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Open - Rajiv S. Jhangiani 2017-03-27
Affordable education. Transparent science.

Accessible scholarship. These ideals are slowly becoming a reality thanks to the open education,

open science, and open access movements. Running separate—if parallel—courses, they all share a philosophy of equity, progress, and justice. This book shares the stories, motives, insights, and practical tips from global leaders in the open movement.

Tensors for Data Processing - Yipeng Liu 2021-10-21
Tensors for Data Processing: Theory, Methods and Applications presents both classical and state-of-the-art methods on tensor computation for data processing, covering computation theories, processing methods, computing and engineering applications, with an emphasis on techniques for data processing. This reference is ideal for students, researchers and industry developers who want to understand and use tensor-based data processing theories and methods. As a higher-order generalization of a matrix, tensor-based processing can avoid multi-linear data structure loss that occurs in classical matrix-based data processing methods. This move from matrix to tensors is beneficial for many diverse application areas, including signal processing, computer science, acoustics, neuroscience, communication, medical engineering, seismology, psychometric, chemometrics, biometric, quantum physics and quantum chemistry. Provides a complete reference on classical and state-of-the-art tensor-based methods for data processing Includes a wide range of applications from different disciplines Gives guidance for their application

Data Processing and Information Technology Carl French 1996-06
This book provides a comprehensive and straightforward coverage of data processing and information technology. It is widely used as a course text on many professional and non-professional business and accountancy courses, and assumes no previous knowledge of the subject. This book provides a comprehensive and straightforward coverage of data processing and

information technology. It is widely used as a course text on many professional and non-professional business and accountancy courses, and assumes no previous knowledge of the subject.

Mathematics for Machine Learning - Marc Peter Deisenroth 2020-04-23
The fundamental mathematical tools needed to understand machine learning include linear algebra, analytic geometry, matrix decompositions, vector calculus, optimization, probability and statistics. These topics are traditionally taught in disparate courses, making it hard for data science or computer science students, or professionals, to efficiently learn the mathematics. This self-contained textbook bridges the gap between mathematical and machine learning texts, introducing the mathematical concepts with a minimum of prerequisites. It uses these concepts to derive four central machine learning methods: linear regression, principal component analysis, Gaussian mixture models and support vector machines. For students and others with a mathematical background, these derivations provide a starting point to machine learning texts. For those learning the mathematics for the first time, the methods help build intuition and practical experience with applying mathematical concepts. Every chapter includes worked examples and exercises to test understanding. Programming tutorials are offered on the book's web site.

*R in Action*Robert I. Kabacoff 2015-05-20
Summary R in Action, Second Edition presents both the R language and the examples that make it so useful for business developers. Focusing on practical solutions, the book offers a crash course in statistics and covers elegant methods for dealing with messy and incomplete data that are difficult to analyze using traditional methods. You'll also master R's extensive graphical capabilities for exploring and presenting data visually. And this expanded

second edition includes new chapters on time series analysis, cluster analysis, and classification methodologies, including decision trees, random forests, and support vector machines. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Business pros and researchers thrive on data, and R speaks the language of data analysis. R is a powerful programming language for statistical computing. Unlike general-purpose tools, R provides thousands of modules for solving just about any data-crunching or presentation challenge you're likely to face. R runs on all important platforms and is used by thousands of major corporations and institutions worldwide. About the Book R in Action, Second Edition teaches you how to use the R language by presenting examples relevant to scientific, technical, and business developers. Focusing on practical solutions, the book offers a crash course in statistics, including elegant methods for dealing with messy and incomplete data. You'll also master R's extensive graphical capabilities for exploring and presenting data visually. And this expanded second edition includes new chapters on forecasting, data mining, and dynamic report writing. What's Inside Complete R language tutorial Using R to manage, analyze, and visualize data Techniques for debugging programs and creating packages OOP in R Over 160 graphs About the Author Dr. Rob Kabacoff is a seasoned researcher and teacher who specializes in data analysis. He also maintains the popular Quick-R website at statmethods.net. Table of Contents PART 1 GETTING STARTED Introduction to R Creating a dataset Getting started with graphs Basic data management Advanced data management PART 2 BASIC METHODS Basic graphs Basic statistics PART 3 INTERMEDIATE METHODS Regression Analysis of variance Power analysis Intermediate graphs Resampling statistics and bootstrapping PART 4 ADVANCED METHODS Generalized

linear models Principal components and factor analysis Time series Cluster analysis Classification Advanced methods for missing data PART 5 EXPANDING YOUR SKILLS Advanced graphics with ggplot2 Advanced programming Creating a package Creating dynamic reports Advanced graphics with the lattice package available online only from manning.com/kabacoff2

Programming Erlang - Joe Armstrong 2013-09-23
A multi-user game, web site, cloud application, or networked database can have thousands of users all interacting at the same time. You need a powerful, industrial-strength tool to handle the really hard problems inherent in parallel, concurrent environments. You need Erlang. In this second edition of the bestselling Programming Erlang, you'll learn how to write parallel programs that scale effortlessly on multicore systems. Using Erlang, you'll be surprised at how easy it becomes to deal with parallel problems, and how much faster and more efficiently your programs run. That's because Erlang uses sets of parallel processes-not a single sequential process, as found in most programming languages. Joe Armstrong, creator of Erlang, introduces this powerful language in small steps, giving you a complete overview of Erlang and how to use it in common scenarios. You'll start with sequential programming, move to parallel programming and handling errors in parallel programs, and learn to work confidently with distributed programming and the standard Erlang/Open Telecom Platform (OTP) frameworks. You need no previous knowledge of functional or parallel programming. The chapters are packed with hands-on, real-world tutorial examples and insider tips and advice, and finish with exercises for both beginning and advanced users. The second edition has been extensively rewritten. New to this edition are seven chapters covering the latest Erlang features: maps, the type system and the

Dialyzer, WebSockets, programming idioms, and a new stand-alone execution environment. You'll write programs that dynamically detect and correct errors, and that can be upgraded without stopping the system. There's also coverage of rebar (the de facto Erlang build system), and information on how to share and use Erlang projects on github, illustrated with examples from cowboy and bitcask. Erlang will change your view of the world, and of how you program. What You Need The Erlang/OTP system. Download it from erlang.org.

Spark: The Definitive Guide - Bill Chambers 2018-02-08

Learn how to use, deploy, and maintain Apache Spark with this comprehensive guide, written by the creators of the open-source cluster-computing framework. With an emphasis on improvements and new features in Spark 2.0, authors Bill Chambers and Matei Zaharia break down Spark topics into distinct sections, each with unique goals. You'll explore the basic operations and common functions of Spark's structured APIs, as well as Structured Streaming, a new high-level API for building end-to-end streaming applications. Developers and system administrators will learn the fundamentals of monitoring, tuning, and debugging Spark, and explore machine learning techniques and scenarios for employing MLlib, Spark's scalable machine-learning library. Get a gentle overview of big data and Spark Learn about DataFrames, SQL, and Datasets—Spark's core APIs—through worked examples Dive into Spark's low-level APIs, RDDs, and execution of SQL and DataFrames Understand how Spark runs on a cluster Debug, monitor, and tune Spark clusters and applications Learn the power of Structured Streaming, Spark's stream-processing engine Learn how you can apply MLlib to a variety of problems, including classification or recommendation

Data-intensive Text Processing with MapReduce - Jimmy Lin 2010

Our world is being revolutionized by data-driven methods: access to large amounts of data has generated new insights and opened exciting new opportunities in commerce, science, and computing applications. Processing the enormous quantities of data necessary for these advances requires large clusters, making distributed computing paradigms more crucial than ever. MapReduce is a programming model for expressing distributed computations on massive datasets and an execution framework for large-scale data processing on clusters of commodity servers. The programming model provides an easy-to-understand abstraction for designing scalable algorithms, while the execution framework transparently handles many system-level details, ranging from scheduling to synchronization to fault tolerance. This book focuses on MapReduce algorithm design, with an emphasis on text processing algorithms common in natural language processing, information retrieval, and machine learning. We introduce the notion of MapReduce design patterns, which represent general reusable solutions to commonly occurring problems across a variety of problem domains. This book not only intends to help the reader "think in MapReduce", but also discusses limitations of the programming model as well. This volume is a printed version of a work that appears in the Synthesis Digital Library of Engineering and Computer Science. Synthesis Lectures provide concise, original presentations of important research and development topics, published quickly, in digital and print formats. For more information visit www.morganclaypool.com

Mining of Massive Datasets - Jure Leskovec 2014-11-13
Now in its second edition, this book focuses on practical algorithms for mining data from even the largest datasets.

The Book of R - Tilman M. Davies 2016-07-16
The Book of R is a comprehensive, beginner-

friendly guide to R, the world's most popular programming language for statistical analysis. Even if you have no programming experience and little more than a grounding in the basics of mathematics, you'll find everything you need to begin using R effectively for statistical analysis. You'll start with the basics, like how to handle data and write simple programs, before moving on to more advanced topics, like producing statistical summaries of your data and performing statistical tests and modeling. You'll even learn how to create impressive data visualizations with R's basic graphics tools and contributed packages, like ggplot2 and ggvis, as well as interactive 3D visualizations using the rgl package. Dozens of hands-on exercises (with downloadable solutions) take you from theory to practice, as you learn: –The fundamentals of programming in R, including how to write data frames, create functions, and use variables, statements, and loops –Statistical concepts like exploratory data analysis, probabilities, hypothesis tests, and regression modeling, and how to execute them in R –How to access R's thousands of functions, libraries, and data sets –How to draw valid and useful conclusions from your data –How to create publication-quality graphics of your results Combining detailed explanations with real-world examples and exercises, this book will provide you with a solid understanding of both statistics and the depth of R's functionality. Make The Book of R your doorway into the growing world of data analysis.

Python for Data Analysis - Wes McKinney 2017-09-25
Get complete instructions for manipulating, processing, cleaning, and crunching datasets in Python. Updated for Python 3.6, the second edition of this hands-on guide is packed with practical case studies that show you how to solve a broad set of data analysis problems effectively. You'll learn the latest versions of pandas, NumPy, IPython, and Jupyter in the process. Written by Wes McKinney, the creator

of the Python pandas project, this book is a practical, modern introduction to data science tools in Python. It's ideal for analysts new to Python and for Python programmers new to data science and scientific computing. Data files and related material are available on GitHub. Use the IPython shell and Jupyter notebook for exploratory computing Learn basic and advanced features in NumPy (Numerical Python) Get started with data analysis tools in the pandas library Use flexible tools to load, clean, transform, merge, and reshape data Create informative visualizations with matplotlib Apply the pandas groupby facility to slice, dice, and summarize datasets Analyze and manipulate regular and irregular time series data Learn how to solve real-world data analysis problems with thorough, detailed examples

Understanding Machine Learning - Shai Shalev-Shwartz 2014-05-19
Introduces machine learning and its algorithmic paradigms, explaining the principles behind automated learning approaches and the considerations underlying their usage.

Natural Language Processing with Python - Steven Bird 2009-06-12
This book offers a highly accessible introduction to natural language processing, the field that supports a variety of language technologies, from predictive text and email filtering to automatic summarization and translation. With it, you'll learn how to write Python programs that work with large collections of unstructured text. You'll access richly annotated datasets using a comprehensive range of linguistic data structures, and you'll understand the main algorithms for analyzing the content and structure of written communication. Packed with examples and exercises, Natural Language Processing with Python will help you: Extract information from unstructured text, either to guess the topic or identify "named entities" Analyze linguistic structure in text, including parsing and semantic analysis Access popular

linguistic databases, including WordNet and treebanks Integrate techniques drawn from fields as diverse as linguistics and artificial intelligence This book will help you gain practical skills in natural language processing using the Python programming language and the Natural Language Toolkit (NLTK) open source library. If you're interested in developing web applications, analyzing multilingual news sources, or documenting endangered languages -- or if you're simply curious to have a programmer's perspective on how human language works -- you'll find Natural Language Processing with Python both fascinating and immensely useful.

Introduction to Computing - David Evans 2011-12-07
Introduction to Computing is a comprehensive text designed for the CS0 (Intro to CS) course at the college level. It may also be used as a primary text for the Advanced Placement Computer Science course at the high school level.

Information-Theoretic Methods in Data Science Miguel R. D. Rodrigues 2021-04-08
The first unified treatment of the interface between information theory and emerging topics in data science, written in a clear, tutorial style. Covering topics such as data acquisition, representation, analysis, and communication, it is ideal for graduate students and researchers in information theory, signal processing, and machine learning.

Graph Algorithms - Mark Needham 2019-05-16
Discover how graph algorithms can help you leverage the relationships within your data to develop more intelligent solutions and enhance your machine learning models. You'll learn how graph analytics are uniquely suited to unfold complex structures and reveal difficult-to-find patterns lurking in your data. Whether you are trying to build dynamic network models or forecast real-world behavior, this book illustrates how graph algorithms deliver

value—from finding vulnerabilities and bottlenecks to detecting communities and improving machine learning predictions. This practical book walks you through hands-on examples of how to use graph algorithms in Apache Spark and Neo4j—two of the most common choices for graph analytics. Also included: sample code and tips for over 20 practical graph algorithms that cover optimal pathfinding, importance through centrality, and community detection. Learn how graph analytics vary from conventional statistical analysis Understand how classic graph algorithms work, and how they are applied Get guidance on which algorithms to use for different types of questions Explore algorithm examples with working code and sample datasets from Spark and Neo4j See how connected feature extraction can increase machine learning accuracy and precision Walk through creating an ML workflow for link prediction combining Neo4j and Spark *Anomaly Detection and Complex Event Processing Over IoT Data Streams* Patrick Schneider 2022-01-21 Anomaly Detection and Complex Event Processing over IoT Data Streams: With Application to eHealth and Patient Data Monitoring presents advanced processing techniques for IoT data streams and the anomaly detection algorithms over them. The book brings new advances and generalized techniques for processing IoT data streams, semantic data enrichment with contextual information at Edge, Fog and Cloud as well as complex event processing in IoT applications. The book comprises fundamental models, concepts and algorithms, architectures and technological solutions as well as their application to eHealth. Case studies, such as the bio-metric signals stream processing are presented –the massive amount of raw ECG signals from the sensors are processed dynamically across the data pipeline and classified with modern machine learning approaches including the Hierarchical Temporal

Memory and Deep Learning algorithms. The book discusses adaptive solutions to IoT stream processing that can be extended to different use cases from different fields of eHealth, to enable a complex analysis of patient data in a historical, predictive and even prescriptive application scenarios. The book ends with a discussion on ethics, emerging research trends, issues and challenges of IoT data stream processing. Provides the state-of-the-art in IoT Data Stream Processing, Semantic Data Enrichment, Reasoning and Knowledge Covers extraction (Anomaly Detection) Illustrates new, scalable and reliable processing techniques based on IoT stream technologies Offers applications to new, real-time anomaly detection scenarios in the health domain

Probability and Statistics for Computer Scientists-Michael Baron 2013-08-05 Student-Friendly Coverage of Probability, Statistical Methods, Simulation, and Modeling ToolsIncorporating feedback from instructors

and researchers who used the previous edition, Probability and Statistics for Computer Scientists, Second Edition helps students understand general methods of stochastic modeling, simulation, and data analysis; make o

Computer Studies- C. S. French 1986 This manual aims to satisfy GCSE (and equivalent) computer studies course requirements, taking full account of the National Criteria. In this edition, more emphasis has been placed on computer applications and practice, and social and economic aspects.

Text Analytics - Domenica Fioredistella Iezzi 2020-11-24 Focusing on methodologies, applications and challenges of textual data analysis and related fields, this book gathers selected and peer-reviewed contributions presented at the 14th International Conference on Statistical Analysis of Textual Data (JADT 2018), held in Rome, Italy, on June 12-15, 2018. Statistical analysis of textual data is a multidisciplinary field of

research that has been mainly fostered by statistics, linguistics, mathematics and computer science. The respective sections of the book focus on techniques, methods and models for text analytics, dictionaries and specific languages, multilingual text analysis, and the applications of text analytics. The interdisciplinary contributions cover topics including text mining, text analytics, network text analysis, information extraction, sentiment analysis, web mining, social media analysis, corpus and quantitative linguistics, statistical and computational methods, and textual data in sociology, psychology, politics, law and marketing.

Advanced Data Analytics for Power Systems Ali Tajer 2021-04-08
Experts in data analytics and power engineering present techniques addressing the needs of modern power systems, covering theory and applications related to power system reliability, efficiency, and security. With topics spanning large-scale and distributed optimization, statistical learning, big data analytics, graph theory, and game theory, this is an essential resource for graduate students and researchers in academia and industry with backgrounds in power systems engineering, applied mathematics, and computer science.

Cognitive and Soft Computing Techniques for the Analysis of Healthcare Data - Akash Kumar Bhoi 2022-01-28
Cognitive and Soft Computing Techniques for the Analysis of Healthcare Data discusses the insight of data processing applications in various domains through soft computing techniques and enormous advancements in the field. The book focuses on the cross-disciplinary mechanisms and ground-breaking research ideas on novel techniques and data processing approaches in handling structured and unstructured healthcare data. It also gives insight into various information-processing models and many memories associated with it while processing the

information for forecasting future trends and decision making. This book is an excellent resource for researchers and professionals who work in the Healthcare Industry, Data Science, and Machine learning. Focuses on data-centric operations in the Healthcare industry Provides the latest trends in healthcare data analytics and practical implementation outcomes of the proposed models Addresses real-time challenges and case studies in the Healthcare industry

Bioimage Data Analysis Workflows - Kota Miura 2019-10-17

This Open Access textbook provides students and researchers in the life sciences with essential practical information on how to quantitatively analyze data images. It refrains from focusing on theory, and instead uses practical examples and step-by step protocols to familiarize readers with the most commonly used image processing and analysis platforms such as ImageJ, MatLab and Python. Besides gaining knowhow on algorithm usage, readers will learn how to create an analysis pipeline by scripting language; these skills are important in order to document reproducible image analysis workflows. The textbook is chiefly intended for advanced undergraduates in the life sciences and biomedicine without a theoretical background in data analysis, as well as for postdocs, staff scientists and faculty members who need to perform regular quantitative analyses of microscopy images.

Process Safety and Big Data -Sagit Valeev 2021-02-18

Process Safety and Big Data discusses the principles of process safety and advanced information technologies. It explains how these principles are applied to the process industry and provides examples of applications in process safety control and decision support systems. This book helps to address problems that researchers face in industry that are the result of increased process complexity and that have an impact on safety issues. It shows ways to tackle these

safety issues by implementing modern information technologies, such as big data analysis and artificial intelligence. It provides an integrated approach to modern information technologies used in control and management of process safety in industry. The book also considers indicators and criteria in effective safety decisions, and addresses the issue of how big data would provide support for improved, autonomous, data-driven decisions. Paves the way for the digital transformation of safety science and safety management Takes a system approach to advanced information technologies used in process safety Applies big data technologies to process safety Includes multiple pertinent case studies

Introducing Microsoft Power BI - Alberto Ferrari 2016-07-07
This is the eBook of the printed book and may not include any media, website access codes, or print supplements that may come packaged with the bound book. Introducing Microsoft Power BI enables you to evaluate when and how to use Power BI. Get inspired to improve business processes in your company by leveraging the available analytical and collaborative features of this environment. Be sure to watch for the publication of Alberto Ferrari and Marco Russo's upcoming retail book, Analyzing Data with Power BI and Power Pivot for Excel (ISBN 9781509302765). Go to the book's page at the Microsoft Press Store here for more details:http://aka.ms/analyzingdata/details. Learn more about Power BI at https://powerbi.microsoft.com/.

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.

Oliver and Chapman's Data Processing and Information Technology - C. S. French 1996-09-01
This text provides an understanding of data processing and information technology for those with little or no knowledge of the subject. The new edition has a greater emphasis on the change in the way IT is expected to serve modern businesses.

Deep Learning for Coders with fastai and PyTorch - Jeremy Howard 2020-06-29
Deep learning is often viewed as the exclusive domain of math PhDs and big tech companies. But as this hands-on guide demonstrates, programmers comfortable with Python can achieve impressive results in deep learning with little math background, small amounts of data, and minimal code. How? With fastai, the first library to provide a consistent interface to the most frequently used deep learning applications. Authors Jeremy Howard and Sylvain Gugger, the creators of fastai, show you how to train a model on a wide range of tasks using fastai and PyTorch. You'll also dive progressively further into deep learning theory to gain a complete understanding of the algorithms behind the scenes. Train models in computer vision, natural language processing, tabular data, and collaborative filtering Learn the latest deep

learning techniques that matter most in practice Improve accuracy, speed, and reliability by understanding how deep learning models work Discover how to turn your models into web applications Implement deep learning algorithms from scratch Consider the ethical implications of your work Gain insight from the foreword by PyTorch cofounder, Soumith Chintala

Computer Science - Ian Sinclair 2014-05-15 Computer Science: A Concise Introduction covers the fundamentals of computer science. The book describes micro-, mini-, and mainframe computers and their uses; the ranges and types of computers and peripherals currently available; applications to numerical computation; and commercial data processing and industrial control processes. The functions of data preparation, data control, computer operations, applications programming, systems analysis and design, database administration, and network control are also encompassed. The book then discusses batch, on-line, and real-time systems; the basic concepts of computer architecture; and the characteristics of main memory and backing storage. The main characteristics of common types of input, output, and input/output devices used in commercial computer applications and data transmission system are also considered. The book tackles the organization and accessing of serial, sequential, and indexed sequential file; file processing and management; and the concepts and functions of operating systems. The text describes on-line and off-line programming methods as well. Computer science students will find the book useful.

Data Science Applied to Sustainability Analysis - Jennifer Dunn 2021-05-11 Data Science Applied to Sustainability Analysis focuses on the methodological considerations associated with applying this tool in analysis techniques such as lifecycle assessment and materials flow analysis. As sustainability analysts

need examples of applications of big data techniques that are defensible and practical in sustainability analyses and that yield actionable results that can inform policy development, corporate supply chain management strategy, or non-governmental organization positions, this book helps answer underlying questions. In addition, it addresses the need of data science experts looking for routes to apply their skills and knowledge to domain areas. Presents data sources that are available for application in sustainability analyses, such as market information, environmental monitoring data, social media data and satellite imagery Includes considerations sustainability analysts must evaluate when applying big data Features case studies illustrating the application of data science in sustainability analyses

Advanced Data Analysis and Modelling in Chemical Engineering - Denis Constales 2016-08-23
Advanced Data Analysis and Modeling in Chemical Engineering provides the mathematical foundations of different areas of chemical engineering and describes typical applications. The book presents the key areas of chemical engineering, their mathematical foundations, and corresponding modeling techniques. Modern industrial production is based on solid scientific methods, many of which are part of chemical engineering. To produce new substances or materials, engineers must devise special reactors and procedures, while also observing stringent safety requirements and striving to optimize the efficiency jointly in economic and ecological terms. In chemical engineering, mathematical methods are considered to be driving forces of many innovations in material design and process development. Presents the main mathematical problems and models of chemical engineering and provides the reader with contemporary methods and tools to solve them Summarizes in a clear and straightforward way, the

contemporary trends in the interaction between mathematics and chemical engineering vital to chemical engineers in their daily work Includes classical analytical methods, computational methods, and methods of symbolic computation Covers the latest cutting edge computational methods, like symbolic computational methods

Principles of Information Systems Ralph Stair 2009-01-07
Now thoroughly streamlined and revised, PRINCIPLES OF INFORMATION SYSTEMS, Ninth Edition, retains the overall vision and framework that made the previous editions so popular while eliminating outdated topics and updating information, examples, and case studies. In just 600 pages, accomplished authors Ralph Stair and George Reynolds cover IS principles and their real-world applications using timely, current business examples and hands-on activities. Regardless of their majors, students can use this book to understand and practice IS principles so they can function more effectively as workers, managers, decision makers, and organizational leaders. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Practical Statistics for Data Scientists - Peter Bruce 2017-05-10
Statistical methods are a key part of 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 *Introduction to Statistics and Data Analysis* Roxy Peck 2005-12 Roxy Peck, Chris Olsen and Jay Devore's new edition uses real data and attention-grabbing examples to introduce students to the study of statistical output and methods of data analysis. Based on the best-selling STATISTICS: THE EXPLORATION AND ANALYSIS OF DATA, Fifth Edition, this new INTRODUCTION TO STATISTICS AND DATA ANALYSIS, Second Edition integrates coverage of the graphing calculator and includes expanded coverage of probability. Traditional in structure yet modern in approach, this text guides students through an intuition-based learning process that stresses interpretation and communication of statistical information. Conceptual comprehension is cemented by the simplicity of notation--frequently substituting words for symbols. Simple notation helps students grasp concepts. Hands-on activities and Seeing Statistics applets in each chapter allow students to practice statistics firsthand.

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 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)

Bandit Algorithms - Tor Lattimore 2020-07-16 A comprehensive and rigorous introduction for graduate students and researchers, with applications in sequential decision-making problems.

Cooperative and Graph Signal Processing - Petar Djuric 2018-07-04 Cooperative and Graph Signal Processing: Principles and Applications presents the fundamentals of signal processing over networks and the latest advances in graph signal processing. A range of key concepts are clearly

explained, including learning, adaptation, optimization, control, inference and machine learning. Building on the principles of these areas, the book then shows how they are relevant to understanding distributed communication, networking and sensing and social networks. Finally, the book shows how the principles are applied to a range of applications, such as Big data, Media and video, Smart grids, Internet of Things, Wireless health and Neuroscience. With this book readers will learn the basics of adaptation and learning in networks, the essentials of detection, estimation and filtering, Bayesian inference in networks, optimization and control, machine learning, signal processing on graphs, signal processing for distributed communication, social networks from the perspective of flow of information, and how to apply signal processing methods in distributed settings. Presents the first book on cooperative signal processing and graph signal processing Provides a range of applications and application areas that are thoroughly covered Includes an editor in chief and associate editor from the IEEE Transactions on Signal Processing and Information Processing over Networks who have recruited top contributors for the book **Neural Networks** - Gérard Dreyfus 2005-12-06 Neural networks represent a powerful data processing technique that has reached maturity and broad application. When clearly understood and appropriately used, they are a mandatory component in the toolbox of any engineer who wants make the best use of the available data, in order to build models, make predictions, mine data, recognize shapes or signals, etc. Ranging from theoretical foundations to real-life applications, this book is intended to provide engineers and researchers with clear methodologies for taking advantage of neural networks in industrial, financial or banking applications, many instances of which are presented in the book. For the benefit of readers wishing to gain deeper knowledge of the topics,

the book features appendices that provide theoretical details for greater insight, and algorithmic details for efficient programming and implementation. The chapters have been written by experts and edited to present a coherent and comprehensive, yet not redundant, practically oriented introduction.

Storage Systems - Alexander Thomasian 2021-10-13
Storage Systems: Organization, Performance, Coding, Reliability and Their Data Processing was motivated by the 1988 Redundant Array of Inexpensive/Independent Disks proposal to replace large form factor mainframe disks with an array of commodity disks. Disk loads are balanced by striping data into strips—with one strip per disk— and storage reliability is enhanced via replication or erasure coding, which at best dedicates k strips per stripe to tolerate k disk failures. Flash memories have resulted in a paradigm shift with Solid State Drives (SSDs) replacing Hard Disk Drives (HDDs) for high performance applications. RAID and Flash have resulted in the emergence of new storage companies, namely EMC, NetApp, SanDisk, and Purestorage, and a multibillion-dollar storage market. Key new conferences and publications are reviewed in this book. The goal of the book is to expose students, researchers, and IT professionals to the more important developments in storage systems, while covering the evolution of storage technologies, traditional and novel databases, and novel sources of data. We describe several prototypes: FAWN at CMU, RAMCloud at Stanford, and Lightstore at MIT; Oracle's Exadata, AWS' Aurora, Alibaba's PolarDB, Fungible Data Center; and author's paper designs for cloud storage, namely heterogeneous disk arrays and hierarchical RAID. • Surveys storage technologies and lists sources of data: measurements, text, audio, images, and video • Familiarizes with paradigms to improve performance: caching, prefetching, log-structured file systems, and merge-trees

(LSMs) • Describes RAID organizations and analyzes their performance and reliability • Conserves storage via data compression, deduplication, compaction, and secures data via encryption • Specifies implications of storage technologies on performance and power consumption • Exemplifies database parallelism for big data, analytics, deep learning via multicore CPUs, GPUs, FPGAs, and ASICs, e.g., Google's Tensor Processing Units

Cognitive Big Data Intelligence with a Metaheuristic Approach - Sushruta Mishra 2021-11-09
Cognitive Big Data Intelligence with a Metaheuristic Approach presents an exact and compact organization of content relating to the latest metaheuristics methodologies based on new challenging big data application domains and cognitive computing. The combined model of cognitive big data intelligence with metaheuristics methods can be used to analyze emerging patterns, spot business opportunities, and take care of critical process-centric issues in real-time. Various real-time case studies and implemented works are discussed in this book for better understanding and additional clarity. This book presents an essential platform for the use of cognitive technology in the field of Data Science. It covers metaheuristic methodologies that can be successful in a wide variety of problem settings in big data frameworks. Provides a unique opportunity to present the work on the state-of-the-art of metaheuristics approach in the area of big data processing developing automated and intelligent models Explains different, feasible applications and case studies where cognitive computing can be successfully implemented in big data analytics using metaheuristics algorithms Provides a snapshot of the latest advances in the contribution of metaheuristics frameworks in cognitive big data applications to solve optimization problems