Data Systems And Solutions

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Enterprise Master Data Management "O'Reilly Media, Inc." This book provides readers the "big picture" and a comprehensive survey of the domain of big data processing systems. For the past decade, the Hadoop framework has dominated the world of big data processing, yet recently academia and industry have started to recognize its limitations in several application domains and thus, it is now gradually

being replaced by a collection of engines that are dedicated to specific verticals (e.g. structured data, graph data, and streaming data). The book explores this new wave of systems, which it refers to as Big Data 2.0 processing systems. After Chapter 1 presents the general background of the big data phenomena, Chapter 2 provides an overview of various general-purpose big data processing systems that allow their users to develop various big data processing jobs for different application domains. In turn, Chapter 3 examines various systems that have been introduced to support the SQL flavor on top of the Hadoop infrastructure and provide competing and scalable performance in the processing of large-scale structured data. Chapter 4 discusses several systems that have been designed to tackle the problem of large-scale graph processing, while the main focus of Chapter 5 is on several systems that have been designed to provide scalable solutions for processing big data streams, and on other sets of systems

that have been introduced to support the development of data pipelines between various types of big data processing jobs and systems. Next, Chapter 6 focuses on covering the emerging frameworks and systems in the domain of scalable machine learning and deep learning processing. Lastly, Chapter 7 shares conclusions and an outlook on future research challenges. This new and considerably enlarged second edition not only contains the completely new chapter 6, but also offers a refreshed content for the state-of-the-art in all domains of big data processing over the last years. Overall, the book offers a valuable reference guide for professional, students, and researchers in the domain of big data processing systems. Further, its comprehensive content will hopefully encourage readers to pursue further research on the subject.

Big Data Addison-Wesley Professional While many companies ponder implementation details such as distributed processing engines and algorithms for data analysis, this practical book takes a much wider view of big data development, starting with initial planning and moving diligently toward

execution. Authors Ted Malaska and Jonathan Seidman guide you through the major components necessary to start, architect, and develop successful big data projects. Everyone from CIOs and COOs to lead architects and developers will explore a variety of big data architectures and applications, from massive data pipelines to web-scale applications. Each chapter addresses a piece of the software development life cycle and identifies patterns to maximize long-term success throughout the life of your project. Start the planning process by considering the key data project types Use guidelines to evaluate and select data management solutions Reduce risk related to technology, your team, and vague requirements Explore system interface design using APIs, REST, and pub/sub systems Choose the right distributed storage system for your big data system Plan and implement metadata collections for your data architecture Use data pipelines to ensure data integrity from source to final storage Evaluate the attributes of various engines for processing the data you collect

Designing Data-Intensive Applications SAS Institute

In this insightful book, you'll learn from the best data practitioners in the field just how wide-ranging -- and beautiful -- working with data can be. Join 39 contributors as they explain how they developed simple and elegant solutions on projects ranging from the Mars lander to a Radiohead video. With Beautiful Data, you will: Explore the opportunities and challenges involved in working with the vast number of datasets made available by the Web Learn how to visualize trends in urban crime, using maps and data mashups Discover

the challenges of designing a data processing system that works within the constraints of space travel Learn how crowdsourcing and transparency have combined to advance the state of drug research Understand how new data can automatically trigger alerts when it matches or overlaps pre-existing data Learn about the massive infrastructure required to create, capture, and process DNA data That's only small sample of what you'll find in Beautiful Data. For anyone who handles data, this is a truly fascinating book. Contributors include: Nathan Yau Jonathan Follett and Matt Holm J.M. Hughes Raghu Ramakrishnan, Brian Cooper, and Utkarsh Srivastava Jeff Hammerbacher Jason Dykes and Jo Wood Jeff Jonas and Lisa Sokol Jud Valeski Alon Halevy and Jayant Madhavan Aaron Koblin with Valdean Klump Michal Migurski Jeff Heer Coco Krumme Peter Norvig Matt Wood and Ben Blackburne Jean-Claude Bradley, Rajarshi Guha, Andrew Lang, Pierre Lindenbaum, Cameron Neylon, Antony Williams, and Egon Willighagen Lukas Biewald and Brendan O'Connor Hadley Wickham, Deborah Swayne, and David Poole Andrew Gelman, Jonathan P. Kastellec, and Yair Ghitza Toby Segaran

Implementing an InfoSphere Optim Data Growth Solution

Springer Nature

Today, organizations face tremendous challenges with data explosion and information

governance. InfoSphereTM OptimTM solutions solve the data growth problem at the source by managing the enterprise application data. The Optim Data Growth solutions are consistent, scalable solutions that include comprehensive capabilities for managing enterprise application data across applications, databases, operating systems, and hardware platforms. You can align the management of your enterprise application data with your business objectives to improve application service levels, lower costs, and mitigate risk. In this IBM ® Redbooks ® publication, we describe the IBM InfoSphere Optim Data Growth solutions and a methodology that provides implementation guidance from requirements analysis through deployment and administration planning. We also discuss various implementation topics including system architecture design, sizing, scalability, security, performance, and automation. This book is intended to provide various systems development professionals, Data Solution Architects, Data Administrators, Modelers, Data Analysts, Data Integrators, or anyone who has to analyze or integrate data structures, a broad understanding about IBM InfoSphere Optim Data Growth solutions. By being used in conjunction with the product manuals and online help, this book provides guidance about implementing an optimal solution for managing your enterprise application data.

Blockchains

John Wiley & Sons

Transform Big Data into Insight "In this book, some of Oracle's best engineers and architects explain how you can make use of big data. They'll tell you how you can integrate your existing Oracle solutions with big data systems, using each where appropriate and moving

data between them as needed." -- Doug Cutting, co-creator of Apache Hadoop Cowritten by members of Oracle's big data team, Oracle Big Data Handbook provides complete coverage of Oracle's comprehensive, integrated set of products for acquiring, organizing, analyzing, and leveraging unstructured data. The book discusses the strategies and technologies essential for a successful big data implementation, including Apache Hadoop, Oracle Big Data Appliance, Oracle Big Data Connectors, Oracle NoSQL Database, Oracle Endeca, Oracle Advanced Analytics, and Oracle's open source R offerings. Best practices for migrating from legacy systems and integrating existing data warehousing and analytics solutions into an enterprise big data infrastructure are also included in this Oracle Press guide. Understand the value of a comprehensive big data strategy Maximize the distributed processing power of the Apache Hadoop platform Discover the advantages of using Oracle Big Data Appliance as an engineered system for Hadoop and Oracle NoSQL Database

Configure, deploy, and monitor Hadoop and Oracle NoSQL Database using Oracle Big Data Appliance Integrate your existing data warehousing and analytics infrastructure into a big data architecture Share data among Hadoop and relational databases using Oracle Big Data Connectors Understand how Oracle NoSQL Database integrates into the Oracle Big Data architecture Deliver faster time to value using in-database analytics Analyze data with Oracle Advanced Analytics (Oracle R Enterprise and Oracle Data Mining), Oracle R Distribution, ROracle, and Oracle R Connector for Hadoop Analyze disparate data with Oracle Endeca Information Discovery Plan and implement a big data governance strategy and develop an architecture and roadmap

Big Data in Complex Systems IBM Redbooks

Summary Big Data teaches you to build big data systems using an architecture that takes advantage of clustered hardware along with new tools designed specifically to capture and analyze web-scale data. It describes a scalable, easy-to-understand approach to big

data systems that can be built and run by a small team. Following a realistic example, this book guides readers through the theory of big data systems, how to implement them in practice, and how to deploy and operate them once they're built. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications.

About the Book

Web-scale applications like social networks, real-time analytics, or e-commerce sites deal with a lot of data, whose volume and velocity exceed the limits of traditional database systems. These applications require architectures built around clusters of machines to store and process data of any size, or speed. Fortunately, scale and simplicity are not mutually exclusive. Big Data teaches you to build big data systems using an architecture designed specifically to capture and analyze web-scale data. This book presents the Lambda Architecture, a scalable, easy-to-understand approach that can be built and run by a small team. You'll explore the theory of big data systems and how to implement

them in practice. In addition to discovering a general framework for processing big data, you'll learn specific technologies like Hadoop, Storm, and NoSQL databases. This book requires no previous exposure to large-scale data analysis or NoSQL tools. Familiarity with traditional databases is helpful. What's Inside Introduction to big data systems Real-time processing of web-scale data Tools like Hadoop, Cassandra, and Storm Extensions to traditional database skills About the Authors Nathan Marz is the creator of Apache Storm and the originator of the Lambda Architecture for big data systems. James Warren is an analytics architect with a background in machine learning and scientific computing. Table of Contents A new paradigm for Big Data PART 1 BATCH LAYER Data model for Big Data Data model for Big Data: Illustration Data storage on the batch layer Data storage on the batch layer: Illustration Batch layer Batch layer: Illustration An example batch layer: Architecture and algorithms An example batch layer: Implementation PART 2 SERVING

LAYER Serving layer Serving layer: Illustration PART 3 SPEED LAYER Realtime views Realtime views: Illustration Queuing and stream processing Queuing and stream processing: Illustration Micro-batch stream processing Micro-batch stream processing: Illustration Lambda Architecture in depth

Software Architecture for Big Data and the Cloud

Springer Nature

This volume provides challenges and Opportunities with updated, in-depth material on the application of Big data to complex systems in order to find solutions for the challenges and problems facing big data sets applications. Much data today is not natively in structured format; for example, tweets and blogs are weakly structured pieces of text, while images and video are structured for storage and display, but not for semantic content and search. Therefore transforming such content into a structured format for later analysis is a major challenge. Data analysis, organization, retrieval, and modeling are other foundational

challenges treated in this book. The material of this book will be useful for researchers and practitioners in the field of big data as well as advanced undergraduate and graduate students. Each of the 17 chapters in the book opens with a chapter abstract and key terms list. The chapters are organized along the lines of problem description, related works, and analysis of the results and comparisons are provided whenever feasible.

OLAP Solutions

Springer

With this textbook, Vaisman and Zim á nyi deliver excellent coverage of data warehousing and business intelligence technologies ranging from the most basic principles to recent findings and applications. To this end, their work is structured into three parts. Part I describes " Fundamental Concepts " including conceptual and logical data warehouse design, as well as querying using MDX, DAX and SQL/OLAP. This part also covers data analytics using Power BI and Analysis Services. Part II details " Implementation and Deployment, " including physical design, ETL and data warehouse design methodologies. Part III covers " Advanced Topics " and it is almost completely new in this second edition. This

part includes chapters with an in-depth coverage of temporal, spatial, and mobility data warehousing. Graph data warehouses are also covered in detail using Neo4j. The last chapter extensively studies big data management and the usage of Hadoop, Spark, distributed, in-memory, columnar, NoSQL and NewSQL database systems, and data lakes in the context of analytical data processing. As a key characteristic of the book, most of the topics are presented and illustrated using application tools. Specifically, a case study based on the well-known Northwind database illustrates how the concepts presented in the book can be implemented using Microsoft Analysis Services and Power BI. All chapters have been revised and updated to the latest versions of the software tools used. KPIs and Dashboards are now also developed using DAX and Power BI, and the chapter on ETL has been expanded with the implementation of ETL processes in PostgreSQL. Review questions and exercises complement each chapter to support comprehensive student learning. Supplemental material to assist instructors using this book as a course text is available online and includes electronic versions of the figures,

solutions to all exercises, and a set of slides accompanying each chapter. Overall, students, practitioners and researchers alike will find this book the most comprehensive reference work on data warehouses, with key topics described in a clear and educational style. “ I can only invite you to dive into the contents of the book, feeling certain that once you have completed its reading (or maybe, targeted parts of it), you will join me in expressing our gratitude to Alejandro and Esteban, for providing such a comprehensive textbook for the field of data warehousing in the first place, and for keeping it up to date with the recent developments, in this current second edition. ” From the foreword by Panos Vassiliadis, University of Ioannina, Greece. Designing Big Data Platforms IBM Redbooks Big Data Systems encompass massive challenges related to data diversity, storage mechanisms, and requirements of massive computational power. Further, capabilities of big data systems also vary with respect to type of problems. For instance, distributed memory systems are not recommended for iterative algorithms. Similarly, variations in big data systems also exist related to consistency and fault tolerance.

The purpose of this book is to provide a detailed explanation of big data systems. The book covers various topics including Networking, Security, Privacy, Storage, Computation, Cloud Computing, NoSQL and NewSQL systems, High Performance Computing, and Deep Learning. An illustrative and practical approach has been adopted in which theoretical topics have been aided by well-explained programming and illustrative examples. Key Features: Introduces concepts and evolution of Big Data technology. Illustrates examples for thorough understanding. Contains programming examples for hands on development. Explains a variety of topics including NoSQL Systems, NewSQL systems, Security, Privacy, Networking, Cloud, High Performance Computing, and Deep Learning. Exemplifies widely used big data technologies such as Hadoop and Spark. Includes discussion on case studies and open issues. Provides end of chapter questions for enhanced learning.

Data Warehouse Systems

Pearson Education India

This investigation considered the methods and problems of collection, storage,

processing and display of psychophysiological data from dynamic flight simulation in the Naval Air Development Center human centrifuge, using analog, mini, and remote mainframe computers. An integrated data processing system is described. Problems associated with data collection and storage are evaluated, and alternate solutions discussed. Anticipated problems in the development of data processing software are examined, and the applicable basic technology identified. Approaches to the critical problem of orderly and systematic development and maintenance of software for semi-open-shop operations is examined.

Big Data 2.0 Processing Systems

Springer

Data as a Service shows how organizations can leverage "data as a service" by providing real-life case studies on the various and innovative architectures and related patterns Comprehensive approach to introducing data as a service in any organization A reusable and flexible SOA based architecture framework Roadmap to introduce 'big data as a service' for potential clients Presents a thorough description of each component in the DaaS

reference architecture so readers can implement solutions *Role of Data-Intensive Distributed Computing Systems in Designing Data Solutions* Intl. Engineering Consortiu DESIGNING BIG DATA PLATFORMS Provides expert guidance and valuable insights on getting the most out of Big Data systems An array of tools are currently available for managing and processing data—some are ready-to-go solutions that can be immediately deployed, while others require complex and time-intensive setups. With such a vast range of options, choosing the right tool to build a solution can be complicated, as can determining which tools work well with each other. Designing Big Data Platforms provides clear and authoritative guidance on the critical decisions necessary for successfully deploying, operating, and maintaining Big Data systems. This highly practical guide helps readers understand how to process large amounts of data with well-known Linux tools and database solutions, use effective techniques to collect and manage data from multiple sources, transform data into meaningful business insights, and much more. Author Yusuf Aytas, a software engineer with a vast amount of big data experience,

discusses the design of the ideal Big Data platform: one that meets the needs of data analysts, data engineers, data scientists, software engineers, and a spectrum of other stakeholders across an organization. Detailed yet accessible chapters cover key topics such as stream data processing, data analytics, data science, data discovery, and data security. This real-world manual for Big Data technologies: Provides up-to-date coverage of the tools currently used in Big Data processing and management Offers step-by-step guidance on building a data pipeline, from basic scripting to distributed systems Highlights and explains how data is processed at scale Includes an introduction to the foundation of a modern data platform Designing Big Data Platforms: How to Use, Deploy, and Maintain Big Data Systems is a must-have for all professionals working with Big Data, as well researchers and students in computer science and related fields.

Building Big Data and Analytics Solutions in the Cloud Apress This book discusses the application of data systems and data-driven infrastructure in existing industrial systems in order to optimize workflow, utilize hidden potential, and make existing systems free from vulnerabilities. The book discusses application of data in the health sector, public

transportation, the financial institutions, and in battling natural disasters, among others. Topics include real-time applications in the current big data perspective; improving security in IoT devices; data backup techniques for systems; artificial intelligence-based outlier prediction; machine learning in OpenFlow Network; and application of deep learning in blockchain enabled applications. This book is intended for a variety of readers from professional industries, organizations, and students.

Processing Big Data with Azure HDInsight

Springer Nature

This book brings a high level of fluidity to analytics and addresses recent trends, innovative ideas, challenges and cognitive computing solutions in big data and the Internet of Things (IoT). It explores domain knowledge, data science reasoning and cognitive methods in the context of the IoT, extending current data science approaches by incorporating insights from experts as well as a notion of artificial intelligence, and performing inferences on the knowledge The book provides a comprehensive overview of the constituent paradigms underlying cognitive computing methods, which illustrate the increased focus on big data in IoT problems as they evolve. It includes novel, in-depth fundamental research contributions from a methodological/ application in data science accomplishing sustainable solution for the future perspective. Mainly focusing on the design of the best cognitive embedded data

science technologies to process and analyze the large amount of data collected through the IoT, and aid better decision making, the book discusses adapting decision-making approaches under cognitive computing paradigms to demonstrate how the proposed procedures as well as big data and IoT problems can be handled in practice. This book is a valuable resource for scientists, professionals, researchers, and academicians dealing with the new challenges and advances in the specific areas of cognitive computing and data science approaches.

Data-intensive Systems

Springer

Delve into the SAP Data Services environment to efficiently prepare, implement, and develop ETL processesAbout This Book • Install and configure the SAP Data Services environment • Develop ETL techniques in the Data Services environment • Implement real-life examples of Data Services uses through step-by-step instructions to perform specific ETL development tasksWho This Book Is ForThis book is for IT technical engineers who want to get familiar with the EIM solutions provided by SAP for ETL development and data quality management. The book requires familiarity with basic programming concepts and basic knowledge of the SQL language.What You Will Learn • Install,

configure, and administer the SAP Data Services components • Run through the ETL design basics • Maximize the performance of your ETL with the advanced patterns in Data Services • Extract methods from various databases and systems • Get familiar with the transformation methods available in SAP Data Services • Load methods into various databases and systems • Code with the Data Services scripting language • Validate and cleanse your data, applying the Data quality methods of the Information StewardIn DetailWant to cost effectively deliver trusted information to all of your crucial business functions? SAP Data Services delivers one enterprise-class solution for data integration, data quality, data profiling, and text data processing. It boosts productivity with a single solution for data quality and data integration. SAP Data Services also enables you to move, improve, govern, and unlock big data.This book will lead you through the SAP Data Services environment to efficiently develop ETL processes. To begin with, you'll learn to install, configure, and prepare the ETL development environment. You will get familiarized with the concepts of developing ETL processes with SAP Data Services. Starting from smallest unit of work- the data flow, the

chapters will lead you to the highest organizational unit—the Data Services job, revealing the advanced techniques of ETL design.You will learn to import XML files by creating and implementing real-time jobs. It will then guide you through the ETL development patterns that enable the most effective performance when extracting, transforming, and loading data. You will also find out how to create validation functions and transforms.Finally, the book will show you the benefits of data quality management with the help of another SAP solution—Information Steward.Style and approachThis book is an easy-to-follow guide with step-by-step instructions to perform specific ETL development tasks.

Data Management Solutions Using SAS Hash Table Operations

Pearson Education India

Explore how a data storage system works – from data ingestion to representation Key FeaturesUnderstand how artificial intelligence, machine learning, and deep learning are different from one anotherDiscover the data storage requirements of different AI apps using case studiesExplore popular data solutions such as Hadoop Distributed File System (HDFS) and Amazon Simple Storage Service (S3)Book Description Social networking sites

see an average of 350 million uploads daily - a quantity impossible for humans to scan and analyze. Only AI can do this job at the required speed, and to leverage an AI application at its full potential, you need an efficient and scalable data storage pipeline. The Artificial Intelligence Infrastructure Workshop will teach you how to build and manage one. The Artificial Intelligence Infrastructure Workshop begins taking you through some real-world applications of AI. You'll explore the layers of a data lake and get to grips with security, scalability, and maintainability. With the help of hands-on exercises, you'll learn how to define the requirements for AI applications in your organization. This AI book will show you how to select a database for your system and run common queries on databases such as MySQL, MongoDB, and Cassandra. You'll also design your own AI trading system to get a feel of the pipeline-based architecture. As you learn to implement a deep Q-learning algorithm to play the CartPole game, you'll gain hands-on experience with PyTorch. Finally, you'll explore ways to run machine learning models in production as part of an AI application. By the end of the book, you'll have learned how to build and deploy your own AI software at scale, using

various tools, API frameworks, and serialization methods. What you will learnGet to grips with the fundamentals of artificial intelligence Understand the importance of data storage and architecture in AI applications Build data storage and workflow management systems with open source tools Containerize your AI applications with tools such as Docker Discover commonly used data storage solutions and best practices for AI on Amazon Web Services (AWS) Use the AWS CLI and AWS SDK to perform common data tasks Who this book is for If you are looking to develop the data storage skills needed for machine learning and AI and want to learn AI best practices in data engineering, this workshop is for you. Experienced programmers can use this book to advance their career in AI. Familiarity with programming, along with knowledge of exploratory data analysis and reading and writing files using Python will help you to understand the key concepts covered.

Foundations for Architecting Data Solutions CRC Press

Encompassing a broad range of forms and sources of data, this textbook introduces data systems through a progressive presentation. Introduction to Data Systems covers data acquisition starting with local files, then progresses to data acquired from relational databases, from REST APIs and

through web scraping. It teaches data forms/formats from tidy data to relationally defined sets of tables to hierarchical structure like XML and JSON using data models to convey the structure, operations, and constraints of each data form. The starting point of the book is a foundation in Python programming found in introductory computer science classes or short courses on the language, and so does not require prerequisites of data structures, algorithms, or other courses. This makes the material accessible to students early in their educational career and equips them with understanding and skills that can be applied in computer science, data science/data analytics, and information technology programs as well as for internships and research experiences. This book is accessible to a wide variety of students. By drawing together content normally spread across upper level computer science courses, it offers a single source providing the essentials for data science practitioners. In our increasingly data-centric world, students from all domains will benefit from the “data-aptitude” built by the material in this book.

Beautiful Data John Wiley & Sons

With this textbook, Vaisman and Zimányi deliver excellent coverage of data warehousing and business intelligence technologies ranging from the most basic principles to recent findings and applications. To this end, their work is structured into three parts. Part I describes “Fundamental

Concepts " including multi-dimensional models; conceptual and logical data warehouse design and MDX and SQL/OLAP. Subsequently, Part II details " Implementation and Deployment, " which includes physical data warehouse design; data extraction, transformation, and loading (ETL) and data analytics. Lastly, Part III covers " Advanced Topics " such as spatial data warehouses; trajectory data warehouses; semantic technologies in data warehouses and novel technologies like Map Reduce, column-store databases and in-memory databases. As a key characteristic of the book, most of the topics are presented and illustrated using application tools. Specifically, a case study based on the well-known Northwind database illustrates how the concepts presented in the book can be implemented using Microsoft Analysis Services and Pentaho Business Analytics. All chapters are summarized using review questions and exercises to support comprehensive student learning. Supplemental material to assist instructors using this book as a course text is available at http://cs.ulb.ac.be/DWSDIbook/, including electronic versions of the figures, solutions to all exercises, and a set of slides accompanying each chapter. Overall, students, practitioners and researchers alike will find this book the most comprehensive reference work on data warehouses, with key topics described in a clear and educational style.

Data Warehousing and Analytics
Springer
The biggest

names in Data Warehousing tell what they would do in the difficult situations DW professionals face every day. The book contains very real problem situations, and very practical solutions.

Operations Support Systems: Solutions and Strategies for the Emerging Network

Pearson Education

Data-intensive systems are a technological building block supporting Big Data and Data Science applications.This book familiarizes readers with core concepts that they should be aware of before continuing with independent work and the more advanced technical reference literature that dominates the current landscape. The material in the book is structured following a problem-based approach. This means that the content in the chapters is focused on developing solutions to simplified, but still realistic problems using data-intensive technologies and approaches. The reader follows one reference scenario through the whole book, that uses an open Apache dataset. The origins of this volume are in lectures from a master ' s course in Data-intensive Systems, given at the University of Stavanger. Some chapters were also a base for guest lectures at Purdue University and Lodz University of Technology.