Big Data And Cloud Computing

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Exploring the Convergence of Big Data and the Internet of Things
Big Data Analytics and...
This book addresses topics related to cloud and Big Data technologies, architecture and applications including distributed computing and data centers, cloud infrastructure and security, and end-user services. The majority of the book is devoted to the security aspects of cloud computing and Big Data. Cloud computing, which can be seen as any subscription-based or pay-per-use service that extends the Internet’s existing capabilities, has gained considerable attention from both academia and the IT industry as a new infrastructure requiring smaller investments in hardware platforms, staff training, or licensing software tools. It is a new paradigm that has ushered in a revolution in both data storage and computation. In parallel to this progress, Big Data technologies, which rely heavily on cloud computing platforms for both data storage and processing, have been developed and deployed at breathtaking speed. They are among the most frequently used technologies for developing applications and services in many fields, such as the web, health, and energy. Accordingly, cloud computing and Big Data technologies are two of the most central current and future research mainstreams. They involve and impact a host of fields, including business, scientific research, and public and private administration. Gathering extended versions of the best papers presented at the Third International Conference on Cloud Computing Technologies and Applications (CloudTech’17), this book offers a valuable resource for all Information System managers, researchers, students, developers, and policymakers involved in the technological and application aspects of cloud computing and Big Data.
Advances in Big Data and Cloud Computing

Clouds are being positioned as the next-generation consolidated, centralized, yet federated IT infrastructure for hosting all kinds of IT platforms and for deploying, maintaining, and managing a wider variety of personal, as well as professional applications and services. Handbook of Research on Cloud Infrastructures for Big Data Analytics focuses exclusively on the topic of cloud-sponsored big data analytics for creating flexible and futuristic organizations. This book helps researchers and practitioners, as well as business entrepreneurs, to make informed decisions and consider appropriate action to simplify and streamline the arduous journey towards smarter enterprises.

Blockchain for Big Data

This book constitutes the thoroughly refereed proceedings of the Third International Conference on Big Data, Cloud and Applications, BDCA 2018, held in Kenitra, Morocco, in April 2018. The 45 revised full papers presented in this book were carefully selected from 99 submissions with a thorough double-blind review process. They focus on the following topics: big data, cloud computing, machine learning, deep learning, data analysis, neural networks, information system and social media, image processing and applications, and natural language processing.

Big-Data Analytics for Cloud, IoT and Cognitive Computing

The growth of Internet use and technologies has increased exponentially within the business sector. When utilized properly, these applications can enhance business functions and make them easier to perform. Exploring the Convergence of Big Data and the Internet of Things is a pivotal reference source featuring the
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latest empirical research on the business use of computing devices to send and receive data in conjunction with analytic applications to reduce maintenance costs, avoid equipment failures, and improve business operations. Including research on a broad range of topics such as supply chain, aquaculture, and speech recognition systems, this book is ideally designed for researchers, academicians, and practitioners seeking current research on various technology uses in business.

Security and Privacy for Big Data, Cloud Computing and Applications

The fundamentals of authentication technologies, i.e., information security, cryptographic algorithms, data authentication algorithms, watermarking, and biometric authentication are presented with comprehensive examples and algorithmic details. The book includes some attractive topics in the era of big data, IoT, cloud computing, i.e., lightweight security algorithms for IoT applications, identification schemes for post-quantum era, authentication for cloud application, cryptographic algorithms on FPGA for cloud application and data protection laws. In addition, the book provides future research directions and open problems related to the evolution of technologies.

Cloud Computing and Big Data

High-Performance Computing for Big Data: Methodologies and Applications explores emerging high-performance architectures for data-intensive applications, novel efficient analytical strategies to boost data processing, and cutting-edge applications in diverse fields, such as machine learning, life science, neural networks, and neuromorphic engineering. The book is organized into two main sections. The first section covers Big Data architectures, including cloud computing systems, and heterogeneous accelerators. It
also covers emerging 3D IC design principles for memory architectures and devices. The second section of the book illustrates emerging and practical applications of Big Data across several domains, including bioinformatics, deep learning, and neuromorphic engineering. Features: Covers a wide range of Big Data architectures, including distributed systems like Hadoop/Spark; Includes accelerator-based approaches for big data applications such as GPU-based acceleration techniques, and hardware acceleration such as FPGA/CGRA/ASICs; Presents emerging memory architectures and devices such as NVM, STT-RAM, 3D IC design principles; Describes advanced algorithms for different big data application domains; Illustrates novel analytics techniques for Big Data applications, scheduling, mapping, and partitioning methodologies; Featuring contributions from leading experts, this book presents state-of-the-art research on the methodologies and applications of high-performance computing for big data applications. About the Editor: Dr. Chao Wang is an Associate Professor in the School of Computer Science at the University of Science and Technology of China. He is the Associate Editor of ACM Transactions on Design Automation for Electronics Systems (TODAES), Applied Soft Computing, Microprocessors and Microsystems, IET Computers & Digital Techniques, and International Journal of Electronics. Dr. Chao Wang was the recipient of Youth Innovation Promotion Association, CAS, ACM China Rising Star Honorable Mention (2016), and best IP nomination of DATE 2015. He is now on the CCF Technical Committee on Computer Architecture, CCF Task Force on Formal Methods. He is a Senior Member of IEEE, Senior Member of CCF, and a Senior Member of ACM.

To the Cloud

This book introduces the latest research findings in cloud, edge, fog, and mist computing and their
applications in various fields using geospatial data. It solves a number of problems of cloud computing and big data, such as scheduling, security issues using different techniques, which researchers from industry and academia have been attempting to solve in virtual environments. Some of these problems are of an intractable nature and so efficient technologies like fog, edge and mist computing play an important role in addressing these issues. By exploring emerging advances in cloud computing and big data analytics and their engineering applications, the book enables researchers to understand the mechanisms needed to implement cloud, edge, fog, and mist computing in their own endeavours, and motivates them to examine their own research findings and developments.

**Large Scale and Big Data**

Software Architecture for Big Data and the Cloud is designed to be a single resource that brings together research on how software architectures can solve the challenges imposed by building big data software systems. The challenges of big data on the software architecture can relate to scale, security, integrity, performance, concurrency, parallelism, and dependability, amongst others. Big data handling requires rethinking architectural solutions to meet functional and non-functional requirements related to volume, variety and velocity. The book's editors have varied and complementary backgrounds in requirements and architecture, specifically in software architectures for cloud and big data, as well as expertise in software engineering for cloud and big data. This book brings together work across different disciplines in software engineering, including work expanded from conference tracks and workshops led by the editors. Discusses systematic and disciplined approaches to building software architectures for cloud and big data with state-of-the-art methods and techniques Presents case studies involving enterprise,
In today’s market, emerging technologies are continually assisting in common workplace practices as companies and organizations search for innovative ways to solve modern issues that arise. Prevalent applications including internet of things, big data, and cloud computing all have noteworthy benefits, but issues remain when separately integrating them into the professional practices. Significant research is needed on converging these systems and leveraging each of their advantages in order to find solutions to real-time problems that still exist. Challenges and Opportunities for the Convergence of IoT, Big Data, and Cloud Computing is a pivotal reference source that provides vital research on the relation between these technologies and the impact they collectively have in solving real-world challenges. While highlighting topics such as cloud-based analytics, intelligent algorithms, and information security, this publication explores current issues that remain when attempting to implement these systems as well as the specific applications IoT, big data, and cloud computing have in various professional sectors. This book is ideally designed for academicians, researchers, developers, computer scientists, IT professionals, practitioners, scholars, students, and engineers seeking research on the integration of emerging technologies to solve modern societal issues.

Computational Intelligence for Multimedia Big Data on the Cloud with Engineering Applications

This book is a compendium of the proceedings of the
International Conference on Big-Data and Cloud Computing. It includes recent advances in the areas of big data analytics, cloud computing, the Internet of nano things, cloud security, data analytics in the cloud, smart cities and grids, etc. Primarily focusing on the application of knowledge that promotes ideas for solving the problems of the society through cutting-edge technologies, it provides novel ideas that further world-class research and development. This concise compilation of articles approved by a panel of expert reviewers is an invaluable resource for researchers in the area of advanced engineering sciences.

**Big Data Analytics**

BIG DATA ANALYTICS FOR INTERNET OF THINGS Discover the latest developments in IoT Big Data with a new resource from established and emerging leaders in the field. Big Data Analytics for Internet of Things delivers a comprehensive overview of all aspects of big data analytics in Internet of Things (IoT) systems. The book includes discussions of the enabling technologies of IoT data analytics, types of IoT data analytics, challenges in IoT data analytics, demand for IoT data analytics, computing platforms, analytical tools, privacy, and security. The distinguished editors have included resources that address key techniques in the analysis of IoT data. The book demonstrates how to select the appropriate techniques to unearth valuable insights from IoT data and offers novel designs for IoT systems. With an abiding focus on practical strategies with concrete applications for data analysts and IoT professionals, Big Data Analytics for Internet of Things also offers readers: A thorough introduction to the Internet of Things, including IoT architectures, enabling technologies, and applications. An exploration of the intersection between the Internet of Things and Big Data, including IoT as a source of Big Data, the
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unique characteristics of IoT data, etc. A discussion of the IoT data analytics, including the data analytical requirements of IoT data and the types of IoT analytics, including predictive, descriptive, and prescriptive analytics. A treatment of machine learning techniques for IoT data analytics. Perfect for professionals, industry practitioners, and researchers engaged in big data analytics related to IoT systems. Big Data Analytics for Internet of Things will also earn a place in the libraries of IoT designers and manufacturers interested in facilitating the efficient implementation of data analytics strategies.

Challenges and Opportunities for the Convergence of IoT, Big Data, and Cloud Computing

Cloud computing and big data are arguably the most significant forces in information technology today. In the wake of revelations about National Security Agency (NSA) activities, many of which occur "in the cloud", this book offers both enlightenment and a critical view. Vincent Mosco explores where the cloud originated, what it means, and how important it is for business, government and citizens. He describes the intense competition among cloud companies like Amazon and Google, the spread of the cloud to government agencies like the controversial NSA, and the astounding growth of entire cloud cities in China. Is the cloud the long-promised information utility that will solve many of the world's economic and social problems? Or is it just marketing hype? To the Cloud provides the first thorough analysis of the potential and the problems of a technology that may very well disrupt the world.

Smart Grid Communication Infrastructures

Systems Simulation and Modelling for Cloud Computing and Big Data Applications provides readers with the
most current approaches to solving problems through the use of models and simulations, presenting SSM based approaches to performance testing and benchmarking that offer significant advantages. For example, multiple big data and cloud application developers and researchers can perform tests in a controllable and repeatable manner. Inspired by the need to analyze the performance of different big data processing and cloud frameworks, researchers have introduced several benchmarks, including BigDataBench, BigBench, HiBench, PigMix, CloudSuite and GridMix, which are all covered in this book. Despite the substantial progress, the research community still needs a holistic, comprehensive big data SSM to use in almost every scientific and engineering discipline involving multidisciplinary research. SSM develops frameworks that are applicable across disciplines to develop benchmarking tools that are useful in solutions development. Examines the methodology and requirements of benchmarking big data and cloud computing tools, advances in big data frameworks and benchmarks for large-scale data analytics, and frameworks for benchmarking and predictive analytics in big data deployment. Discusses applications using big data benchmarks, such as BigDataBench, BigBench, HiBench, MapReduce, HPCC, ECL, HOBBIT, GridMix and PigMix, and applications using big data frameworks, such as Hadoop, Spark, Samza, Flink and SQL frameworks. Covers development of big data benchmarks to evaluate workloads in state-of-the-practice heterogeneous hardware platforms, advances in modeling and simulation tools for performance evaluation, security problems and scalable cloud computing environments.

**Authentication Technologies for Cloud Computing, IoT and Big Data**

Big data has presented a number of opportunities across industries. With these opportunities come a number of challenges associated with handling,
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analyzing, and storing large data sets. One solution to this challenge is cloud computing, which supports a massive storage and computation facility in order to accommodate big data processing. Managing and Processing Big Data in Cloud Computing explores the challenges of supporting big data processing and cloud-based platforms as a proposed solution. Emphasizing a number of crucial topics such as data analytics, wireless networks, mobile clouds, and machine learning, this publication meets the research needs of data analysts, IT professionals, researchers, graduate students, and educators in the areas of data science, computer programming, and IT development.

Applications of Machine Learning in Big-Data Analytics and Cloud Computing

This book provides a framework for evaluating big data and cloud computing based on how they evolve to fit users' needs in developing countries in key areas, such as agriculture and education. The authors discuss how this framework can be utilized by businesses, governments, and consumers to accelerate economic growth and overcome information and communication barriers. By examining the ways in which cloud computing can drive social, economic, and environmental transformation, readers gain a nuanced understanding of the opportunities and challenges these technologies offer. The authors also provide an authoritative and up-to-date account of big data's diffusion into a wide range of developing economies, such as Brazil and China, illustrating key concepts through in-depth case studies. Special attention is paid to economic development in the context of the new Sustainable Development Goals formulated by the United Nations, introducing readers to the most modern standard of economic evaluation. Students of information management, entrepreneurship, and development, as well as policy makers, researchers, and practitioners, will find Big Data and Cloud
Computing for Development an interesting read and a useful reference source.

Big Data and Cloud Computing for Development

A comprehensive resource that covers all the key areas of smart grid communication infrastructures. Smart grid is a transformational upgrade to the traditional power grid that adds communication capabilities, intelligence and modern control. Smart Grid Communication Infrastructures is a comprehensive guide that addresses communication infrastructures, related applications and other issues related to the smart grid. The text shows how smart grid departs from the traditional power grid technology. Fundamentally, smart grid has advanced communication infrastructures to achieve two-way information exchange between service providers and customers. Grid operations in smart grid have proven to be more efficient and more secure because of the communication infrastructures and modern control. Smart Grid Communication Infrastructures examines and summarizes the recent advances in smart grid communications, big data analytics and network security. The authors – noted experts in the field – review the technologies, applications and issues in smart grid communication infrastructure. This important resource: Offers a comprehensive review of all areas of smart grid communication infrastructures. Includes an ICT framework for smart grid. Contains a review of self-sustaining wireless neighborhood that are network designed. Presents design and analysis of a wireless monitoring network for transmission lines in smart grid. Written for graduate students, professors, researchers, scientists, practitioners and engineers, Smart Grid Communication Infrastructures is the comprehensive resource that explores all aspects of the topic.

**Big Data Computing**

Cloud computing offers many advantages to researchers and engineers who need access to high performance computing facilities for solving particular compute-intensive and/or large-scale problems, but whose overall high performance computing (HPC) needs do not justify the acquisition and operation of dedicated HPC facilities. There are, however, a number of fundamental problems which must be addressed, such as the limitations imposed by accessibility, security and communication speed, before these advantages can be
exploited to the full. This book presents 14 contributions selected from the International Research Workshop on Advanced High Performance Computing Systems, held in Cetraro, Italy, in June 2012. The papers are arranged in three chapters. Chapter 1 includes five papers on cloud infrastructures, while Chapter 2 discusses cloud applications. The third chapter in the book deals with big data, which is nothing new – large scientific organizations have been collecting large amounts of data for decades – but what is new is that the focus has now broadened to include sectors such as business analytics, financial analyses, Internet service providers, oil and gas, medicine, automotive and a host of others. This book will be of interest to all those whose work involves them with aspects of cloud computing and big data applications.

Handbook of Research on Cloud Computing and Big Data Applications in IoT

This book constitutes the refereed proceedings of the First International Conference on Big Data Analytics, BDA 2012, held in New Delhi, India, in December 2012. The 5 regular papers and 5 short papers presented were carefully reviewed and selected from 42 submissions. The volume also contains two tutorial papers in the section perspectives on big data analytics. The regular contributions are organized in topical sections on: data analytics applications; knowledge discovery through information extraction; and data models in analytics.

Big-Data Analytics for Cloud, IoT and Cognitive Computing

"This book addresses the newest innovative and intelligent applications related to utilizing the large amounts of big data being generated that is increasingly driving decision making and changing the
Cloud-Based Big Data Analytics in Vehicular Ad-Hoc Networks

The definitive guide to successfully integrating social, mobile, Big-Data analytics, cloud and IoT principles and technologies. The main goal of this book is to spur the development of effective big-data computing operations on smart clouds that are fully supported by IoT sensing, machine learning and analytics systems. To that end, the authors draw upon their original research and proven track record in the field to describe a practical approach integrating big-data theories, cloud design principles, Internet of Things (IoT) sensing, machine learning, data analytics and Hadoop and Spark programming. Part 1 focuses on data science, the roles of clouds and IoT devices and frameworks for big-data computing. Big data analytics and cognitive machine learning, as well as cloud architecture, IoT and cognitive systems are explored, and mobile cloud-IoT-interaction frameworks are illustrated with concrete system design examples. Part 2 is devoted to the principles of and algorithms for machine learning, data analytics and deep learning in big data applications. Part 3 concentrates on cloud programming software libraries from MapReduce to Hadoop, Spark and TensorFlow and describes business, educational, healthcare and social media applications for those tools. The first book describing a practical approach to integrating social, mobile, analytics, cloud and IoT (SMACT) principles and technologies. Covers theory and computing techniques and technologies, making it suitable for use in both computer science and electrical engineering programs. Offers an extremely well-informed vision of future intelligent and cognitive computing environments integrating SMACT technologies. Fully illustrated.
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throughout with examples, figures and approximately 150 problems to support and reinforce learning.

Features a companion website with an instructor manual and PowerPoint slides www.wiley.com/go/hwangIOT Big-Data Analytics for Cloud, IoT and Cognitive Computing satisfies the demand among university faculty and students for cutting-edge information on emerging intelligent and cognitive computing systems and technologies. Professionals working in data science, cloud computing and IoT applications will also find this book to be an extremely useful working resource.

Reliability Assurance of Big Data in the Cloud

Today, cloud computing, big data, and the internet of things (IoT) are becoming indubitable parts of modern information and communication systems. They cover not only information and communication technology but also all types of systems in society including within the realms of business, finance, industry, manufacturing, and management. Therefore, it is critical to remain up-to-date on the latest advancements and applications, as well as current issues and challenges. The Handbook of Research on Cloud Computing and Big Data Applications in IoT is a pivotal reference source that provides relevant theoretical frameworks and the latest empirical research findings on principles, challenges, and applications of cloud computing, big data, and IoT. While highlighting topics such as fog computing, language interaction, and scheduling algorithms, this publication is ideally designed for software developers, computer engineers, scientists, professionals, academicians, researchers, and students.

Cloud Computing for Geospatial Big Data Analytics

This book examines various topics and approaches
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related to the security and privacy in big data and cloud computing, where authors share their expertise in their respective chapters on a broad range of security and privacy challenges and state of the art solutions.

**Big Data**

Vehicular traffic congestion and accidents remain universal issues in today’s world. Due to the continued growth in the use of vehicles, optimizing traffic management operations is an immense challenge. To reduce the number of traffic accidents, improve the performance of transportation systems, enhance road safety, and protect the environment, vehicular ad-hoc networks have been introduced. Current developments in wireless communication, computing paradigms, big data, and cloud computing enable the enhancement of these networks, equipped with wireless communication capabilities and high-performance processing tools. Cloud-Based Big Data Analytics in Vehicular Ad-Hoc Networks is a pivotal reference source that provides vital research on cloud and data analytic applications in intelligent transportation systems. While highlighting topics such as location routing, accident detection, and data warehousing, this publication addresses future challenges in vehicular ad-hoc networks and presents viable solutions. This book is ideally designed for researchers, computer scientists, engineers, automobile industry professionals, IT practitioners, academicians, and students seeking current research on cloud computing models in vehicular networks.

**Big Data Analytics for Internet of Things**

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
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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

Managing and Processing Big Data in Cloud Computing

The definitive guide to successfully integrating social, mobile, Big-Data analytics, cloud and IoT principles and technologies The main goal of this book is to spur the development of effective big-data computing operations on smart clouds that are fully supported by IoT sensing, machine learning and analytics systems. To that end, the authors draw upon their original research and proven track record in the field to describe a practical approach integrating big-data theories, cloud design principles, Internet of Things (IoT) sensing, machine learning, data analytics and Hadoop and Spark programming. Part 1 focuses on data science, the roles of clouds and IoT devices and frameworks for big-data computing. Big data analytics and cognitive machine learning, as well as cloud architecture, IoT and cognitive systems are explored, and mobile cloud-IoT-interaction frameworks are illustrated with concrete system design examples. Part 2 is devoted to the principles of and algorithms for machine learning, data analytics and deep learning in
big data applications. Part 3 concentrates on cloud programming software libraries from MapReduce to Hadoop, Spark and TensorFlow and describes business, educational, healthcare and social media applications for those tools. The first book describing a practical approach to integrating social, mobile, analytics, cloud and IoT (SMACT) principles and technologies. Covers theory and computing techniques and technologies, making it suitable for use in both computer science and electrical engineering programs. Offers an extremely well-informed vision of future intelligent and cognitive computing environments integrating SMACT technologies. Fully illustrated throughout with examples, figures and approximately 150 problems to support and reinforce learning. Features a companion website with an instructor manual and PowerPoint slides www.wiley.com/go/hwangIOT

Big Data Analytics for Cloud, IoT and Cognitive Computing satisfies the demand among university faculty and students for cutting-edge information on emerging intelligent and cognitive computing systems and technologies. Professionals working in data science, cloud computing and IoT applications will also find this book to be an extremely useful working resource.

**Big Data Computing**

Large Scale and Big Data: Processing and Management provides readers with a central source of reference on the data management techniques currently available for large-scale data processing. Presenting chapters written by leading researchers, academics, and practitioners, it addresses the fundamental challenges associated with Big Data processing tools and techniques across a range of computing environments. The book begins by discussing the basic concepts and tools of large-scale Big Data processing and cloud computing. It also provides an overview of different programming models and cloud-based deployment models. The book’s second section examines the usage of
advanced Big Data processing techniques in different domains, including semantic web, graph processing, and stream processing. The third section discusses advanced topics of Big Data processing such as consistency management, privacy, and security. Supplying a comprehensive summary from both the research and applied perspectives, the book covers recent research discoveries and applications, making it an ideal reference for a wide range of audiences, including researchers and academics working on databases, data mining, and web scale data processing. After reading this book, you will gain a fundamental understanding of how to use Big Data-processing tools and techniques effectively across application domains. Coverage includes cloud data management architectures, big data analytics visualization, data management, analytics for vast amounts of unstructured data, clustering, classification, link analysis of big data, scalable data mining, and machine learning techniques.

Software Architecture for Big Data and the Cloud

This book reviews the theoretical concepts, leading-edge techniques and practical tools involved in the latest multi-disciplinary approaches addressing the challenges of big data. Illuminating perspectives from both academia and industry are presented by an international selection of experts in big data science. Topics and features: describes the innovative advances in theoretical aspects of big data, predictive analytics and cloud-based architectures; examines the applications and implementations that utilize big data in cloud architectures; surveys the state of the art in architectural approaches to the provision of cloud-based big data analytics functions; identifies potential research directions and technologies to facilitate the realization of emerging business models through big data approaches; provides relevant theoretical frameworks, empirical research
findings, and numerous case studies; discusses real-world applications of algorithms and techniques to address the challenges of big datasets.

**Big Data, Cloud and Applications**

With the rapid growth of Cloud computing, the size of Cloud data is expanding at a dramatic speed. A huge amount of data is generated and processed by Cloud applications, putting a higher demand on cloud storage. While data reliability should already be a requirement, data in the Cloud needs to be stored in a highly cost-effective manner. This book focuses on the trade-off between data storage cost and data reliability assurance for big data in the Cloud.

Throughout the whole Cloud data lifecycle, four major features are presented: first, a novel generic data reliability model for describing data reliability in the Cloud; second, a minimum replication calculation approach for meeting a given data reliability requirement to facilitate data creation; third, a novel cost-effective data reliability assurance mechanism for big data maintenance, which could dramatically reduce the storage space needed in the Cloud; fourth, a cost-effective strategy for facilitating data creation and recovery, which could significantly reduce the energy consumption during data transfer. Captures data reliability with variable disk rates and compares virtual to physical disks. Offers methods for reducing cloud-based storage cost and energy consumption. Presents a minimum replication benchmark for data reliability requirements to evaluate various replication-based data storage approaches.

**Handbook of Research on Cloud Infrastructures for Big Data Analytics**

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 Cloud Computing**

In recent years, the fast-paced development of social information and networks has led to the explosive growth of data. A variety of big data have emerged, encouraging researchers to make business decisions by analysing this data. However, many challenges remain, especially concerning data security and privacy. Big data security and privacy threats permeate every link of the big data industry chain, such as data production, collection, processing, and sharing, and the causes of risk are complex and interwoven. Blockchain technology has been highly praised and recognised for its decentralised infrastructure, anonymity, security, and other characteristics, and it will change the way we access and share information.
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In this book, the author demonstrates how blockchain technology can overcome some limitations in big data technology and can promote the development of big data while also helping to overcome security and privacy challenges. The author investigates research into and the application of blockchain technology in the field of big data and assesses the attendant advantages and challenges while discussing the possible future directions of the convergence of blockchain and big data. After mastering concepts and technologies introduced in this work, readers will be able to understand the technical evolution, similarities, and differences between blockchain and big data technology, allowing them to further apply it in their development and research. Author: Shaoliang Peng is the Executive Director and Professor of the College of Computer Science and Electronic Engineering, National Supercomputing Centre of Hunan University, Changsha, China. His research interests are high-performance computing, bioinformatics, big data, AI, and blockchain.

**Mobile Big Data**

The internet of things (IoT) has emerged to address the need for connectivity and seamless integration with other devices as well as big data platforms for analytics. However, there are challenges that IoT-based applications face including design and implementation issues; connectivity problems; data gathering, storing, and analyzing in cloud-based environments; and IoT security and privacy issues. Emerging Trends in IoT and Integration with Data Science, Cloud Computing, and Big Data Analytics is a critical reference source that provides theoretical frameworks and research findings on IoT and big data integration. Highlighting topics that include wearable sensors, machine learning, machine intelligence, and mobile computing, this book serves professionals who want to improve their understanding of the strategic
role of trust at different levels of the information and knowledge society. It is therefore of most value to data scientists, computer scientists, data analysts, IT specialists, academicians, professionals, researchers, and students working in the field of information and knowledge management in various disciplines that include but are not limited to information and communication sciences, administrative sciences and management, education, sociology, computer science, etc. Moreover, the book provides insights and supports executives concerned with the management of expertise, knowledge, information, and organizational development in different types of work communities and environments.

**Emerging Trends in IoT and Integration with Data Science, Cloud Computing, and Big Data Analytics**

Cloud Computing and Big Data technologies have become the new descriptors of the digital age. The global amount of digital data has increased more than nine times in volume in just five years and by 2030 its volume may reach a staggering 65 trillion gigabytes. This explosion of data has led to opportunities and transformation in various areas such as healthcare, enterprises, industrial manufacturing and transportation. New Cloud Computing and Big Data tools endow researchers and analysts with novel techniques and opportunities to collect, manage and analyze the vast quantities of data. In Cloud and Big Data Analytics, Swarm Intelligence and Deep Learning are two developing type of Machine Learning techniques that show enormous potential for solving complex business problems. Deep Learning enables computers to analyze large quantities of unstructured and binary data and to deduce relationships without requiring specific models or programming instructions. This book introduces the state-of-the-art trends and advances in the use of Machine Learning in Cloud and Big Data
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Analytics. The book will serve as a reference for data scientists, systems architects, developers, new researchers and graduate level students in Computer and Data Science. The book will describe the concepts necessary to understand current Machine Learning issues, challenges and possible solutions as well as upcoming trends in Big Data Analytics.

Managing Big Data in Cloud Computing Environments

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

Systems Simulation and Modeling for Cloud Computing and Big Data Applications

This book presents the outcomes of the 3rd IEEE/ACIS International Conference on Big Data, Cloud Computing, Data Science & Engineering (BCD 2018), which was held on July 10–12, 2018 in Kanazawa. The aim of the conference was to bring together researchers and scientists, businesspeople and entrepreneurs,
teachers, engineers, computer users, and students to discuss the various fields of computer science, to share their experiences, and to exchange new ideas and information in a meaningful way. All aspects (theory, applications and tools) of computer and information science, the practical challenges encountered along the way, and the solutions adopted to solve them are all explored here. The conference organizers selected the best papers from among those accepted for presentation. The papers were chosen on the basis of review scores submitted by members of the program committee and subsequently underwent further rigorous review. Following this second round of review, 13 of the conference’s most promising papers were selected for this Springer (SCI) book. We eagerly await the important contributions that we know these authors will make to the field of computer and information science.

**Applications of Big Data in Large- and Small-Scale Systems**

This book unravels the mystery of Big Data computing and its power to transform business operations. The approach it uses will be helpful to any professional who must present a case for realizing Big Data computing solutions or to those who could be involved in a Big Data computing project. It provides a framework that enables business and technical managers to make optimal decisions necessary for the successful migration to Big Data computing environments and applications within their organizations.

**Exploring the Convergence of Big Data and the Internet of Things**

This book reports on the latest advances in mobile technologies for collecting, storing and processing mobile big data in connection with wireless communications. It presents novel approaches and
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applications in which mobile big data is being applied from an engineering standpoint and addresses future theoretical and practical challenges related to the big data field from a mobility perspective. Further, it provides an overview of new methodologies designed to take mobile big data to the Cloud, enable the processing of real-time streaming events on-the-move and enhance the integration of resource availability through the ‘Anywhere, Anything, Anytime’ paradigm. By providing both academia and industry researchers and professionals with a timely snapshot of emerging mobile big data-centric systems and highlighting related pitfalls, as well as potential solutions, the book fills an important gap in the literature and fosters the further development in the area of mobile technologies for exploiting mobile big data.

**Big Data Analytics and Cloud Computing**

This book is a compendium of the proceedings of the International Conference on Big Data and Cloud Computing. It includes recent advances in the areas of big data analytics, cloud computing, internet of nano things, cloud security, data analytics in the cloud, smart cities and grids, etc. This volume primarily focuses on the application of the knowledge that promotes ideas for solving the problems of the society through cutting-edge technologies. The articles featured in this proceeding provide novel ideas that contribute to the growth of world class research and development. The contents of this volume will be of interest to researchers and professionals alike.

**Big Data, Cloud Computing, Data Science & Engineering**

Cloud computing has proven to be a successful paradigm of service-oriented computing, and has revolutionized the way computing infrastructures are abstracted and used. By means of cloud computing technology, massive
data can be managed effectively and efficiently to support various aspects of problem solving and decision making. Managing Big Data in Cloud Computing Environments explores the latest advancements in the area of data management and analysis in the cloud. Providing timely, research-based information relating to data storage, sharing, extraction, and indexing in cloud systems, this publication is an ideal reference source for graduate students, IT specialists, researchers, and professionals working in the areas of data and knowledge engineering.

**Cloud Computing and Big Data: Technologies, Applications and Security**

Computational Intelligence for Multimedia Big Data on the Cloud with Engineering Applications covers timely topics, including the neural network (NN), particle swarm optimization (PSO), evolutionary algorithm (GA), fuzzy sets (FS) and rough sets (RS), etc. Furthermore, the book highlights recent research on representative techniques to elaborate how a data-centric system formed a powerful platform for the processing of cloud hosted multimedia big data and how it could be analyzed, processed and characterized by CI. The book also provides a view on how techniques in CI can offer solutions in modeling, relationship pattern recognition, clustering and other problems in bioengineering. It is written for domain experts and developers who want to understand and explore the application of computational intelligence aspects (opportunities and challenges) for design and development of a data-centric system in the context of multimedia cloud, big data era and its related applications, such as smarter healthcare, homeland security, traffic control trading analysis and telecom, etc. Researchers and PhD students exploring the significance of data centric systems in the next paradigm of computing will find this book extremely useful. Presents a brief overview of computational
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intelligent paradigms and its significant role in application domains Illustrates the state-of-the-art and recent developments in the new theories and applications of CI approaches Familiarizes the reader with computational intelligence concepts and technologies that are successfully used in the implementation of cloud-centric multimedia services in massive data processing Provides new advances in the fields of CI for bio-engineering application

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