

Download Ebook Building Data Streaming Applications With Apache Kafka Design Develop And Streamline Applications Using Apache Kafka Storm Heron And Spark

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Encyclopedia of Information Science and Technology, Fifth Edition
Mastering Hadoop 3
Learning Apache Kafka - Second Edition
Large-scale Data Streaming, Processing, and Blockchain Security
Agile Data Science 2.0
Apache Kafka Quick Start Guide
Building Data Streaming Applications with Apache Kafka
Performance Dashboards
Multimedia Fingerprinting
Forensics for Traitor Tracing
Designing Data-Intensive Applications
Data Stream Management
Big Data Processing with Apache Spark
Building Data Streaming Applications with Apache Kafka
Practical Real-time Data Processing and Analytics
Knowledge Discovery from Data Streams
Machine Learning and Knowledge Discovery in Databases
Streaming Architecture
Engineering the Web in the Big Data Era
Building Web Applications with Erlang
Streaming Data
Hands-On Big Data Modeling
Learning Real-time Processing with Spark
Streaming
Learning Spark
Stream Processing with Apache Spark
Kafka Streams - Real-time Stream Processing
Game Theory, Alive
Mastering Hadoop 3
Streaming Systems
Fundamentals of Stream Processing
Kafka: The Definitive Guide
Stream Processing with Apache Flink
Apache Kafka 1.0 Cookbook
Building Data Science Teams
Data

Download Ebook Building Data Streaming Applications With Apache Kafka Design Develop And Streamline Applications Using Apache Kafka StreamsSpatio-Temporal Data StreamsTar Heel TravelerAzure Storage, Streaming, and Batch AnalyticsKafka Streams in ActionEffective KafkaReal-Time Analytics

Encyclopedia of Information Science and Technology, Fifth Edition

The popularity of multimedia content has led to the widespread distribution and consumption of digital multimedia data. As a result of the relative ease with which individuals may now alter and repackage digital content, ensuring that media content is employed by authorized users for its intended purpose is becoming an issue of eminent importance to both governmental security and commercial applications. Digital fingerprinting is a class of multimedia forensic technologies to track and identify entities involved in the illegal manipulation and unauthorized usage of multimedia content, thereby protecting the sensitive nature of multimedia data as well as its commercial value after the content has been delivered to a recipient. "Multimedia Fingerprinting Forensics for Traitor Tracing" covers the essential aspects of research in this emerging technology, and explains the latest development in this field. It describes the framework of multimedia fingerprinting, discusses the challenges that may be faced when enforcing usage policies, and investigates the design of fingerprints that cope with new families of multiuser attacks that may be mounted against media fingerprints. The discussion provided in the book highlights challenging

problems as well as future trends in this research field, providing readers with a broader view of the evolution of the young field of multimedia forensics. Topics and features: Comprehensive coverage of digital watermarking and fingerprinting in multimedia forensics for a number of media types. Detailed discussion on challenges in multimedia fingerprinting and analysis of effective multiuser collusion attacks on digital fingerprinting. Thorough investigation of fingerprint design and performance analysis for addressing different application concerns arising in multimedia fingerprinting. Well-organized explanation of problems and solutions, such as order-statistics-based nonlinear collusion attacks, efficient detection and identification of colluders, group-oriented fingerprint design, and anti-collusion codes for multimedia fingerprinting. Presenting the state of the art in collusion-resistant digital fingerprinting for multimedia forensics, this invaluable book is accessible to a wide range of researchers and professionals in the fields of electrical engineering, computer science, information technologies, and digital rights management.

Mastering Hadoop 3

In the data stream scenario, input arrives very rapidly and there is limited memory to store the input. Algorithms have to work with one or few passes over the data, space less than linear in the input size or time significantly less than the input size. In the past few years, a new theory has emerged for reasoning about algorithms that work within these constraints

on space, time, and number of passes. Some of the methods rely on metric embeddings, pseudo-random computations, sparse approximation theory and communication complexity. The applications for this scenario include IP network traffic analysis, mining text message streams and processing massive data sets in general. Researchers in Theoretical Computer Science, Databases, IP Networking and Computer Systems are working on the data stream challenges

Learning Apache Kafka - Second Edition

Every enterprise application creates data, whether it's log messages, metrics, user activity, outgoing messages, or something else. And how to move all of this data becomes nearly as important as the data itself. If you're an application architect, developer, or production engineer new to Apache Kafka, this practical guide shows you how to use this open source streaming platform to handle real-time data feeds. Engineers from Confluent and LinkedIn who are responsible for developing Kafka explain how to deploy production Kafka clusters, write reliable event-driven microservices, and build scalable stream-processing applications with this platform. Through detailed examples, you'll learn Kafka's design principles, reliability guarantees, key APIs, and architecture details, including the replication protocol, the controller, and the storage layer. Understand publish-subscribe messaging and how it fits in the big data ecosystem. Explore Kafka producers and consumers for writing and reading messages Understand Kafka patterns and use-case

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requirements to ensure reliable data delivery Get best practices for building data pipelines and applications with Kafka Manage Kafka in production, and learn to perform monitoring, tuning, and maintenance tasks Learn the most critical metrics among Kafka's operational measurements Explore how Kafka's stream delivery capabilities make it a perfect source for stream processing systems

Large-scale Data Streaming, Processing, and Blockchain Security

A blend of oral history and memoir with a good dose of quirky humor, the Tar Heel Traveler is a celebratory look at the people and places of North Carolina. Mason is the TV reporter—the Tar Heel Traveler—who journeys across North Carolina profiling colorful characters and out-of-the-way places.

Agile Data Science 2.0

"Working with REST and Web-Sockets on Yaws"--Cover.

Apache Kafka Quick Start Guide

Simplify real-time data processing by leveraging the power of Apache Kafka 1.0 Key Features Use Kafka 1.0 features such as Confluent platforms and Kafka streams to build efficient streaming data applications to handle and process your data Integrate Kafka with other Big Data tools such as Apache Hadoop, Apache Spark, and more Hands-on recipes to help you design,

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operate, maintain, and secure your Apache Kafka cluster with ease

Book Description Apache Kafka provides a unified, high-throughput, low-latency platform to handle real-time data feeds. This book will show you how to use Kafka efficiently, and contains practical solutions to the common problems that developers and administrators usually face while working with it. This practical guide contains easy-to-follow recipes to help you set up, configure, and use Apache Kafka in the best possible manner. You will use Apache Kafka Consumers and Producers to build effective real-time streaming applications. The book covers the recently released Kafka version 1.0, the Confluent Platform and Kafka Streams. The programming aspect covered in the book will teach you how to perform important tasks such as message validation, enrichment and composition. Recipes focusing on optimizing the performance of your Kafka cluster, and integrate Kafka with a variety of third-party tools such as Apache Hadoop, Apache Spark, and Elasticsearch will help ease your day to day collaboration with Kafka greatly. Finally, we cover tasks related to monitoring and securing your Apache Kafka cluster using tools such as Ganglia and Graphite. If you're looking to become the go-to person in your organization when it comes to working with Apache Kafka, this book is the only resource you need to have. What you will learn

- Install and configure Apache Kafka 1.0 to get optimal performance
- Create and configure Kafka Producers and Consumers
- Operate your Kafka clusters efficiently by implementing the mirroring technique
- Work with the new Confluent platform and Kafka streams, and achieve high availability with Kafka
- Monitor Kafka

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using tools such as Graphite and Ganglia -Integrate Kafka with third-party tools such as Elasticsearch, Logstash, Apache Hadoop, Apache Spark, and more Who this book is for This book is for developers and Kafka administrators who are looking for quick, practical solutions to problems encountered while operating, managing or monitoring Apache Kafka. If you are a developer, some knowledge of Scala or Java will help, while for administrators, some working knowledge of Kafka will be useful.

Building Data Streaming Applications with Apache Kafka

Since the beginning of the Internet age and the increased use of ubiquitous computing devices, the large volume and continuous flow of distributed data have imposed new constraints on the design of learning algorithms. Exploring how to extract knowledge structures from evolving and time-changing data, Knowledge Discovery from Data Streams presents a coherent overview of state-of-the-art research in learning from data streams. The book covers the fundamentals that are imperative to understanding data streams and describes important applications, such as TCP/IP traffic, GPS data, sensor networks, and customer click streams. It also addresses several challenges of data mining in the future, when stream mining will be at the core of many applications. These challenges involve designing useful and efficient data mining solutions applicable to real-world problems. In the appendix, the author includes examples of publicly available

software and online data sets. This practical, up-to-date book focuses on the new requirements of the next generation of data mining. Although the concepts presented in the text are mainly about data streams, they also are valid for different areas of machine learning and data mining.

Performance Dashboards

Data science teams looking to turn research into useful analytics applications require not only the right tools, but also the right approach if they're to succeed. With the revised second edition of this hands-on guide, up-and-coming data scientists will learn how to use the Agile Data Science development methodology to build data applications with Python, Apache Spark, Kafka, and other tools. Author Russell Journey demonstrates how to compose a data platform for building, deploying, and refining analytics applications with Apache Kafka, MongoDB, ElasticSearch, d3.js, scikit-learn, and Apache Airflow. You'll learn an iterative approach that lets you quickly change the kind of analysis you're doing, depending on what the data is telling you. Publish data science work as a web application, and affect meaningful change in your organization. Build value from your data in a series of agile sprints, using the data-value pyramid Extract features for statistical models from a single dataset Visualize data with charts, and expose different aspects through interactive reports Use historical data to predict the future via classification and regression Translate predictions into actions Get feedback from users after each sprint to keep your

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Multimedia Fingerprinting Forensics for Traitor Tracing

Data in all domains is getting bigger. How can you work with it efficiently? Recently updated for Spark 1.3, this book introduces Apache Spark, the open source cluster computing system that makes data analytics fast to write and fast to run. With Spark, you can tackle big datasets quickly through simple APIs in Python, Java, and Scala. This edition includes new information on Spark SQL, Spark Streaming, setup, and Maven coordinates. Written by the developers of Spark, this book will have data scientists and engineers up and running in no time. You'll learn how to express parallel jobs with just a few lines of code, and cover applications from simple batch jobs to stream processing and machine learning. Quickly dive into Spark capabilities such as distributed datasets, in-memory caching, and the interactive shell Leverage Spark's powerful built-in libraries, including Spark SQL, Spark Streaming, and MLlib Use one programming paradigm instead of mixing and matching tools like Hive, Hadoop, Mahout, and Storm Learn how to deploy interactive, batch, and streaming applications Connect to data sources including HDFS, Hive, JSON, and S3 Master advanced topics like data partitioning and shared variables

Designing Data-Intensive Applications

This volume focuses on the theory and practice of

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data stream management, and the novel challenges this emerging domain poses for data-management algorithms, systems, and applications. The collection of chapters, contributed by authorities in the field, offers a comprehensive introduction to both the algorithmic/theoretical foundations of data streams, as well as the streaming systems and applications built in different domains. A short introductory chapter provides a brief summary of some basic data streaming concepts and models, and discusses the key elements of a generic stream query processing architecture. Subsequently, Part I focuses on basic streaming algorithms for some key analytics functions (e.g., quantiles, norms, join aggregates, heavy hitters) over streaming data. Part II then examines important techniques for basic stream mining tasks (e.g., clustering, classification, frequent itemsets). Part III discusses a number of advanced topics on stream processing algorithms, and Part IV focuses on system and language aspects of data stream processing with surveys of influential system prototypes and language designs. Part V then presents some representative applications of streaming techniques in different domains (e.g., network management, financial analytics). Finally, the volume concludes with an overview of current data streaming products and new application domains (e.g. cloud computing, big data analytics, and complex event processing), and a discussion of future directions in this exciting field. The book provides a comprehensive overview of core concepts and technological foundations, as well as various systems and applications, and is of particular interest to students, lecturers and researchers in the area of data stream management.

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Data Stream Management

This SpringerBrief presents the fundamental concepts of a specialized class of data stream, spatio-temporal data streams, and demonstrates their distributed processing using Big Data frameworks and platforms. It explores a consistent framework which facilitates a thorough understanding of all different facets of the technology, from basic definitions to state-of-the-art techniques. Key topics include spatio-temporal continuous queries, distributed stream processing, SQL-like language embedding, and trajectory stream clustering. Over the course of the book, the reader will become familiar with spatio-temporal data streams management and data flow processing, which enables the analysis of huge volumes of location-aware continuous data streams. Applications range from mobile object tracking and real-time intelligent transportation systems to traffic monitoring and complex event processing. Spatio-Temporal Data Streams is a valuable resource for researchers studying spatio-temporal data streams and Big Data analytics, as well as data engineers and data scientists solving data management and analytics problems associated with this class of data.

Big Data Processing with Apache Spark

This book teaches fundamentals of stream processing, covering application design, distributed systems infrastructure, and continuous analytic algorithms.

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Building Data Streaming Applications with Apache Kafka

Summary Kafka Streams in Action teaches you everything you need to know to implement stream processing on data flowing into your Kafka platform, allowing you to focus on getting more from your data without sacrificing time or effort. Foreword by Neha Narkhede, Cocreator of Apache Kafka Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Not all stream-based applications require a dedicated processing cluster. The lightweight Kafka Streams library provides exactly the power and simplicity you need for message handling in microservices and real-time event processing. With the Kafka Streams API, you filter and transform data streams with just Kafka and your application. About the Book Kafka Streams in Action teaches you to implement stream processing within the Kafka platform. In this easy-to-follow book, you'll explore real-world examples to collect, transform, and aggregate data, work with multiple processors, and handle real-time events. You'll even dive into streaming SQL with KSQL! Practical to the very end, it finishes with testing and operational aspects, such as monitoring and debugging. What's inside Using the KStreams API Filtering, transforming, and splitting data Working with the Processor API Integrating with external systems About the Reader Assumes some experience with distributed systems. No knowledge of Kafka or streaming applications required. About the Author Bill Bejeck is a Kafka Streams contributor and

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Confluent engineer with over 15 years of software development experience. Table of Contents PART 1 - GETTING STARTED WITH KAFKA STREAMS Welcome to Kafka Streams Kafka quicklyPART 2 - KAFKA STREAMS DEVELOPMENT Developing Kafka Streams Streams and state The KTable API The Processor APIPART 3 - ADMINISTERING KAFKA STREAMS Monitoring and performance Testing a Kafka Streams applicationPART 4 - ADVANCED CONCEPTS WITH KAFKA STREAMS Advanced applications with Kafka StreamsAPPENDIXES Appendix A - Additional configuration information Appendix B - Exactly once semantics

Practical Real-time Data Processing and Analytics

Design and administer fast, reliable enterprise messaging systems with Apache KafkaAbout This Book* Build efficient real-time streaming applications in Apache Kafka to process data streams of data* Master the core Kafka APIs to set up Apache Kafka clusters and start writing message producers and consumers* A comprehensive guide to help you get a solid grasp of the Apache Kafka concepts in Apache Kafka with practical examplesWho This Book Is ForIf you want to learn how to use Apache Kafka and the different tools in the Kafka ecosystem in the easiest possible manner, this book is for you. Some programming experience with Java is required to get the most out of this bookWhat You Will Learn* Learn the basics of Apache Kafka from scratch* Use the basic building blocks of a streaming application*

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Design effective streaming applications with Kafka using Spark, Storm & Heron* Understand the importance of a low-latency, high-throughput, and fault-tolerant messaging system* Make effective capacity planning while deploying your Kafka Application* Understand and implement the best security practices

In Detail Apache Kafka is a popular distributed streaming platform that acts as a messaging queue or an enterprise messaging system. It lets you publish and subscribe to a stream of records, and process them in a fault-tolerant way as they occur. This book is a comprehensive guide to designing and architecting enterprise-grade streaming applications using Apache Kafka and other big data tools. It includes best practices for building such applications, and tackles some common challenges such as how to use Kafka efficiently and handle high data volumes with ease. This book first takes you through understanding the type messaging system and then provides a thorough introduction to Apache Kafka and its internal details. The second part of the book takes you through designing streaming application using various frameworks and tools such as Apache Spark, Apache Storm, and more. Once you grasp the basics, we will take you through more advanced concepts in Apache Kafka such as capacity planning and security. By the end of this book, you will have all the information you need to be comfortable with using Apache Kafka, and to design efficient streaming data applications with it.

Style and approach A step-by-step, comprehensive guide filled with practical and real-world examples

This book constitutes the refereed proceedings of the 15th International Conference on Web Engineering, ICWE 2015, held in Rotterdam, The Netherlands, in June 2015. The 26 full research papers, 11 short papers, 7 industry papers, 11 demonstrations, 6 posters and 4 contributions to the PhD symposium presented were carefully reviewed and selected from 100 submissions. Moreover 2 tutorials are presented. The papers focus on eight tracks, namely Web application modeling and engineering; mobile Web applications; social Web applications; semantic Web applications; quality and accessibility aspects of Web applications; Web applications composition and mashups; Web user interfaces; security and privacy in Web applications.

Machine Learning and Knowledge Discovery in Databases

Solve all big data problems by learning how to create efficient data models Key Features Create effective models that get the most out of big data Apply your knowledge to datasets from Twitter and weather data to learn big data Tackle different data modeling challenges with expert techniques presented in this book Book Description Modeling and managing data is a central focus of all big data projects. In fact, a database is considered to be effective only if you have a logical and sophisticated data model. This book will help you develop practical skills in modeling your own big data projects and improve the

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performance of analytical queries for your specific business requirements. To start with, you'll get a quick introduction to big data and understand the different data modeling and data management platforms for big data. Then you'll work with structured and semi-structured data with the help of real-life examples. Once you've got to grips with the basics, you'll use the SQL Developer Data Modeler to create your own data models containing different file types such as CSV, XML, and JSON. You'll also learn to create graph data models and explore data modeling with streaming data using real-world datasets. By the end of this book, you'll be able to design and develop efficient data models for varying data sizes easily and efficiently. What you will learn Get insights into big data and discover various data models Explore conceptual, logical, and big data models Understand how to model data containing different file types Run through data modeling with examples of Twitter, Bitcoin, IMDB and weather data modeling Create data models such as Graph Data and Vector Space Model structured and unstructured data using Python and R Who this book is for This book is great for programmers, geologists, biologists, and every professional who deals with spatial data. If you want to learn how to handle GIS, GPS, and remote sensing data, then this book is for you. Basic knowledge of R and QGIS would be helpful.

Streaming Architecture

The Microsoft Azure cloud is an ideal platform for data-intensive applications. Designed for productivity,

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Azure provides pre-built services that make collection, storage, and analysis much easier to implement and manage. Azure Storage, Streaming, and Batch Analytics teaches you how to design a reliable, performant, and cost-effective data infrastructure in Azure by progressively building a complete working analytics system. Summary The Microsoft Azure cloud is an ideal platform for data-intensive applications. Designed for productivity, Azure provides pre-built services that make collection, storage, and analysis much easier to implement and manage. Azure Storage, Streaming, and Batch Analytics teaches you how to design a reliable, performant, and cost-effective data infrastructure in Azure by progressively building a complete working analytics system. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Microsoft Azure provides dozens of services that simplify storing and processing data. These services are secure, reliable, scalable, and cost efficient. About the book Azure Storage, Streaming, and Batch Analytics shows you how to build state-of-the-art data solutions with tools from the Microsoft Azure platform. Read along to construct a cloud-native data warehouse, adding features like real-time data processing. Based on the Lambda architecture for big data, the design uses scalable services such as Event Hubs, Stream Analytics, and SQL databases. Along the way, you'll cover most of the topics needed to earn an Azure data engineering certification. What's inside

- Configuring Azure services for speed and cost
- Constructing data pipelines with Data Factory
- Choosing the right data storage methods

About the

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reader For readers familiar with database management. Examples in C# and PowerShell. About the author Richard Nuckolls is a senior developer building big data analytics and reporting systems in Azure. Table of Contents 1 What is data engineering? 2 Building an analytics system in Azure 3 General storage with Azure Storage accounts 4 Azure Data Lake Storage 5 Message handling with Event Hubs 6 Real-time queries with Azure Stream Analytics 7 Batch queries with Azure Data Lake Analytics 8 U-SQL for complex analytics 9 Integrating with Azure Data Lake Analytics 10 Service integration with Azure Data Factory 11 Managed SQL with Azure SQL Database 12 Integrating Data Factory with SQL Database 13 Where to go next

Engineering the Web in the Big Data Era

More and more data-driven companies are looking to adopt stream processing and streaming analytics. With this concise ebook, you'll learn best practices for designing a reliable architecture that supports this emerging big-data paradigm. Authors Ted Dunning and Ellen Friedman (Real World Hadoop) help you explore some of the best technologies to handle stream processing and analytics, with a focus on the upstream queuing or message-passing layer. To illustrate the effectiveness of these technologies, this book also includes specific use cases. Ideal for developers and non-technical people alike, this book describes: Key elements in good design for streaming analytics, focusing on the essential characteristics of the messaging layer New messaging technologies,

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including Apache Kafka and MapR Streams, with links to sample code. Technology choices for streaming analytics: Apache Spark Streaming, Apache Flink, Apache Storm, and Apache Apex. How stream-based architectures are helpful to support microservices. Specific use cases such as fraud detection and geo-distributed data streams. Ted Dunning is Chief Applications Architect at MapR Technologies, and active in the open source community. He currently serves as VP for Incubator at the Apache Foundation, as a champion and mentor for a large number of projects, and as committer and PMC member of the Apache ZooKeeper and Drill projects. Ted is on Twitter as @ted_dunning. Ellen Friedman, a committer for the Apache Drill and Apache Mahout projects, is a solutions consultant and well-known speaker and author, currently writing mainly about big data topics. With a PhD in Biochemistry, she has years of experience as a research scientist and has written about a variety of technical topics. Ellen is on Twitter as @Ellen_Friedman.

Building Web Applications with Erlang

Data is at the center of many challenges in system design today. Difficult issues need to be figured out, such as scalability, consistency, reliability, efficiency, and maintainability. In addition, we have an overwhelming variety of tools, including relational databases, NoSQL datastores, stream or batch processors, and message brokers. What are the right choices for your application? How do you make sense

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of all these buzzwords? In this practical and comprehensive guide, author Martin Kleppmann helps you navigate this diverse landscape by examining the pros and cons of various technologies for processing and storing data. Software keeps changing, but the fundamental principles remain the same. With this book, software engineers and architects will learn how to apply those ideas in practice, and how to make full use of data in modern applications. Peer under the hood of the systems you already use, and learn how to use and operate them more effectively Make informed decisions by identifying the strengths and weaknesses of different tools Navigate the trade-offs around consistency, scalability, fault tolerance, and complexity Understand the distributed systems research upon which modern databases are built Peek behind the scenes of major online services, and learn from their architectures

Streaming Data

We live in a highly connected world with multiple self-interested agents interacting and myriad opportunities for conflict and cooperation. The goal of game theory is to understand these opportunities. This book presents a rigorous introduction to the mathematics of game theory without losing sight of the joy of the subject. This is done by focusing on theoretical highlights (e.g., at least six Nobel Prize winning results are developed from scratch) and by presenting exciting connections of game theory to other fields such as computer science (algorithmic game theory), economics (auctions and matching

markets), social choice (voting theory), biology (signaling and evolutionary stability), and learning theory. Both classical topics, such as zero-sum games, and modern topics, such as sponsored search auctions, are covered. Along the way, beautiful mathematical tools used in game theory are introduced, including convexity, fixed-point theorems, and probabilistic arguments. The book is appropriate for a first course in game theory at either the undergraduate or graduate level, whether in mathematics, economics, computer science, or statistics. The importance of game-theoretic thinking transcends the academic setting—for every action we take, we must consider not only its direct effects, but also how it influences the incentives of others.

Hands-On Big Data Modeling

Tips, techniques, and trends on how to use dashboard technology to optimize business performance Business performance management is a hot new management discipline that delivers tremendous value when supported by information technology. Through case studies and industry research, this book shows how leading companies are using performance dashboards to execute strategy, optimize business processes, and improve performance. Wayne W. Eckerson (Hingham, MA) is the Director of Research for The Data Warehousing Institute (TDWI), the leading association of business intelligence and data warehousing professionals worldwide that provide high-quality, in-depth education, training, and research. He is a columnist for SearchCIO.com, DM Review, Application

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Learning Real-time Processing with Spark Streaming

The rise of intelligence and computation within technology has created an eruption of potential applications in numerous professional industries. Techniques such as data analysis, cloud computing, machine learning, and others have altered the traditional processes of various disciplines including healthcare, economics, transportation, and politics. Information technology in today's world is beginning to uncover opportunities for experts in these fields that they are not yet aware of. The exposure of specific instances in which these devices are being implemented will assist other specialists in how to successfully utilize these transformative tools with the appropriate amount of discretion, safety, and awareness. Considering the level of diverse uses and practices throughout the globe, the fifth edition of the Encyclopedia of Information Science and Technology series continues the enduring legacy set forth by its predecessors as a premier reference that contributes the most cutting-edge concepts and methodologies to the research community. The Encyclopedia of Information Science and Technology, Fifth Edition is a three-volume set that includes 136 original and previously unpublished research chapters that present multidisciplinary research and expert insights into new methods and processes for understanding modern technological tools and their applications as

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well as emerging theories and ethical controversies surrounding the field of information science.

Highlighting a wide range of topics such as natural language processing, decision support systems, and electronic government, this book offers strategies for implementing smart devices and analytics into various professional disciplines. The techniques discussed in this publication are ideal for IT professionals, developers, computer scientists, practitioners, managers, policymakers, engineers, data analysts, and programmers seeking to understand the latest developments within this field and who are looking to apply new tools and policies in their practice. Additionally, academicians, researchers, and students in fields that include but are not limited to software engineering, cybersecurity, information technology, media and communications, urban planning, computer science, healthcare, economics, environmental science, data management, and political science will benefit from the extensive knowledge compiled within this publication.

Learning Spark

Construct a robust end-to-end solution for analyzing and visualizing streaming data Real-time analytics is the hottest topic in data analyticstoday. In Real-Time Analytics: Techniques to Analyze and Visualize Streaming Data, expert Byron Ellis teaches dataanalysts technologies to build an effective real-time analyticsplatform. This platform can then be used to make sense of theconstantly changing data

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that is beginning to outpace traditional batch-based analysis platforms. The author is among a very few leading experts in the field. He has a prestigious background in research, development, analytics, real-time visualization, and Big Data streaming and is uniquely qualified to help you explore this revolutionary field. Moving from a description of the overall analytic architecture of real-time analytics to using specific tools to obtain targeted results, Real-Time Analytics leverages open source and modern commercial tools to construct robust, efficient systems that can provide real-time analysis in a cost-effective manner. The book includes: A deep discussion of streaming data systems and architectures Instructions for analyzing, storing, and delivering streaming data Tips on aggregating data and working with sets Information on data warehousing options and techniques Real-Time Analytics includes in-depth case studies for website analytics, Big Data, visualizing streaming and mobile data, and mining and visualizing operational data flows. The book's "recipe" layout lets readers quickly learn and implement different techniques. All of the code examples presented in the book, along with their related data sets, are available on the companion website.

Stream Processing with Apache Spark

As data science evolves to become a business necessity, the importance of assembling a strong and innovative data teams grows. In this in-depth report, data scientist DJ Patil explains the skills, perspectives,

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tools and processes that position data science teams for success. Topics include: What it means to be "data driven." The unique roles of data scientists. The four essential qualities of data scientists. Patil's first-hand experience building the LinkedIn data science team.

Kafka Streams - Real-time Stream Processing

A practical guide to help you tackle different real-time data processing and analytics problems using the best tools for each scenario About This Book Learn about the various challenges in real-time data processing and use the right tools to overcome them This book covers popular tools and frameworks such as Spark, Flink, and Apache Storm to solve all your distributed processing problems A practical guide filled with examples, tips, and tricks to help you perform efficient Big Data processing in real-time Who This Book Is For If you are a Java developer who would like to be equipped with all the tools required to devise an end-to-end practical solution on real-time data streaming, then this book is for you. Basic knowledge of real-time processing would be helpful, and knowing the fundamentals of Maven, Shell, and Eclipse would be great. What You Will Learn Get an introduction to the established real-time stack Understand the key integration of all the components Get a thorough understanding of the basic building blocks for real-time solution designing Garnish the search and visualization aspects for your real-time solution Get conceptually and practically acquainted with real-time analytics Be well equipped to apply the

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knowledge and create your own solutions In Detail

With the rise of Big Data, there is an increasing need to process large amounts of data continuously, with a shorter turnaround time. Real-time data processing involves continuous input, processing and output of data, with the condition that the time required for processing is as short as possible. This book covers the majority of the existing and evolving open source technology stack for real-time processing and analytics. You will get to know about all the real-time solution aspects, from the source to the presentation to persistence. Through this practical book, you'll be equipped with a clear understanding of how to solve challenges on your own. We'll cover topics such as how to set up components, basic executions, integrations, advanced use cases, alerts, and monitoring. You'll be exposed to the popular tools used in real-time processing today such as Apache Spark, Apache Flink, and Storm. Finally, you will put your knowledge to practical use by implementing all of the techniques in the form of a practical, real-world use case. By the end of this book, you will have a solid understanding of all the aspects of real-time data processing and analytics, and will know how to deploy the solutions in production environments in the best possible manner.

Style and Approach In this practical guide to real-time analytics, each chapter begins with a basic high-level concept of the topic, followed by a practical, hands-on implementation of each concept, where you can see the working and execution of it. The book is written in a DIY style, with plenty of practical use cases, well-explained code examples, and relevant screenshots and diagrams.

Game Theory, Alive

The software architecture landscape has evolved dramatically over the past decade. Microservices have displaced monoliths. Data and applications are increasingly becoming distributed and decentralised. But composing disparate systems is a hard problem. More recently, software practitioners have been rapidly converging on event-driven architecture as a sustainable way of dealing with complexity — integrating systems without increasing their coupling. In *Effective Kafka*, Emil Koutanov explores the fundamentals of Event-Driven Architecture — using Apache Kafka — the world's most popular and supported open-source event streaming platform. You'll learn:

- The fundamentals of event-driven architecture and event streaming platforms
- The background and rationale behind Apache Kafka, its numerous potential uses and applications
- The architecture and core concepts — the underlying software components, partitioning and parallelism, load-balancing, record ordering and consistency modes
- Installation of Kafka and related tooling — using standalone deployments, clusters, and containerised deployments with Docker
- Using CLI tools to interact with and administer Kafka classes, as well as publishing data and browsing topics
- Using third-party web-based tools for monitoring a cluster and gaining insights into the event streams
- Building stream processing applications in Java 11 using off-the-shelf client libraries
- Patterns and best-practice for organising the application architecture, with emphasis on maintainability and testability of the

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resulting code • The numerous gotchas that lurk in Kafka's client and broker configuration, and how to counter them • Theoretical background on distributed and concurrent computing, exploring factors affecting their liveness and safety • Best-practices for running multi-tenanted clusters across diverse engineering teams, how teams collaborate to build complex systems at scale and equitably share the cluster with the aid of quotas • Operational aspects of running Kafka clusters at scale, performance tuning and methods for optimising network and storage utilisation • All aspects of Kafka security—including network segregation, encryption, certificates, authentication and authorization. The coverage is progressively delivered and carefully aimed at giving you a journey-like experience into becoming proficient with Apache Kafka and Event-Driven Architecture. The goal is to get you designing and building applications. And by the conclusion of this book, you will be a confident practitioner and a Kafka evangelist within your organisation—wielding the knowledge necessary to teach others.

Mastering Hadoop 3

Streaming data is a big deal in big data these days. As more and more businesses seek to tame the massive unbounded data sets that pervade our world, streaming systems have finally reached a level of maturity sufficient for mainstream adoption. With this practical guide, data engineers, data scientists, and developers will learn how to work with streaming data in a conceptual and platform-agnostic way. Expanded

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from Tyler Akidau's popular blog posts "Streaming 101" and "Streaming 102", this book takes you from an introductory level to a nuanced understanding of the what, where, when, and how of processing real-time data streams. You'll also dive deep into watermarks and exactly-once processing with co-authors Slava Chernyak and Reuven Lax. You'll explore: How streaming and batch data processing patterns compare The core principles and concepts behind robust out-of-order data processing How watermarks track progress and completeness in infinite datasets How exactly-once data processing techniques ensure correctness How the concepts of streams and tables form the foundations of both batch and streaming data processing The practical motivations behind a powerful persistent state mechanism, driven by a real-world example How time-varying relations provide a link between stream processing and the world of SQL and relational algebra

Streaming Systems

Before you can build analytics tools to gain quick insights, you first need to know how to process data in real time. With this practical guide, developers familiar with Apache Spark will learn how to put this in-memory framework to use for streaming data. You'll discover how Spark enables you to write streaming jobs in almost the same way you write batch jobs. Authors Gerard Maas and François Garillot help you explore the theoretical underpinnings of Apache Spark. This comprehensive guide features two

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sections that compare and contrast the streaming APIs Spark now supports: the original Spark Streaming library and the newer Structured Streaming API. Learn fundamental stream processing concepts and examine different streaming architectures Explore Structured Streaming through practical examples; learn different aspects of stream processing in detail Create and operate streaming jobs and applications with Spark Streaming; integrate Spark Streaming with other Spark APIs Learn advanced Spark Streaming techniques, including approximation algorithms and machine learning algorithms Compare Apache Spark to other stream processing projects, including Apache Storm, Apache Flink, and Apache Kafka Streams

Fundamentals of Stream Processing

Process large volumes of data in real-time while building high performance and robust data stream processing pipeline using the latest Apache Kafka 2.0 Key Features Solve practical large data and processing challenges with Kafka Tackle data processing challenges like late events, windowing, and watermarking Understand real-time streaming applications processing using Schema registry, Kafka connect, Kafka streams, and KSQL Book Description Apache Kafka is a great open source platform for handling your real-time data pipeline to ensure high-speed filtering and pattern matching on the fly. In this book, you will learn how to use Apache Kafka for efficient processing of distributed applications and will get familiar with solving everyday problems in fast

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data and processing pipelines. This book focuses on programming rather than the configuration management of Kafka clusters or DevOps. It starts off with the installation and setting up the development environment, before quickly moving on to performing fundamental messaging operations such as validation and enrichment. Here you will learn about message composition with pure Kafka API and Kafka Streams. You will look into the transformation of messages in different formats, such as avro, binary, XML, JSON, and AVRO. Next, you will learn how to expose the schemas contained in Kafka with the Schema Registry. You will then learn how to work with all relevant connectors with Kafka Connect. While working with Kafka Streams, you will perform various interesting operations on streams, such as windowing, joins, and aggregations. Finally, through KSQL, you will learn how to retrieve, insert, modify, and delete data streams, and how to manipulate watermarks and windows. What you will learn How to validate data with Kafka Add information to existing data flows Generate new information through message composition Perform data validation and versioning with the Schema Registry How to perform message Serialization and Deserialization How to perform message Serialization and Deserialization Process data streams with Kafka Streams Understand the duality between tables and streams with KSQL Who this book is for This book is for developers who want to quickly master the practical concepts behind Apache Kafka. The audience need not have come across Apache Kafka previously; however, a familiarity of Java or any JVM language will be helpful in understanding the code in this book.

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Kafka: The Definitive Guide

A comprehensive guide to mastering the most advanced Hadoop 3 concepts Key Features Get to grips with the newly introduced features and capabilities of Hadoop 3 Crunch and process data using MapReduce, YARN, and a host of tools within the Hadoop ecosystem Sharpen your Hadoop skills with real-world case studies and code Book Description Apache Hadoop is one of the most popular big data solutions for distributed storage and for processing large chunks of data. With Hadoop 3, Apache promises to provide a high-performance, more fault-tolerant, and highly efficient big data processing platform, with a focus on improved scalability and increased efficiency. With this guide, you'll understand advanced concepts of the Hadoop ecosystem tool. You'll learn how Hadoop works internally, study advanced concepts of different ecosystem tools, discover solutions to real-world use cases, and understand how to secure your cluster. It will then walk you through HDFS, YARN, MapReduce, and Hadoop 3 concepts. You'll be able to address common challenges like using Kafka efficiently, designing low latency, reliable message delivery Kafka systems, and handling high data volumes. As you advance, you'll discover how to address major challenges when building an enterprise-grade messaging system, and how to use different stream processing systems along with Kafka to fulfil your enterprise goals. By the end of this book, you'll have a complete understanding of how components in the Hadoop ecosystem are effectively integrated to

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implement a fast and reliable data pipeline, and you'll be equipped to tackle a range of real-world problems in data pipelines. What you will learn Gain an in-depth understanding of distributed computing using Hadoop 3 Develop enterprise-grade applications using Apache Spark, Flink, and more Build scalable and high-performance Hadoop data pipelines with security, monitoring, and data governance Explore batch data processing patterns and how to model data in Hadoop Master best practices for enterprises using, or planning to use, Hadoop 3 as a data platform Understand security aspects of Hadoop, including authorization and authentication Who this book is for If you want to become a big data professional by mastering the advanced concepts of Hadoop, this book is for you. You'll also find this book useful if you're a Hadoop professional looking to strengthen your knowledge of the Hadoop ecosystem. Fundamental knowledge of the Java programming language and basics of Hadoop is necessary to get started with this book.

Stream Processing with Apache Flink

Design and administer fast, reliable enterprise messaging systems with Apache Kafka About This Book Build efficient real-time streaming applications in Apache Kafka to process data streams of data Master the core Kafka APIs to set up Apache Kafka clusters and start writing message producers and consumers A comprehensive guide to help you get a solid grasp of the Apache Kafka concepts in Apache Kafka with practical examples Who This Book

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Is For If you want to learn how to use Apache Kafka and the different tools in the Kafka ecosystem in the easiest possible manner, this book is for you. Some programming experience with Java is required to get the most out of this book

What You Will Learn

- Learn the basics of Apache Kafka from scratch
- Use the basic building blocks of a streaming application
- Design effective streaming applications with Kafka using Spark, Storm &, and Heron
- Understand the importance of a low-latency, high-throughput, and fault-tolerant messaging system
- Make effective capacity planning while deploying your Kafka Application
- Understand and implement the best security practices

In Detail

Apache Kafka is a popular distributed streaming platform that acts as a messaging queue or an enterprise messaging system. It lets you publish and subscribe to a stream of records, and process them in a fault-tolerant way as they occur. This book is a comprehensive guide to designing and architecting enterprise-grade streaming applications using Apache Kafka and other big data tools. It includes best practices for building such applications, and tackles some common challenges such as how to use Kafka efficiently and handle high data volumes with ease. This book first takes you through understanding the type messaging system and then provides a thorough introduction to Apache Kafka and its internal details. The second part of the book takes you through designing streaming application using various frameworks and tools such as Apache Spark, Apache Storm, and more. Once you grasp the basics, we will take you through more advanced concepts in Apache Kafka such as capacity planning and security. By the end of this book, you

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will have all the information you need to be comfortable with using Apache Kafka, and to design efficient streaming data applications with it. Style and approach A step-by-step, comprehensive guide filled with practical and real-world examples

Apache Kafka 1.0 Cookbook

Building Data Science Teams

Many of the technologies discussed in the book - Spark, Storm, Kafka, Impala, RabbitMQ, etc. - are covered individually in other books. Throughout this book, readers will get a clear picture of how these technologies work individually and together, gain insight on how to choose the correct technologies, and discover how to fuse them together to architect a robust system. Streaming Data introduces the concepts and requirements of streaming and real-time data systems. Readers will develop a foundation to understand the challenges and solutions of building in-the-moment data systems before committing to specific technologies. Using lots of diagrams, this book systematically builds up the blueprint for an in-the-moment system concept by concept. This book focuses on the big ideas of streaming and real time data systems rather than the implementation details. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications.

Data Streams

When in 1986 Yves Kodrato started the European Working Session on Learning at Orsay, France, it could not be foreseen that the conference would grow year by year and become the premier European conference of the field, attracting submissions from all over the world. The first European Conference on Principles of Data Mining and Knowledge Discovery was organized by Henryk Jan Komorowski and Jan Zytkow in 1997 in Trondheim, Norway. Since 2001 the two conferences have been collocated, offering participants from both areas the opportunity to listen to each other's talks. This year, the integration has moved even further. Instead of first splitting the field according to ECML or PKDD topics, we flattened the structure of the field to a single set of topics. For each of the topics, experts were invited to the Program Committee. Submitted papers were gathered into one collection and characterized according to their topics. The reviewers were then asked to bid on all papers, regardless of the conference. This allowed us to allocate papers more precisely. The hierarchical reviewing process as introduced in 2005 was continued. We nominated 30 Area Chairs, each supervising the reviews and discussions of about 17 papers. In addition, 307 reviewers completed the Program Committee. Many thanks to all of them! It was a considerable effort for the reviewers to carefully review the papers, some providing us with additional reviews even at short notice.

Spatio-Temporal Data Streams

The book Kafka Streams - Real-time Stream

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Processing helps you understand the stream processing in general and apply that skill to Kafka streams programming. This book is focusing mainly on the new generation of the Kafka Streams library available in the Apache Kafka 2.x. The primary focus of this book is on Kafka Streams. However, the book also touches on the other Apache Kafka capabilities and concepts that are necessary to grasp the Kafka Streams programming. Who should read this book? Kafka Streams: Real-time Stream Processing is written for software engineers willing to develop a stream processing application using Kafka Streams library. I am also writing this book for data architects and data engineers who are responsible for designing and building the organization's data-centric infrastructure. Another group of people is the managers and architects who do not directly work with Kafka implementation, but they work with the people who implement Kafka Streams at the ground level. What should you already know? This book assumes that the reader is familiar with the basics of Java programming language. The source code and examples in this book are using Java 8, and I will be using Java 8 lambda syntax, so experience with lambda will be helpful. Kafka Streams is a library that runs on Kafka. Having a good fundamental knowledge of Kafka is essential to get the most out of Kafka Streams. I will touch base on the mandatory Kafka concepts for those who are new to Kafka. The book also assumes that you have some familiarity and experience in running and working on the Linux operating system.

Tar Heel Traveler

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Get started with Apache Flink, the open source framework that powers some of the world's largest stream processing applications. With this practical book, you'll explore the fundamental concepts of parallel stream processing and discover how this technology differs from traditional batch data processing. Longtime Apache Flink committers Fabian Hueske and Vasia Kalavri show you how to implement scalable streaming applications with Flink's DataStream API and continuously run and maintain these applications in operational environments. Stream processing is ideal for many use cases, including low-latency ETL, streaming analytics, and real-time dashboards as well as fraud detection, anomaly detection, and alerting. You can process continuous data of any kind, including user interactions, financial transactions, and IoT data, as soon as you generate them. Learn concepts and challenges of distributed stateful stream processing Explore Flink's system architecture, including its event-time processing mode and fault-tolerance model Understand the fundamentals and building blocks of the DataStream API, including its time-based and stateful operators Read data from and write data to external systems with exactly-once consistency Deploy and configure Flink clusters Operate continuously running streaming applications

Azure Storage, Streaming, and Batch Analytics

"This book explores the latest methodologies, modeling, and simulations for coping with the

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generation and management of large-scale data in both scientific and individual applications"--

Kafka Streams in Action

Building scalable and fault-tolerant streaming applications made easy with Spark streaming About This Book Process live data streams more efficiently with better fault recovery using Spark Streaming Implement and deploy real-time log file analysis Learn about integration with Advance Spark Libraries - GraphX, Spark SQL, and MLib. Who This Book Is For This book is intended for big data developers with basic knowledge of Scala but no knowledge of Spark. It will help you grasp the basics of developing real-time applications with Spark and understand efficient programming of core elements and applications. What You Will Learn Install and configure Spark and Spark Streaming to execute applications Explore the architecture and components of Spark and Spark Streaming to use it as a base for other libraries Process distributed log files in real-time to load data from distributed sources Apply transformations on streaming data to use its functions Integrate Apache Spark with the various advance libraries like MLib and GraphX Apply production deployment scenarios to deploy your application In Detail Using practical examples with easy-to-follow steps, this book will teach you how to build real-time applications with Spark Streaming. Starting with installing and setting the required environment, you will write and execute your first program for Spark Streaming. This will be followed by exploring the architecture and

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components of Spark Streaming along with an overview of libraries/functions exposed by Spark. Next you will be taught about various client APIs for coding in Spark by using the use-case of distributed log file processing. You will then apply various functions to transform and enrich streaming data. Next you will learn how to cache and persist datasets. Moving on you will integrate Apache Spark with various other libraries/components of Spark like Mlib, GraphX, and Spark SQL. Finally, you will learn about deploying your application and cover the different scenarios ranging from standalone mode to distributed mode using Mesos, Yarn, and private data centers or on cloud infrastructure. Style and approach A Step-by-Step approach to learn Spark Streaming in a structured manner, with detailed explanation of basic and advance features in an easy-to-follow Style. Each topic is explained sequentially and supported with real world examples and executable code snippets that appeal to the needs of readers with the wide range of experiences.

Effective Kafka

A comprehensive guide to mastering the most advanced Hadoop 3 concepts Key Features Get to grips with the newly introduced features and capabilities of Hadoop 3 Crunch and process data using MapReduce, YARN, and a host of tools within the Hadoop ecosystem Sharpen your Hadoop skills with real-world case studies and code Book Description Apache Hadoop is one of the most popular big data solutions for distributed storage and

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for processing large chunks of data. With Hadoop 3, Apache promises to provide a high-performance, more fault-tolerant, and highly efficient big data processing platform, with a focus on improved scalability and increased efficiency. With this guide, you'll understand advanced concepts of the Hadoop ecosystem tool. You'll learn how Hadoop works internally, study advanced concepts of different ecosystem tools, discover solutions to real-world use cases, and understand how to secure your cluster. It will then walk you through HDFS, YARN, MapReduce, and Hadoop 3 concepts. You'll be able to address common challenges like using Kafka efficiently, designing low latency, reliable message delivery Kafka systems, and handling high data volumes. As you advance, you'll discover how to address major challenges when building an enterprise-grade messaging system, and how to use different stream processing systems along with Kafka to fulfil your enterprise goals. By the end of this book, you'll have a complete understanding of how components in the Hadoop ecosystem are effectively integrated to implement a fast and reliable data pipeline, and you'll be equipped to tackle a range of real-world problems in data pipelines. What you will learn Gain an in-depth understanding of distributed computing using Hadoop 3 Develop enterprise-grade applications using Apache Spark, Flink, and more Build scalable and high-performance Hadoop data pipelines with security, monitoring, and data governance Explore batch data processing patterns and how to model data in Hadoop Master best practices for enterprises using, or planning to use, Hadoop 3 as a data platform Understand security aspects of Hadoop, including

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authorization and authentication Who this book is for If you want to become a big data professional by mastering the advanced concepts of Hadoop, this book is for you. You'll also find this book useful if you're a Hadoop professional looking to strengthen your knowledge of the Hadoop ecosystem. Fundamental knowledge of the Java programming language and basics of Hadoop is necessary to get started with this book.

Real-Time Analytics

This book is for readers who want to know more about Apache Kafka at a hands-on level; the key audience is those with software development experience but no prior exposure to Apache Kafka or similar technologies. It is also useful for enterprise application developers and big data enthusiasts who have worked with other publisher-subscriber-based systems and want to explore Apache Kafka as a futuristic solution.

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