacking the ability to measure their longitude, sailors throughout the great ages of exploration had been literally lost at sea as soon as they lost sight of land. Thousands of lives and the increasing fortunes of nations hung on a resolution. One man, John Harrison, in complete opposition to the scientific community, dared to imagine a mechanical solution-

a clock that would keep precise time at sea, something no clock had ever been able to do on land. Longitude is the dramatic human story of an epic scientific quest and of Harrison's forty-year obsession with building his perfect timekeeper, known today as the chronometer. Full of heroism and chicanery, it is also a fascinating brief history of astronomy, navigation, and clockmaking, and opens a new window on our world.

Think Stats

Exploratory Data Analysis *"O'Reilly Media, Inc."*

If you know how to program, you have the skills to turn data into knowledge, using tools of probability and statistics. This concise introduction shows you how to perform statistical analysis computationally, rather than mathematically, with programs written in Python. By working with a single case study throughout this thoroughly revised book, you'll learn the entire process of exploratory data analysis—from collecting data and generating statistics to identifying patterns and testing hypotheses. You'll explore distributions, rules of probability, visualization, and many other tools and concepts. New chapters on regression, time series analysis, survival analysis, and analytic methods will enrich your discoveries. Develop an understanding of probability and statistics by writing and testing code. Run experiments to test statistical behavior, such as generating samples from several distributions. Use simulations to understand concepts that are hard to grasp mathematically. Import data from most sources with Python, rather than rely on data that's cleaned and formatted for statistics tools. Use

statistical inference to answer questions about real-world data.

Think Stats *"O'Reilly Media, Inc."*

If you know how to program, you have the skills to turn data into knowledge using the tools of probability and statistics. This concise introduction shows you how to perform statistical analysis computationally, rather than mathematically, with programs written in Python. You'll work with a case study throughout the book to help you learn the entire data analysis process—from collecting data and generating statistics to identifying patterns and testing hypotheses. Along the way, you'll become familiar with distributions, the rules of probability, visualization, and many other tools and concepts. Develop your understanding of probability and statistics by writing and testing code. Run experiments to test statistical behavior, such as generating samples from several distributions. Use simulations to understand concepts that are hard to grasp mathematically. Learn topics not usually covered in an introductory course, such as Bayesian estimation. Import data from almost any source using Python, rather than be limited to data that has been cleaned and formatted for statistics tools. Use statistical inference to answer questions about real-world data.

Introduction to Machine Learning with Python

A Guide for Data Scientists *"O'Reilly Media, Inc."*

Machine learning has become an integral part of many commercial applications and research projects, but this field is not exclusive to large companies with extensive research teams. If you use

Python, even as a beginner, this book will teach you practical ways to build your own machine learning solutions. With all the data available today, machine learning applications are limited only by your imagination. You'll learn the steps necessary to create a successful machine-learning application with Python and the scikit-learn library. Authors Andreas Müller and Sarah Guido focus on the practical aspects of using machine learning algorithms, rather than the math behind them. Familiarity with the NumPy and matplotlib libraries will help you get even more from this book. With this book, you'll learn: Fundamental concepts and applications of machine learning Advantages and shortcomings of widely used machine learning algorithms How to represent data processed by machine learning, including which data aspects to focus on Advanced methods for model evaluation and parameter tuning The concept of pipelines for chaining models and encapsulating your workflow Methods for working with text data, including text-specific processing techniques Suggestions for improving your machine learning and data science skills

Statistics for Beginners in Data Science

Theory and Applications of Essential Statistics Concepts Using Python

Statistics for Beginners in Data Science Statistical methods are an integral part of data science. Hence, a formal training in statistics is indispensable for data scientists. If you are keen on getting your foot into the lucrative data science and analysis universe, you need to have a fundamental understanding of statistical analysis. Besides, Python is a versatile programming language you

need to master to become a career data scientist. As a data scientist, you will identify, clean, explore, analyze, and interpret trends or possible patterns in complex data sets. The explosive growth of Big Data means you have to manage enormous amounts of data, clean it, manipulate it, and process it. Only then the most relevant data can be used. Python is a natural data science tool as it has an assortment of useful libraries, such as Pandas, NumPy, SciPy, Matplotlib, Seaborn, StatsModels, IPython, and several more. And Python's focus on simplicity makes it relatively easy for you to learn. Importantly, the ease of performing repetitive tasks saves you precious time. Long story short--Python is simply a high-priority data science tool. How Is This Book Different? The book focuses equally on the theoretical as well as practical aspects of data science. You will learn how to implement elementary data science tools and algorithms from scratch. The book contains an in-depth theoretical and analytical explanation of all data science concepts and also includes dozens of hands-on, real-life projects that will help you understand the concepts better. The ready-to-access Python codes at various places right through the book are aimed at shortening your learning curve. The main goal is to present you with the concepts, the insights, the inspiration, and the right tools needed to dive into coding and analyzing data in Python. The main benefit of purchasing this book is you get quick access to all the extra content provided with this book--Python codes, exercises, references, and PDFs--on the publisher's website, at no extra price. You get to experiment with the practical aspects of Data Science right from page 1. Beginners in Python and

statistics will find this book extremely informative, practical, and helpful. Even if you aren't new to Python and data science, you'll find the hands-on projects in this book immensely helpful. The topics covered include: Introduction to Statistics Getting Familiar with Python Data Exploration and Data Analysis Pandas, Matplotlib, and Seaborn for Statistical Visualization Exploring Two or More Variables and Categorical Data Statistical Tests and ANOVA Confidence Interval Regression Analysis Classification Analysis Click the BUY button and download the book now to start learning and coding Python for Data Science.

Engineering Fundamentals: An Introduction to Engineering, SI Edition *Cengage Learning*

Specifically designed as an introduction to the exciting world of engineering, **ENGINEERING FUNDAMENTALS: AN INTRODUCTION TO ENGINEERING** encourages students to become engineers and prepares them with a solid foundation in the fundamental principles and physical laws. The book begins with a discovery of what engineers do as well as an inside look into the various areas of specialization. An explanation on good study habits and what it takes to succeed is included as well as an introduction to design and problem solving, communication, and ethics. Once this foundation is established, the book moves on to the basic physical concepts and laws that students will encounter regularly. The framework of this text teaches students that engineers apply physical and chemical laws and principles as well as mathematics to design, test, and supervise the production of millions of parts, products, and services that people

use every day. By gaining problem solving skills and an understanding of fundamental principles, students are on their way to becoming analytical, detail-oriented, and creative engineers. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Becoming a Data Head

How to Think, Speak, and Understand Data Science, Statistics, and Machine Learning *John Wiley & Sons*

"Turn yourself into a Data Head. You'll become a more valuable employee and make your organization more successful." Thomas H. Davenport, Research Fellow, Author of *Competing on Analytics*, *Big Data @ Work*, and *The AI Advantage* You've heard the hype around data—now get the facts. In *Becoming a Data Head: How to Think, Speak, and Understand Data Science, Statistics, and Machine Learning*, award-winning data scientists Alex Gutman and Jordan Goldmeier pull back the curtain on data science and give you the language and tools necessary to talk and think critically about it. You'll learn how to: Think statistically and understand the role variation plays in your life and decision making Speak intelligently and ask the right questions about the statistics and results you encounter in the workplace Understand what's really going on with machine learning, text analytics, deep learning, and artificial intelligence Avoid common pitfalls when working with and interpreting data *Becoming a Data Head* is a complete guide for data science in the workplace: covering everything from the personalities you'll work with to the

math behind the algorithms. The authors have spent years in data trenches and sought to create a fun, approachable, and eminently readable book. Anyone can become a Data Head—an active participant in data science, statistics, and machine learning. Whether you're a business professional, engineer, executive, or aspiring data scientist, this book is for you.

Naked Statistics: Stripping the Dread from the Data *W. W. Norton & Company*

"Brilliant, funny . . . the best math teacher you never had."—San Francisco Chronicle Once considered tedious, the field of statistics is rapidly evolving into a discipline Hal Varian, chief economist at Google, has actually called "sexy." From batting averages and political polls to game shows and medical research, the real-world application of statistics continues to grow by leaps and bounds. How can we catch schools that cheat on standardized tests? How does Netflix know which movies you'll like? What is causing the rising incidence of autism? As best-selling author Charles Wheelan shows us in *Naked Statistics*, the right data and a few well-chosen statistical tools can help us answer these questions and more. For those who slept through Stats 101, this book is a lifesaver. Wheelan strips away the arcane and technical details and focuses on the underlying intuition that drives statistical analysis. He clarifies key concepts such as inference, correlation, and regression analysis, reveals how biased or careless parties can manipulate or misrepresent data, and shows us how brilliant and creative researchers are exploiting the valuable data from natural experiments to tackle thorny questions. And in Wheelan's trademark style, there's not a

dull page in sight. You'll encounter clever Schlitz Beer marketers leveraging basic probability, an International Sausage Festival illuminating the tenets of the central limit theorem, and a head-scratching choice from the famous game show *Let's Make a Deal*—and you'll come away with insights each time. With the wit, accessibility, and sheer fun that turned *Naked Economics* into a bestseller, Wheelan defies the odds yet again by bringing another essential, formerly unglamorous discipline to life.

Human-Centered Data Science

An Introduction *MIT Press*

Best practices for addressing the bias and inequality that may result from the automated collection, analysis, and distribution of large datasets. Human-centered data science is a new interdisciplinary field that draws from human-computer interaction, social science, statistics, and computational techniques. This book, written by founders of the field, introduces best practices for addressing the bias and inequality that may result from the automated collection, analysis, and distribution of very large datasets. It offers a brief and accessible overview of many common statistical and algorithmic data science techniques, explains human-centered approaches to data science problems, and presents practical guidelines and real-world case studies to help readers apply these methods. The authors explain how data scientists' choices are involved at every stage of the data science workflow—and show how a human-centered approach can enhance each one, by making the process more transparent, asking questions, and considering the social context of the data. They describe how

tools from social science might be incorporated into data science practices, discuss different types of collaboration, and consider data storytelling through visualization. The book shows that data science practitioners can build rigorous and ethical algorithms and design projects that use cutting-edge computational tools and address social concerns.

Deep Learning from Scratch

Building with Python from First Principles *O'Reilly Media*

With the resurgence of neural networks in the 2010s, deep learning has become essential for machine learning practitioners and even many software engineers. This book provides a comprehensive introduction for data scientists and software engineers with machine learning experience. You'll start with deep learning basics and move quickly to the details of important advanced architectures, implementing everything from scratch along the way. Author Seth Weidman shows you how neural networks work using a first principles approach. You'll learn how to apply multilayer neural networks, convolutional neural networks, and recurrent neural networks from the ground up. With a thorough understanding of how neural networks work mathematically, computationally, and conceptually, you'll be set up for success on all future deep learning projects. This book provides: Extremely clear and thorough mental models—accompanied by working code examples and mathematical explanations—for understanding neural networks Methods for implementing multilayer neural networks from scratch, using an easy-to-understand object-

oriented framework Working implementations and clear-cut explanations of convolutional and recurrent neural networks Implementation of these neural network concepts using the popular PyTorch framework

Build a Career in Data Science *Simon and Schuster*

Summary You are going to need more than technical knowledge to succeed as a data scientist. *Build a Career in Data Science* teaches you what school leaves out, from how to land your first job to the lifecycle of a data science project, and even how to become a manager. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications.

About the technology What are the keys to a data scientist's long-term success? Blending your technical know-how with the right "soft skills" turns out to be a central ingredient of a rewarding career.

About the book *Build a Career in Data Science* is your guide to landing your first data science job and developing into a valued senior employee. By following clear and simple instructions, you'll learn to craft an amazing resume and ace your interviews. In this demanding, rapidly changing field, it can be challenging to keep projects on track, adapt to company needs, and manage tricky stakeholders. You'll love the insights on how to handle expectations, deal with failures, and plan your career path in the stories from seasoned data scientists included in the book. What's inside

Creating a portfolio of data science projects Assessing and negotiating an offer Leaving gracefully and moving up the ladder Interviews with professional data scientists About the reader For readers who want to begin or advance a

data science career. About the author Emily Robinson is a data scientist at Warby Parker. Jacqueline Nolis is a data science consultant and mentor. Table of Contents: PART 1 - GETTING STARTED WITH DATA SCIENCE 1. What is data science? 2. Data science companies 3. Getting the skills 4. Building a portfolio PART 2 - FINDING YOUR DATA SCIENCE JOB 5. The search: Identifying the right job for you 6. The application: Résumés and cover letters 7. The interview: What to expect and how to handle it 8. The offer: Knowing what to accept PART 3 - SETTLING INTO DATA SCIENCE 9. The first months on the job 10. Making an effective analysis 11. Deploying a model into production 12. Working with stakeholders PART 4 - GROWING IN YOUR DATA SCIENCE ROLE 13. When your data science project fails 14. Joining the data science community 15. Leaving your job gracefully 16. Moving up the ladder

Introduction to Probability, Second Edition *CRC Press*

Developed from celebrated Harvard statistics lectures, *Introduction to Probability* provides essential language and tools for understanding statistics, randomness, and uncertainty. The book explores a wide variety of applications and examples, ranging from coincidences and paradoxes to Google PageRank and Markov chain Monte Carlo (MCMC). Additional application areas explored include genetics, medicine, computer science, and information theory. The authors present the material in an accessible style and motivate concepts using real-world examples. Throughout, they use stories to uncover connections between the fundamental distributions in statistics and conditioning to reduce complicated

problems to manageable pieces. The book includes many intuitive explanations, diagrams, and practice problems. Each chapter ends with a section showing how to perform relevant simulations and calculations in R, a free statistical software environment. The second edition adds many new examples, exercises, and explanations, to deepen understanding of the ideas, clarify subtle concepts, and respond to feedback from many students and readers. New supplementary online resources have been developed, including animations and interactive visualizations, and the book has been updated to dovetail with these resources. Supplementary material is available on Joseph Blitzstein's website www.stat110.net. The supplements include: Solutions to selected exercises Additional practice problems Handouts including review material and sample exams Animations and interactive visualizations created in connection with the edX online version of Stat 110. Links to lecture videos available on iTunes U and YouTube There is also a complete instructor's solutions manual available to instructors who require the book for a course.

R for Data Science

Import, Tidy, Transform, Visualize, and Model Data *O'Reilly Media, Inc.*

"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"--

Statistics in Plain English *Psychology Press*

This book presents statistical concepts

and techniques in simple, everyday language to help readers gain a better understanding of how they work and how to interpret them correctly. Each self-contained chapter features a description of the statistic including how it is used and the information it provides, how to calculate the formula, the strengths and weaknesses of each technique, the conditions needed for its use, and an example that uses and

interprets the statistic. A glossary of terms and symbols is also included along with an Interactive CD with PowerPoint presentations and problems and solutions for each chapter. This brief paperback is an ideal supplement for statistics, research methods, or any course that uses statistics, or as a handy reference tool to refresh one's memory about key concepts. The actual research examples are from a variety of fields, including psychology and education.