

Big Data Principles And Best Practices Of Scalable Realtime Data Systems

Serving as a flagship driver towards advance research in the area of Big Data platforms and applications, this book provides a platform for the dissemination of advanced topics of theory, research efforts and analysis, and implementation oriented on methods, techniques and performance evaluation. In 23 chapters, several important formulations of the architecture design, optimization techniques, advanced analytics methods, biological, medical and social media applications are presented. These chapters discuss the research of members from the ICT COST Action IC1406 High-Performance Modelling and Simulation for Big Data Applications (cHiPSet). This volume is ideal as a reference for students, researchers and industry practitioners working in or interested in joining interdisciplinary works in the areas of intelligent decision systems using emergent distributed computing paradigms. It will also allow newcomers to grasp the key concerns and their potential solutions.

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

"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"

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A timely overview of cutting edge technologies for multimedia retrieval with a special emphasis on scalability The amount of multimedia data available every day is enormous and is growing at an exponential rate, creating a great need for new and more efficient approaches for large scale multimedia search. This book addresses that need, covering the area of multimedia retrieval and placing a special emphasis on scalability. It reports the recent works in large scale multimedia search, including research methods and applications, and is structured so that readers with basic knowledge can grasp the core message while still allowing experts and specialists to drill further down into the analytical sections. Big Data Analytics for Large-Scale Multimedia Search covers: representation learning, concept and event-based video search in large collections; big data multimedia mining, large scale video understanding, big multimedia data fusion, large-scale social multimedia analysis, privacy and audiovisual content, data storage and management for big multimedia, large scale multimedia search, multimedia tagging using deep learning, interactive interfaces for big multimedia and medical decision support applications using large multimodal data. Addresses the area of multimedia retrieval and pays close attention to the issue of scalability Presents problem driven techniques with solutions that are demonstrated through realistic case studies and user scenarios Includes tables, illustrations, and figures Offers a Wiley-hosted BCS that features links to open source algorithms, data sets and tools Big Data Analytics for Large-Scale Multimedia Search is an excellent book for academics, industrial researchers, and developers interested in big multimedia data search retrieval. It will also appeal to consultants in computer science problems and professionals in the multimedia industry.

The increase in connected devices in the internet of things (IoT) is leading to an exponential increase in the data that an organization is required to manage. To successfully utilize IoT in businesses, big data analytics are necessary in order to efficiently sort through the increased data. The combination of big data and IoT can thus enable new monitoring services

pressures. HCI Challenges and Privacy Preservation in Big Data Security is an informative scholarly publication that discusses how human-computer interaction impacts privacy and security in almost all sectors of modern life. Featuring relevant topics such as large scale security data, threat detection, big data encryption, and identity management, this reference source is ideal for academicians, researchers, advanced-level students, and engineers that are interested in staying current on the advancements and drawbacks of human-computer interaction within the world of big data. 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 big data processing scenarios such as the large-scale processing of structured data, graph data and streaming data. 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. Lastly, Chapter 6 shares conclusions and an outlook on future research challenges. Overall, the book offers a valuable reference guide for students, researchers and professionals in the domain of big data processing systems. Further, its comprehensive content will hopefully encourage readers to pursue further research on the subject.

This volume constitutes the proceedings of the 7th International Conference on BIGDATA 2018, held as Part of SCF 2018 in Seattle, WA, USA in June 2018. The 22 full papers together with 10 short papers published in this volume were carefully reviewed and selected from 97 submissions. They are organized in topical sections such as Data analysis, data as a service, services computing, data conversion, data storage, data centers, dataflow architectures, data compression, data exchange, data modeling, databases, and data management.

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

This book constitutes the refereed proceedings of the 17th International Conference on Data Warehousing and Knowledge Discovery, DaWaK 2015, held in Valencia, Spain, September 2015. The 31 revised full papers presented were carefully reviewed and selected from 90 submissions. The papers are organized in topical sections similarity measure and clustering; data mining; social computing; heterogeneous networks and data; data warehouses; stream processing; applications of big data analysis; and big data.

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The evolution of knowledge management theory and the special emphasis on human and social capital sets new challenges for knowledge-driven and technology-enabled innovation. Emerging technologies including big data and analytics have significant implications for sustainability, policy making, and competitiveness. This edited volume promotes scientific research into the potential contributions knowledge management can make to the new era of innovation and social inclusive economic growth. We are grateful to all the contributors of this edition for their intellectual work. The organization of the relevant debate is aligned around three pillars: SECTION A. DATA, KNOWLEDGE, HUMAN AND SOCIAL CAPITAL FOR INNOVATION We elaborate on the new era of knowledge types and the emerging forms of social capital and their impact on technology-driven innovation. Topics include: · Social Networks · Smart Education · Social Capital · Corporate Innovation · Disruptive Innovation · Knowledge integration · Enhanced Decision-Making. SECTION B. KNOWLEDGE MANAGEMENT & BIG DATA ENABLED INNOVATION In this section, knowledge management and big data applications and systems are presented. Selective topic include: · Crowdsourcing Analysis · Natural Language Processing · Data Governance · Knowledge Extraction · Ontology Design Semantic Modeling SECTION C. SUSTAINABLE DEVELOPMENT In the section, the debate on the impact of knowledge management and big data research to sustainability is promoted with integrative discussion of complementary social and technological factors including: · Big Social Networks on Sustainable Economic Development · Business Intelligence

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professional audiences following continuous education short courses, and to researchers from diverse areas following self-study courses. Basic skills in computer science, mathematics, and statistics are required.

This book constitutes the refereed proceedings of the 21st International Conference on Big Data Analytics and Knowledge Discovery, DaWaK 2019, held in Linz, Austria, in September 2019. The 12 full papers and 10 short papers presented were carefully reviewed and selected from 61 submissions. The papers are organized in the following topical sections: Applications; patterns; RDF and streams; big data systems; graphs and machine learning; databases.

This book presents the latest advances in machine intelligence and big data analytics to improve early warning of cyber-attacks, for cybersecurity intrusion detection and monitoring, and malware analysis. Cyber-attacks have posed real and wide-ranging threats for the information society. Detecting cyber-attacks becomes a challenge, not only because of the sophistication of attacks but also because of the large scale and complex nature of today's IT infrastructures. It discusses novel trends and achievements in machine intelligence and their role in the development of secure systems and identifies open and future research issues related to the application of machine intelligence in the cybersecurity field. Bridging an important gap between machine intelligence, big data, and cybersecurity communities, it aspires to provide a relevant reference for students, researchers, engineers, and professionals working in this area or those interested in grasping its diverse facets and exploring the latest advances on machine intelligence and big data analytics for cybersecurity applications.

The significance of big data can be observed in any decision-making process as it is often used for forecasting and predictive analytics. Additionally, big data can be used to build a holistic view of an enterprise through a collection and analysis of large data sets retrospectively. As the data deluge deepens, new methods for analyzing, comprehending, and making use of big data become necessary. Enterprise Big Data Engineering, Analytics, and Management presents novel methodologies and practical approaches to engineering, managing, and analyzing large-scale data sets with a focus on enterprise applications and implementation. Featuring essential big data concepts including data mining, artificial intelligence, and information extraction, this publication provides a platform for retargeting the current research available in the field. Data analysts, IT professionals, researchers, and graduate-level students will find the timely research presented in this publication essential to furthering their knowledge in the field.

Data analytics is core to business and decision making. The rapid increase in data volume, velocity and variety offers both opportunities and challenges. While open source solutions to store big data, like Hadoop, offer platforms for exploring value and insight from big data, they were not originally developed with data security and governance in mind. Big Data Management discusses numerous policies, strategies and recipes for managing big data. It addresses data security, privacy, controls and life cycle management offering modern principles and open source architectures for successful governance of big data. The author has collected best practices from the world's leading organizations that

