

Big Data Fundamentals Concepts Drivers Techniques The Prentice Hall Service Technology Series From Thomas Erl

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Big Data Processing with Apache Spark - Srini Penchikala 2018-03-13

Apache Spark is a popular open-source big-data processing framework that's built around speed, ease of use, and unified distributed computing architecture. Not only it supports developing applications in different languages like Java, Scala, Python, and R, it's also hundred times faster in memory and ten times faster even when running on disk compared to traditional data processing frameworks. Whether you are currently working on a big data project or interested in learning more about topics like machine learning, streaming data processing, and graph data analytics, this book is for you. You can learn about Apache Spark and develop Spark programs for various use cases in big data analytics using the code examples provided. This book covers all the libraries in Spark ecosystem: Spark Core, Spark SQL, Spark Streaming, Spark ML, and Spark GraphX.

The Fourth Industrial Revolution - Klaus Schwab 2017-01-03

World-renowned economist Klaus Schwab, Founder and Executive Chairman of the World Economic Forum, explains that we have an opportunity to shape the fourth industrial revolution, which will fundamentally alter how we live and work. Schwab argues that this revolution is different in scale, scope and complexity from any that have come before. Characterized by a range of new technologies that are fusing the physical, digital and biological worlds, the developments are affecting all disciplines, economies, industries and governments, and even challenging ideas about what it means to be human. Artificial intelligence is already all around us, from supercomputers, drones and virtual assistants to 3D printing, DNA sequencing, smart thermostats, wearable sensors and microchips smaller than a grain of sand. But this is just the beginning: nanomaterials 200 times stronger than steel and a million times thinner than a strand of hair and the first transplant of a 3D printed liver are already in development. Imagine "smart factories" in which global systems of manufacturing are coordinated virtually, or implantable mobile phones made of biosynthetic materials. The fourth industrial revolution, says Schwab, is more significant, and its ramifications more profound, than in any prior period of human history. He outlines the key technologies driving this revolution and discusses the major impacts expected on government, business, civil society and individuals. Schwab also offers bold ideas on how to harness these changes and shape a better future—one in which technology empowers people rather than replaces them; progress serves society rather than disrupts it; and in which innovators respect moral and ethical boundaries rather than cross them. We all have the opportunity to contribute to developing new frameworks that advance progress.

Big Data Analytics for Cyber-Physical Systems - Guido Dartmann 2019-07-15

Big Data Analytics in Cyber-Physical Systems: Machine Learning for the Internet of Things examines sensor signal processing, IoT gateways, optimization and decision-making, intelligent mobility, and implementation of machine learning algorithms in embedded systems. This book focuses on the interaction between IoT technology and the mathematical tools used to evaluate the extracted data of those systems. Each chapter provides the reader with a broad list of data analytics and machine learning methods for multiple IoT applications. Additionally, this volume addresses the educational transfer needed to incorporate these technologies into our society by examining new platforms for IoT in schools, new courses and concepts for universities and adult education on IoT and data science. . Bridges the gap between IoT, CPS, and

mathematical modelling. Features numerous use cases that discuss how concepts are applied in different domains and applications. Provides "best practices", "winning stories" and "real-world examples" to complement innovation. Includes highlights of mathematical foundations of signal processing and machine learning in CPS and IoT.

Ethics of Big Data - Kord Davis 2012-09-13

What are your organization's policies for generating and using huge datasets full of personal information? This book examines ethical questions raised by the big data phenomenon, and explains why enterprises need to reconsider business decisions concerning privacy and identity. Authors Kord Davis and Doug Patterson provide methods and techniques to help your business engage in a transparent and productive ethical inquiry into your current data practices. Both individuals and organizations have legitimate interests in understanding how data is handled. Your use of data can directly affect brand quality and revenue—as Target, Apple, Netflix, and dozens of other companies have discovered. With this book, you'll learn how to align your actions with explicit company values and preserve the trust of customers, partners, and stakeholders. Review your data-handling practices and examine whether they reflect core organizational values Express coherent and consistent positions on your organization's use of big data Define tactical plans to close gaps between values and practices—and discover how to maintain alignment as conditions change over time Maintain a balance between the benefits of innovation and the risks of unintended consequences

Designing Data-Intensive Applications - Martin Kleppmann 2017-03-16

Data is at the center of many challenges in system design today. Difficult issues need to be figured out, such as scalability, consistency, reliability, efficiency, and maintainability. In addition, we have an overwhelming variety of tools, including relational databases, NoSQL datastores, stream or batch processors, and message brokers. What are the right choices for your application? How do you make sense of all these buzzwords? In this practical and comprehensive guide, author Martin Kleppmann helps you navigate this diverse landscape by examining the pros and cons of various technologies for processing and storing data. Software keeps changing, but the fundamental principles remain the same. With this book, software engineers and architects will learn how to apply those ideas in practice, and how to make full use of data in modern applications. Peer under the hood of the systems you already use, and learn how to use and operate them more effectively Make informed decisions by identifying the strengths and weaknesses of different tools Navigate the trade-offs around consistency, scalability, fault tolerance, and complexity Understand the distributed systems research upon which modern databases are built Peek behind the scenes of major online services, and learn from their architectures

Big Data Fundamentals - Thomas Erl 2015-12-30

Big Data Science Fundamentals offers a comprehensive, easy-to-understand, and up-to-date understanding of Big Data for all business professionals and technologists. Leading enterprise technology author Thomas Erl introduces key Big Data concepts, theory, terminology, technologies, key analysis/analytics techniques, and more - all logically organized, presented in plain English, and supported by easy-to-understand diagrams and case study examples. Erl provides a uniquely valuable methodology for Big Data analysis, and

introduces the underlying analysis techniques and enabling technological constructs that constitute a Big Data solution environment. He presents vendor-neutral guidance on implementing Big Data for competitive advantage; and for successfully integrating Big Data with existing enterprise systems. Coverage includes: Big Data's fundamental concepts and key business/technology drivers "5 V" characteristics of data in Big Data environments: volume, velocity, variety, veracity, and value Types of Big Data: structured, unstructured, semi-structured, and meta-data Big Data's relationships with OLTP, OLAP, ETL, data warehouses, and data marts Fundamental types of analysis, analytics, and machine learning Requirements and tools for visualizing big data Adoption and planning: business cases, privacy, security, provenance, performance, governance, and more Big Data technologies, including clusters, NoSQL, distributed and parallel data processing, Hadoop, cloud computing, and storage Big Data analysis and analytics across the full lifecycle And much more

Advanced Data Mining Techniques - David L. Olson 2008-01-01

This book covers the fundamental concepts of data mining, to demonstrate the potential of gathering large sets of data, and analyzing these data sets to gain useful business understanding. The book is organized in three parts. Part I introduces concepts. Part II describes and demonstrates basic data mining algorithms. It also contains chapters on a number of different techniques often used in data mining. Part III focuses on business applications of data mining.

Big Data - Rajkumar Buyya 2016-06-07

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

Exam Ref Dp-900 Microsoft Azure Data Fundamentals - Daniel Seara 2021-02-15

Direct from Microsoft, this Exam Ref is the official study guide for the new Microsoft DP-900 Microsoft Azure Data Fundamentals certification exam. Exam Ref DP-900 Microsoft Azure Data Fundamentals offers professional-level preparation that helps candidates maximize their exam performance and sharpen their skills on the job. It focuses on the specific areas of expertise modern IT professionals need to demonstrate real-world foundational knowledge of core data concepts and how they are implemented using Microsoft Azure data services. Coverage includes: Describing core data concepts Describing how to work with relational data on Azure Describing how to work with non-relational data on Azure Describing analytics workloads on Azure Microsoft Exam Ref publications stand apart from third-party study guides because they: Provide guidance from Microsoft, the creator of Microsoft certification exams Target professional-level exam candidates with content focused on their needs, not "one-size-fits-all" content Streamline study by organizing material according to the exam's objective domain (OD), covering one functional group and its objectives in each chapter Feature Thought Experiments to guide candidates through a set of "what if?" scenarios, and prepare them more effectively for Pro-level style exam questions Explore big picture thinking around the professional's job role For more information on Exam DP-900 and the Microsoft Certified: Azure Data Fundamentals credential, visit <https://docs.microsoft.com/en-us/learn/certifications/exams/DP-900>.

Privacy and Big Data - Terence Craig 2011-09-23

"The players, regulators, and stakeholders"--Cover.

Big Data For Dummies - Judith S. Hurwitz 2013-04-02

Find the right big data solution for your business or organization Big data management is one of the major challenges facing business, industry, and not-for-profit organizations. Data sets such as customer transactions for a mega-retailer, weather patterns monitored by meteorologists, or social network activity

can quickly outpace the capacity of traditional data management tools. If you need to develop or manage big data solutions, you'll appreciate how these four experts define, explain, and guide you through this new and often confusing concept. You'll learn what it is, why it matters, and how to choose and implement solutions that work. Effectively managing big data is an issue of growing importance to businesses, not-for-profit organizations, government, and IT professionals Authors are experts in information management, big data, and a variety of solutions Explains big data in detail and discusses how to select and implement a solution, security concerns to consider, data storage and presentation issues, analytics, and much more Provides essential information in a no-nonsense, easy-to-understand style that is empowering Big Data For Dummies cuts through the confusion and helps you take charge of big data solutions for your organization.

Big Data, Analytics, and the Future of Marketing & Sales - McKinsey Chief Marketing & Sales Officer Forum 2014-08-16

Big Data is the biggest game-changing opportunity for marketing and sales since the Internet went mainstream almost 20 years ago. The data big bang has unleashed torrents of terabytes about everything from customer behaviors to weather patterns to demographic consumer shifts in emerging markets. This collection of articles, videos, interviews, and slideshows highlights the most important lessons for companies looking to turn data into above-market growth: Using analytics to identify valuable business opportunities from the data to drive decisions and improve marketing return on investment (MROI) Turning those insights into well-designed products and offers that delight customers Delivering those products and offers effectively to the marketplace. The goldmine of data represents a pivot-point moment for marketing and sales leaders. Companies that inject big data and analytics into their operations show productivity rates and profitability that are 5 percent to 6 percent higher than those of their peers. That's an advantage no company can afford to ignore.

Big Data - Hrushiksha Mohanty 2015-06-29

This book is a collection of chapters written by experts on various aspects of big data. The book aims to explain what big data is and how it is stored and used. The book starts from the fundamentals and builds up from there. It is intended to serve as a review of the state-of-the-practice in the field of big data handling. The traditional framework of relational databases can no longer provide appropriate solutions for handling big data and making it available and useful to users scattered around the globe. The study of big data covers a wide range of issues including management of heterogeneous data, big data frameworks, change management, finding patterns in data usage and evolution, data as a service, service-generated data, service management, privacy and security. All of these aspects are touched upon in this book. It also discusses big data applications in different domains. The book will prove useful to students, researchers, and practicing database and networking engineers.

Cloud Computing - Thomas Erl 2013

Explores cloud computing, breaking down the concepts, models, mechanisms, and architectures of this technology while allowing for the financial assessment of resources and how they compare to traditional storage systems.

Data Science and Big Data Analytics - EMC Education Services 2015-01-05

Data Science and Big Data Analytics is about harnessing the power of data for new insights. The book covers the breadth of activities and methods and tools that Data Scientists use. The content focuses on concepts, principles and practical applications that are applicable to any industry and technology environment, and the learning is supported and explained with examples that you can replicate using open-source software. This book will help you: Become a contributor on a data science team Deploy a structured lifecycle approach to data analytics problems Apply appropriate analytic techniques and tools to analyzing big data Learn how to tell a compelling story with data to drive business action Prepare for EMC Proven Professional Data Science Certification Corresponding data sets are available from the book's page at Wiley which you can find on the Wiley site by searching for the ISBN 9781118876138. Get started discovering, analyzing, visualizing, and presenting data in a meaningful way today!

Principles of Big Data - Jules J. Berman 2013-05-20

Principles of Big Data helps readers avoid the common mistakes that endanger all Big Data projects. By stressing simple, fundamental concepts, this book teaches readers how to organize large volumes of

complex data, and how to achieve data permanence when the content of the data is constantly changing. General methods for data verification and validation, as specifically applied to Big Data resources, are stressed throughout the book. The book demonstrates how adept analysts can find relationships among data objects held in disparate Big Data resources, when the data objects are endowed with semantic support (i.e., organized in classes of uniquely identified data objects). Readers will learn how their data can be integrated with data from other resources, and how the data extracted from Big Data resources can be used for purposes beyond those imagined by the data creators. Learn general methods for specifying Big Data in a way that is understandable to humans and to computers Avoid the pitfalls in Big Data design and analysis Understand how to create and use Big Data safely and responsibly with a set of laws, regulations and ethical standards that apply to the acquisition, distribution and integration of Big Data resources

Big Data Computing - Rajendra Akerkar 2013-12-05

Due to market forces and technological evolution, Big Data computing is developing at an increasing rate. A wide variety of novel approaches and tools have emerged to tackle the challenges of Big Data, creating both more opportunities and more challenges for students and professionals in the field of data computation and analysis. Presenting a mix of industry cases and theory, Big Data Computing discusses the technical and practical issues related to Big Data in intelligent information management. Emphasizing the adoption and diffusion of Big Data tools and technologies in industry, the book introduces a broad range of Big Data concepts, tools, and techniques. It covers a wide range of research, and provides comparisons between state-of-the-art approaches. Comprised of five sections, the book focuses on: What Big Data is and why it is important Semantic technologies Tools and methods Business and economic perspectives Big Data applications across industries

Learning SQL - Alan Beaulieu 2009-04-11

Updated for the latest database management systems -- including MySQL 6.0, Oracle 11g, and Microsoft's SQL Server 2008 -- this introductory guide will get you up and running with SQL quickly. Whether you need to write database applications, perform administrative tasks, or generate reports, Learning SQL, Second Edition, will help you easily master all the SQL fundamentals. Each chapter presents a self-contained lesson on a key SQL concept or technique, with numerous illustrations and annotated examples. Exercises at the end of each chapter let you practice the skills you learn. With this book, you will: Move quickly through SQL basics and learn several advanced features Use SQL data statements to generate, manipulate, and retrieve data Create database objects, such as tables, indexes, and constraints, using SQL schema statements Learn how data sets interact with queries, and understand the importance of subqueries Convert and manipulate data with SQL's built-in functions, and use conditional logic in data statements Knowledge of SQL is a must for interacting with data. With Learning SQL, you'll quickly learn how to put the power and flexibility of this language to work.

Understanding Big Data Scalability - Cory Isaacson 2014

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

Modern Big Data Architectures - Dominik Ryzko 2020-04-09

Provides an up-to-date analysis of big data and multi-agent systems The term Big Data refers to the cases,

where data sets are too large or too complex for traditional data-processing software. With the spread of new concepts such as Edge Computing or the Internet of Things, production, processing and consumption of this data becomes more and more distributed. As a result, applications increasingly require multiple agents that can work together. A multi-agent system (MAS) is a self-organized computer system that comprises multiple intelligent agents interacting to solve problems that are beyond the capacities of individual agents. Modern Big Data Architectures examines modern concepts and architecture for Big Data processing and analytics. This unique, up-to-date volume provides joint analysis of big data and multi-agent systems, with emphasis on distributed, intelligent processing of very large data sets. Each chapter contains practical examples and detailed solutions suitable for a wide variety of applications. The author, an internationally-recognized expert in Big Data and distributed Artificial Intelligence, demonstrates how base concepts such as agent, actor, and micro-service have reached a point of convergence—enabling next generation systems to be built by incorporating the best aspects of the field. This book: Illustrates how data sets are produced and how they can be utilized in various areas of industry and science Explains how to apply common computational models and state-of-the-art architectures to process Big Data tasks Discusses current and emerging Big Data applications of Artificial Intelligence Modern Big Data Architectures: A Multi-Agent Systems Perspective is a timely and important resource for data science professionals and students involved in Big Data analytics, and machine and artificial learning.

The Enterprise Big Data Lake - Alex Gorelik 2019-02-21

The data lake is a daring new approach for harnessing the power of big data technology and providing convenient self-service capabilities. But is it right for your company? This book is based on discussions with practitioners and executives from more than a hundred organizations, ranging from data-driven companies such as Google, LinkedIn, and Facebook, to governments and traditional corporate enterprises. You'll learn what a data lake is, why enterprises need one, and how to build one successfully with the best practices in this book. Alex Gorelik, CTO and founder of Waterline Data, explains why old systems and processes can no longer support data needs in the enterprise. Then, in a collection of essays about data lake implementation, you'll examine data lake initiatives, analytic projects, experiences, and best practices from data experts working in various industries. Get a succinct introduction to data warehousing, big data, and data science Learn various paths enterprises take to build a data lake Explore how to build a self-service model and best practices for providing analysts access to the data Use different methods for architecting your data lake Discover ways to implement a data lake from experts in different industries

Exploring the Boundaries of Big Data - Bart van der Sloot 2016

Though the exact nature and delineation of Big Data is still unclear, it seems likely that Big Data will have an enormous impact on our daily lives. 'Exploring the Boundaries of Big Data' serves as preparatory work for The Netherlands Scientific Council for Government Policy's advice to the Dutch government, which has asked the Council to address questions regarding Big Data, security and privacy. It is divided into five parts, each part engaging with a different perspective on Big Data: the technical, empirical, legal, regulatory and international perspective.

Doing Data Science - Cathy O'Neil 2013-10-09

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.

Too Big to Ignore - Phil Simon 2015-11-02

Residents in Boston, Massachusetts are automatically reporting potholes and road hazards via their smartphones. Progressive Insurance tracks real-time customer driving patterns and uses that information to offer rates truly commensurate with individual safety. Google accurately predicts local flu outbreaks based upon thousands of user search queries. Amazon provides remarkably insightful, relevant, and timely product recommendations to its hundreds of millions of customers. Quantcast lets companies target precise audiences and key demographics throughout the Web. NASA runs contests via gamification site TopCoder, awarding prizes to those with the most innovative and cost-effective solutions to its problems. Exploryst offers penetrating and previously unknown insights into healthcare behavior. How do these organizations and municipalities do it? Technology is certainly a big part, but in each case the answer lies deeper than that. Individuals at these organizations have realized that they don't have to be Nate Silver to reap massive benefits from today's new and emerging types of data. And each of these organizations has embraced Big Data, allowing them to make astute and otherwise impossible observations, actions, and predictions. It's time to start thinking big. In *Too Big to Ignore*, recognized technology expert and award-winning author Phil Simon explores an unassailably important trend: Big Data, the massive amounts, new types, and multifaceted sources of information streaming at us faster than ever. Never before have we seen data with the volume, velocity, and variety of today. Big Data is no temporary blip of fad. In fact, it is only going to intensify in the coming years, and its ramifications for the future of business are impossible to overstate. *Too Big to Ignore* explains why Big Data is a big deal. Simon provides commonsense, jargon-free advice for people and organizations looking to understand and leverage Big Data. Rife with case studies, examples, analysis, and quotes from real-world Big Data practitioners, the book is required reading for chief executives, company owners, industry leaders, and business professionals.

Fundamentals of Predictive Analytics with JMP, Second Edition - Ron Klimberg 2017-12-19

Written for students in undergraduate and graduate statistics courses, as well as for the practitioner who wants to make better decisions from data and models, this updated and expanded second edition of *Fundamentals of Predictive Analytics with JMP(R)* bridges the gap between courses on basic statistics, which focus on univariate and bivariate analysis, and courses on data mining and predictive analytics. Going beyond the theoretical foundation, this book gives you the technical knowledge and problem-solving skills that you need to perform real-world multivariate data analysis. First, this book teaches you to recognize when it is appropriate to use a tool, what variables and data are required, and what the results might be. Second, it teaches you how to interpret the results and then, step-by-step, how and where to perform and evaluate the analysis in JMP. Using JMP 13 and JMP 13 Pro, this book offers the following new and enhanced features in an example-driven format: an add-in for Microsoft Excel Graph Builder dirty data visualization regression ANOVA logistic regression principal component analysis LASSO elastic net cluster analysis decision trees k-nearest neighbors neural networks bootstrap forests boosted trees text mining association rules model comparison With today's emphasis on business intelligence, business analytics, and predictive analytics, this second edition is invaluable to anyone who needs to expand his or her knowledge of statistics and to apply real-world, problem-solving analysis. This book is part of the SAS Press program.

Creating a Data-Driven Organization - Carl Anderson 2015-07-23

"What do you need to become a data-driven organization? Far more than having big data or a crack team of unicorn data scientists, it requires establishing an effective, deeply-ingrained data culture. This practical book shows you how true data-drivenness involves processes that require genuine buy-in across your company ... Through interviews and examples from data scientists and analytics leaders in a variety of industries ... Anderson explains the analytics value chain you need to adopt when building predictive business models"--Publisher's description.

Creating Value with Big Data Analytics - Peter C. Verhoef 2016-01-08

Our newly digital world is generating an almost unimaginable amount of data about all of us. Such a vast amount of data is useless without plans and strategies that are designed to cope with its size and complexity, and which enable organisations to leverage the information to create value. This book is a refreshingly practical, yet theoretically sound roadmap to leveraging big data and analytics. *Creating Value with Big Data Analytics* provides a nuanced view of big data development, arguing that big data in itself is

not a revolution but an evolution of the increasing availability of data that has been observed in recent times. Building on the authors' extensive academic and practical knowledge, this book aims to provide managers and analysts with strategic directions and practical analytical solutions on how to create value from existing and new big data. By tying data and analytics to specific goals and processes for implementation, this is a much-needed book that will be essential reading for students and specialists of data analytics, marketing research, and customer relationship management.

Successful Business Intelligence: Secrets to Making BI a Killer App - Cindi Howson 2007-12-17

Praise for *Successful Business Intelligence* "If you want to be an analytical competitor, you've got to go well beyond business intelligence technology. Cindi Howson has wrapped up the needed advice on technology, organization, strategy, and even culture in a neat package. It's required reading for quantitatively oriented strategists and the technologists who support them." --Thomas H. Davenport, President's Distinguished Professor, Babson College and co-author, *Competing on Analytics* "When used strategically, business intelligence can help companies transform their organization to be more agile, more competitive, and more profitable. *Successful Business Intelligence* offers valuable guidance for companies looking to embark upon their first BI project as well as those hoping to maximize their current deployments." --John Schwarz, CEO, Business Objects "A thoughtful, clearly written, and carefully researched examination of all facets of business intelligence that your organization needs to know to run its business more intelligently and exploit information to its fullest extent." --Wayne Eckerson, Director, TDWI Research "Using real-world examples, Cindi Howson shows you how to use business intelligence to improve the performance, and the quality, of your company." --Bill Baker, Distinguished Engineer & GM, Business Intelligence Applications, Microsoft Corporation "This book outlines the key steps to make BI an integral part of your company's culture and demonstrates how your company can use BI as a competitive differentiator." --Robert VanHees, CFO, Corporate Express "Given the trend to expand the business analytics user base, organizations are faced with a number of challenges that affect the success rate of these projects. This insightful book provides practical advice on improving that success rate." --Dan Vesset, Vice President, Business Analytics Solution Research, IDC

New Horizons for a Data-Driven Economy - José María Cavanillas 2016-04-04

In this book readers will find technological discussions on the existing and emerging technologies across the different stages of the big data value chain. They will learn about legal aspects of big data, the social impact, and about education needs and requirements. And they will discover the business perspective and how big data technology can be exploited to deliver value within different sectors of the economy. The book is structured in four parts: Part I "The Big Data Opportunity" explores the value potential of big data with a particular focus on the European context. It also describes the legal, business and social dimensions that need to be addressed, and briefly introduces the European Commission's BIG project. Part II "The Big Data Value Chain" details the complete big data lifecycle from a technical point of view, ranging from data acquisition, analysis, curation and storage, to data usage and exploitation. Next, Part III "Usage and Exploitation of Big Data" illustrates the value creation possibilities of big data applications in various sectors, including industry, healthcare, finance, energy, media and public services. Finally, Part IV "A Roadmap for Big Data Research" identifies and prioritizes the cross-sectorial requirements for big data research, and outlines the most urgent and challenging technological, economic, political and societal issues for big data in Europe. This compendium summarizes more than two years of work performed by a leading group of major European research centers and industries in the context of the BIG project. It brings together research findings, forecasts and estimates related to this challenging technological context that is becoming the major axis of the new digitally transformed business environment.

Autonomous and Connected Heavy Vehicle Technology - Rajalakshmi Krishnamurthi 2022-02-01

Autonomous and Connected Heavy Vehicle Technology presents the fundamentals, definitions, technologies, standards and future developments of autonomous and connected heavy vehicles. This book provides insights into various issues pertaining to heavy vehicle technology and helps users develop solutions towards autonomous, connected, cognitive solutions through the convergence of Big Data, IoT, cloud computing and cognition analysis. Various physical, cyber-physical and computational key points related to connected vehicles are covered, along with concepts such as edge computing, dynamic resource

optimization, engineering process, methodology and future directions. The book also contains a wide range of case studies that help to identify research problems and an analysis of the issues and synthesis solutions. This essential resource for graduate-level students from different engineering disciplines such as automotive and mechanical engineering, computer science, data science and business analytics combines both basic concepts and advanced level content from technical experts. Covers state-of-the-art developments and research in vehicle sensor technology, vehicle communication technology, convergence with emerging technologies, and vehicle software and hardware integration Addresses challenges such as optimization, real-time control systems for distance and steering mechanism, and cognitive and predictive analysis Provides complete product development, commercial deployment, technological and performing costs and scaling needs

Scalable Big Data Architecture - Bahaaldine Azarmi 2015-12-31

This book highlights the different types of data architecture and illustrates the many possibilities hidden behind the term "Big Data", from the usage of No-SQL databases to the deployment of stream analytics architecture, machine learning, and governance. Scalable Big Data Architecture covers real-world, concrete industry use cases that leverage complex distributed applications, which involve web applications, RESTful API, and high throughput of large amount of data stored in highly scalable No-SQL data stores such as Couchbase and Elasticsearch. This book demonstrates how data processing can be done at scale from the usage of NoSQL datastores to the combination of Big Data distribution. When the data processing is too complex and involves different processing topology like long running jobs, stream processing, multiple data sources correlation, and machine learning, it's often necessary to delegate the load to Hadoop or Spark and use the No-SQL to serve processed data in real time. This book shows you how to choose a relevant combination of big data technologies available within the Hadoop ecosystem. It focuses on processing long jobs, architecture, stream data patterns, log analysis, and real time analytics. Every pattern is illustrated with practical examples, which use the different open source projects such as Logstash, Spark, Kafka, and so on. Traditional data infrastructures are built for digesting and rendering data synthesis and analytics from large amount of data. This book helps you to understand why you should consider using machine learning algorithms early on in the project, before being overwhelmed by constraints imposed by dealing with the high throughput of Big data. Scalable Big Data Architecture is for developers, data architects, and data scientists looking for a better understanding of how to choose the most relevant pattern for a Big Data project and which tools to integrate into that pattern.

Learning to See Data - Ben Jones 2020-12-15

This book is associated with the 'Data Literacy Level 1' on-demand online course:

<https://dataliteracy.com/courses/data-literacy-level-1> For most of us, it's rare to go a full day without coming across data in the form of a chart, map or dashboard. Graphical displays of data are all around us, from performance indicators at work to election trackers on the news to traffic maps on the road. But few of us have received training or instruction in how to actually read and interpret them. How many times have we been misled simply because we aren't aware of the pitfalls to avoid when interpreting data visualizations. Learning to See Data will teach you the different ways that data can be encoded in graphical form, and it will give you a deeper understanding of the way our human visual system interprets these encodings. You will also learn about the most common chart types, and the situations in which they are most appropriate. From basic bar charts to overused pie charts to helpful maps and many more, a wide array of chart types are covered in detail, and conventions, pitfalls, strengths and weaknesses of each of them are revealed. This book will help you develop fluency in the interpretation of charts, an ability that we all need to hone and perfect if we are to make meaningful contributions in the professional, public and personal arenas of life. The principles covered in it also serve as a critical background for anyone looking to create charts that others will be able to understand. "This book is clear and evocative, thorough and thoughtful, and remarkably readable: a marvelous launchpad into the world of data." -Tamara Munzner, Professor, University of British Columbia Computer Science "Everyone of us needs good data literacy skills to survive in the modern world. Without them, it's hard to succeed at work, or survive the onslaught of information (and misinformation) across all our media. Ben's book provides the necessary building blocks for a strong foundation. From that foundation, Ben's approach will inspire you to own the process of developing your

skills further." -Andy Cotgreave, Technical Evangelism Director, Tableau

Encyclopedia of Data Science and Machine Learning - John Wang 2022

"This book examines current, state-of-the-art research in the areas of data science, machine learning, data mining, optimization, artificial intelligence, statistics, and the interactions, linkages, and applications of knowledge-based business with information systems"--

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 Big Data: Analytics for Enterprise Class Hadoop and Streaming Data - Paul Zikopoulos 2011-10-22

Big Data represents a new era in data exploration and utilization, and IBM is uniquely positioned to help clients navigate this transformation. This book reveals how IBM is leveraging open source Big Data technology, infused with IBM technologies, to deliver a robust, secure, highly available, enterprise-class Big Data platform. The three defining characteristics of Big Data--volume, variety, and velocity--are discussed. You'll get a primer on Hadoop and how IBM is hardening it for the enterprise, and learn when to leverage IBM InfoSphere BigInsights (Big Data at rest) and IBM InfoSphere Streams (Big Data in motion) technologies. Industry use cases are also included in this practical guide. Learn how IBM hardens Hadoop for enterprise-class scalability and reliability Gain insight into IBM's unique in-motion and at-rest Big Data analytics platform Learn tips and tricks for Big Data use cases and solutions Get a quick Hadoop primer

Applied Text Analysis with Python - Benjamin Bengfort 2018-06-11

From news and speeches to informal chatter on social media, natural language is one of the richest and most underutilized sources of data. Not only does it come in a constant stream, always changing and adapting in context; it also contains information that is not conveyed by traditional data sources. The key to unlocking natural language is through the creative application of text analytics. This practical book presents a data scientist's approach to building language-aware products with applied machine learning. You'll learn robust, repeatable, and scalable techniques for text analysis with Python, including contextual and linguistic feature engineering, vectorization, classification, topic modeling, entity resolution, graph analysis, and visual steering. By the end of the book, you'll be equipped with practical methods to solve any number of complex real-world problems. Preprocess and vectorize text into high-dimensional feature representations Perform document classification and topic modeling Steer the model selection process with visual diagnostics Extract key phrases, named entities, and graph structures to reason about data in text Build a dialog framework to enable chatbots and language-driven interaction Use Spark to scale processing power and neural networks to scale model complexity

Fundamentals of Computer Programming with C# - Svetlin Nakov 2013-09-01

The free book "Fundamentals of Computer Programming with C#" is a comprehensive computer programming tutorial that teaches programming, logical thinking, data structures and algorithms, problem solving and high quality code with lots of examples in C#. It starts with the first steps in programming and software development like variables, data types, conditional statements, loops and arrays and continues with other basic topics like methods, numeral systems, strings and string processing, exceptions, classes and objects. After the basics this fundamental programming book enters into more advanced programming topics like recursion, data structures (lists, trees, hash-tables and graphs), high-quality code, unit testing

and refactoring, object-oriented principles (inheritance, abstraction, encapsulation and polymorphism) and their implementation the C# language. It also covers fundamental topics that each good developer should know like algorithm design, complexity of algorithms and problem solving. The book uses C# language and Visual Studio to illustrate the programming concepts and explains some C# / .NET specific technologies like lambda expressions, extension methods and LINQ. The book is written by a team of developers lead by Svetlin Nakov who has 20+ years practical software development experience. It teaches the major programming concepts and way of thinking needed to become a good software engineer and the C# language in the meantime. It is a great start for anyone who wants to become a skillful software engineer. The books does not teach technologies like databases, mobile and web development, but shows the true way to master the basics of programming regardless of the languages, technologies and tools. It is good for beginners and intermediate developers who want to put a solid base for a successful career in the software engineering industry. The book is accompanied by free video lessons, presentation slides and mind maps, as well as hundreds of exercises and live examples. Download the free C# programming book, videos, presentations and other resources from <http://introprogramming.info>. Title: Fundamentals of Computer Programming with C# (The Bulgarian C# Programming Book) ISBN: 9789544007737 ISBN-13: 978-954-400-773-7 (9789544007737) ISBN-10: 954-400-773-3 (9544007733) Author: Svetlin Nakov & Co. Pages: 1132 Language: English Published: Sofia, 2013 Publisher: Faber Publishing, Bulgaria Web site: <http://www.introprogramming.info> License: CC-Attribution-Share-Alike Tags: free, programming, book, computer programming, programming fundamentals, ebook, book programming, C#, CSharp, C# book, tutorial, C# tutorial; programming concepts, programming fundamentals, compiler, Visual Studio, .NET, .NET Framework, data types, variables, expressions, statements, console, conditional statements, control-flow logic, loops, arrays, numeral systems, methods, strings, text processing, StringBuilder, exceptions, exception handling, stack trace, streams, files, text files, linear data structures, list, linked list, stack, queue, tree, balanced tree, graph, depth-first search, DFS, breadth-first search, BFS, dictionaries, hash tables, associative arrays, sets, algorithms, sorting algorithm, searching algorithms, recursion, combinatorial algorithms, algorithm complexity, OOP, object-oriented programming, classes, objects, constructors, fields, properties, static members, abstraction, interfaces, encapsulation, inheritance, virtual methods, polymorphism, cohesion, coupling, enumerations, generics, namespaces, UML, design patterns, extension methods, anonymous types, lambda expressions, LINQ, code quality, high-quality code, high-quality classes, high-quality methods, code formatting, self-documenting code, code refactoring, problem solving, problem solving methodology, 9789544007737, 9544007733

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

Big Data Fundamentals - Thomas Erl 2015-12-29

"This text should be required reading for everyone in contemporary business." --Peter Woodhull, CEO, Modus21 "The one book that clearly describes and links Big Data concepts to business utility." --Dr. Christopher Starr, PhD "Simply, this is the best Big Data book on the market!" --Sam Rostam, Cascadian IT Group "...one of the most contemporary approaches I've seen to Big Data fundamentals..." --Joshua M. Davis, PhD The Definitive Plain-English Guide to Big Data for Business and Technology Professionals Big Data Fundamentals provides a pragmatic, no-nonsense introduction to Big Data. Best-selling IT author Thomas Erl and his team clearly explain key Big Data concepts, theory and terminology, as well as fundamental technologies and techniques. All coverage is supported with case study examples and numerous simple diagrams. The authors begin by explaining how Big Data can propel an organization forward by solving a spectrum of previously intractable business problems. Next, they demystify key analysis techniques and technologies and show how a Big Data solution environment can be built and integrated to offer competitive advantages. Discovering Big Data's fundamental concepts and what makes it different from previous forms of data analysis and data science Understanding the business motivations and drivers behind Big Data adoption, from operational improvements through innovation Planning strategic, business-driven Big Data initiatives Addressing considerations such as data management, governance, and security Recognizing the 5 "V" characteristics of datasets in Big Data environments: volume, velocity, variety, veracity, and value Clarifying Big Data's relationships with OLTP, OLAP, ETL, data warehouses, and data marts Working with Big Data in structured, unstructured, semi-structured, and metadata formats Increasing value by integrating Big Data resources with corporate performance monitoring Understanding how Big Data leverages distributed and parallel processing Using NoSQL and other technologies to meet Big Data's distinct data processing requirements Leveraging statistical approaches of quantitative and qualitative analysis Applying computational analysis methods, including machine learning