Apache Spark Tutorial Tutorialspoint

Build data-intensive applications locally and deploy at scale using the combined powers of Python and Spark 2.0 About This Book Learn why and how you can efficiently use Python to process data and build machine learning models in Apache Spark 2.0 Develop and deploy efficient, scalable real-time Spark solutions Take your understanding of using Spark with Python to the next level with this jump start guide Who This Book Is For If you are a Python developer who wants to learn about the Apache Spark 2.0 ecosystem, this book is for you. A firm understanding of Python is expected to get the best out of the book. Familiarity with Spark would be useful, but is not mandatory. What You Will Learn Learn about Apache Spark and the Spark 2.0 architecture Build and interact with Spark DataFrames using Spark SQL Learn how to solve graph and deep learning problems using GraphFrames and TensorFrames respectively Read, transform, and understand data and use it to train machine learning models Build machine learning models with MLlib and ML Learn how to submit your applications programmatically using spark-submit Deploy locally built applications to a cluster In Detail Apache Spark is an open source framework for efficient cluster computing with a strong interface for data parallelism and fault tolerance. This book will show you how to leverage the power of Python and put it to use in the Spark ecosystem. You will start by getting a firm understanding of the Spark 2.0 architecture and how to set up a Python environment for Spark. You will

get familiar with the modules available in PySpark. You will learn how to abstract data with RDDs and DataFrames and understand the streaming capabilities of PySpark. Also, you will get a thorough overview of machine learning capabilities of PySpark using ML and MLlib, graph processing using GraphFrames, and polyglot persistence using Blaze. Finally, you will learn how to deploy your applications to the cloud using the spark-submit command. By the end of this book, you will have established a firm understanding of the Spark Python API and how it can be used to build data-intensive applications. Style and approach This book takes a very comprehensive, step-by-step approach so you understand how the Spark ecosystem can be used with Python to develop efficient, scalable solutions. Every chapter is standalone and written in a very easy-to-understand manner, with a focus on both the hows and the whys of each concept.

Learn the right cutting-edge skills and knowledge to leverage Spark Streaming to implement a wide array of real-time, streaming applications. This book walks you through end-to-end real-time application development using real-world applications, data, and code. Taking an application-first approach, each chapter introduces use cases from a specific industry and uses publicly available datasets from that domain to unravel the intricacies of production-grade design and implementation. The domains covered in Pro Spark Streaming include social media, the sharing economy, finance, online advertising, telecommunication, and IoT. In the last few years, Spark has become synonymous with big

data processing. DStreams enhance the underlying Spark processing engine to support streaming analysis with a novel micro-batch processing model. Pro Spark Streaming by Zubair Nabi will enable you to become a specialist of latency sensitive applications by leveraging the key features of DStreams, micro-batch processing, and functional programming. To this end, the book includes ready-to-deploy examples and actual code. Pro Spark Streaming will act as the bible of Spark Streaming. What You'll Learn Discover Spark Streaming application development and best practices Work with the low-level details of discretized streams Optimize production-grade deployments of Spark Streaming via configuration recipes and instrumentation using Graphite, collectd, and Nagios Ingest data from disparate sources including MQTT, Flume, Kafka, Twitter, and a custom HTTP receiver Integrate and couple with HBase, Cassandra, and Redis Take advantage of design patterns for side-effects and maintaining state across the Spark Streaming micro-batch model Implement real-time and scalable ETL using data frames, SparkSQL, Hive, and SparkR Use streaming machine learning, predictive analytics, and recommendations Mesh batch processing with stream processing via the Lambda architecture Who This Book Is For Data scientists, big data experts, BI analysts, and data architects.

Production-targeted Spark guidance with real-world use cases Spark: Big Data Cluster Computing in Production goes beyond general Spark overviews to provide targeted guidance toward using lightning-fast big-data clustering in

production. Written by an expert team well-known in the big data community, this book walks you through the challenges in moving from proof-of-concept or demo Spark applications to live Spark in production. Real use cases provide deep insight into common problems, limitations, challenges, and opportunities, while expert tips and tricks help you get the most out of Spark performance. Coverage includes Spark SQL, Tachyon, Kerberos, ML Lib, YARN, and Mesos, with clear, actionable guidance on resource scheduling, db connectors, streaming, security, and much more. Spark has become the tool of choice for many Big Data problems, with more active contributors than any other Apache Software project. General introductory books abound, but this book is the first to provide deep insight and real-world advice on using Spark in production. Specific guidance, expert tips, and invaluable foresight make this guide an incredibly useful resource for real production settings. Review Spark hardware requirements and estimate cluster size Gain insight from real-world production use cases Tighten security, schedule resources, and fine-tune performance Overcome common problems encountered using Spark in production Spark works with other big data tools including MapReduce and Hadoop, and uses languages you already know like Java, Scala, Python, and R. Lightning speed makes Spark too good to pass up, but understanding limitations and challenges in advance goes a long way toward easing actual production implementation. Spark: Big Data Cluster Computing in Production tells you everything you need to know, with real-world production

insight and expert guidance, tips, and tricks.

Save time and trouble building object-oriented, functional, and concurrent applications with Scala. The latest edition of this comprehensive cookbook is packed with more than 250 ready-to-use recipes and 1,000 code examples to help you solve the most common problems when working with Scala 3 and its popular libraries. Scala changes the way you think about programming--and that's a good thing. Whether you're working on web, big data, or distributed applications, this cookbook provides recipes based on real-world scenarios for both experienced Scala developers and programmers just learning to use this JVM language. Author Alvin Alexander includes practical solutions from his experience using Scala for component-based, highly scalable applications that support concurrency and distribution. Recipes cover: Strings, numbers, and control structures Classes, methods, objects, traits, packaging, and imports Functional programming techniques Scala's wealth of collections classes and methods Building and publishing Scala applications with sbt Actors and concurrency with Scala Future and Akka Typed Popular libraries, including Spark, Scala.js, Play Framework, and GraalVM Types, such as variance, givens, intersections, and unions Best practices, including pattern matching, modules, and functional error handling

Summary Spark GraphX in Action starts out with an overview of Apache Spark and the GraphX graph processing API. This example-based tutorial then teaches you how to configure GraphX and how to use it interactively. Along the

way, you'll collect practical techniques for enhancing applications and applying machine learning algorithms to graph data. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology GraphX is a powerful graph processing API for the Apache Spark analytics engine that lets you draw insights from large datasets. GraphX gives you unprecedented speed and capacity for running massively parallel and machine learning algorithms. About the Book Spark GraphX in Action begins with the big picture of what graphs can be used for. This example-based tutorial teaches you how to use GraphX interactively. You'll start with a crystal-clear introduction to building big data graphs from regular data, and then explore the problems and possibilities of implementing graph algorithms and architecting graph processing pipelines. Along the way, you'll collect practical techniques for enhancing applications and applying machine learning algorithms to graph data. What's Inside Understanding graph technology Using the GraphX API Developing algorithms for big graphs Machine learning with graphs Graph visualization About the Reader Readers should be comfortable writing code. Experience with Apache Spark and Scala is not required. About the Authors Michael Malak has worked on Spark applications for Fortune 500 companies since early 2013. Robin East has worked as a consultant to large organizations for over 15 years and is a data scientist at Worldpay. Table of Contents PART 1 SPARK AND GRAPHS Two important technologies: Spark and graphs GraphX quick start Some

fundamentals PART 2 CONNECTING VERTICES GraphX Basics Built-in algorithms Other useful graph algorithms Machine learning PART 3 OVER THE ARC The missing algorithms Performance and monitoring Other languages and tools

Using the Scala API

Scala Cookbook

A Practitioner's Guide to Using Spark for Large Scale Data Analysis

Spark Cookbook

Data Analytics with Hadoop

Learning Apache Spark 2

Build, process and analyze large-scale graph data effectively with Spark About This Book Find solutions for every stage of data processing from loading and transforming graph data to Improve the scalability of your graphs with a variety of real-world applications with complete Scala code. A concise guide to processing large-scale networks with Apache Spark. Who This Book Is For This book is for data scientists and big data developers who want to learn the processing and analyzing graph datasets at scale. Basic programming experience with Scala is assumed. Basic knowledge of Spark is assumed. What You Will Learn Write, build and deploy Spark applications with the Scala Build Tool. Build and analyze large-scale network datasets Analyze and transform graphs using RDD and graph-specific operations Implement new custom graph operations tailored to specific needs. Develop iterative and efficient graph algorithms using message aggregation and Pregel

abstraction Extract subgraphs and use it to discover common clusters Analyze graph data and solve various data science problems using real-world datasets. In Detail Apache Spark is the next standard of open-source cluster-computing engine for processing big data. Many practical computing problems concern large graphs, like the Web graph and various social networks. The scale of these graphs - in some cases billions of vertices, trillions of edges - poses challenges to their efficient processing. Apache Spark GraphX API combines the advantages of both data-parallel and graph-parallel systems by efficiently expressing graph computation within the Spark data-parallel framework. This book will teach the user to do graphical programming in Apache Spark, apart from an explanation of the entire process of graphical data analysis. You will journey through the creation of graphs, its uses, its exploration and analysis and finally will also cover the conversion of graph elements into graph structures. This book begins with an introduction of the Spark system, its libraries and the Scala Build Tool. Using a hands-on approach, this book will quickly teach you how to install and leverage Spark interactively on the command line and in a standalone Scala program. Then, it presents all the methods for building Spark graphs using illustrative network datasets. Next, it will walk you through the process of exploring, visualizing and analyzing different network characteristics. This book will also teach you how to transform raw datasets into a usable form. In addition, you will learn powerful operations that can be used to transform graph elements and graph structures. Furthermore, this book also teaches how to create custom

graph operations that are tailored for specific needs with efficiency in mind. The later chapters of this book cover more advanced topics such as clustering graphs, implementing graph-parallel iterative algorithms and learning methods from graph data. Style and approach A step-by-step guide that will walk you through the key ideas and techniques for processing big graph data at scale, with practical examples that will ensure an overall understanding of the concepts of Spark.

In this Study Guide for the Developer Certification for Apache Spark training course, expert author Olivier Girardot will teach you everything you need to know to prepare for and pass the Developer Certification for Apache Spark. This course is designed for users that are already familiar with Python, Java, and Scala. You will start by learning about Apache Spark best practices, including transformations, actions, and joins. From there, Olivier will teach you about closure serialization, shared variables and performance, and Spark SQL. This video tutorial also covers Spark MLLib, Spark GraphX, and Spark streaming. Finally, you will learn about deployment and infrastructure. Once you have completed this computer based training course, you will have learned the knowledge necessary to prepare for and pass the Spark Certification Exam. Working files are included, allowing you to follow along with the author throughout the lessons.

Get command of your organizational Big Data using the power of data science and analytics Key Features A perfect companion to boost your Big Data storing, processing, analyzing skills to help you take informed business decisions Work with the best tools such as Apache Hadoop,

R, Python, and Spark for NoSQL platforms to perform massive online analyses Get expert tips on statistical inference, machine learning, mathematical modeling, and data visualization for Big Data Book Description Big Data analytics relates to the strategies used by organizations to collect, organize and analyze large amounts of data to uncover valuable business insights that otherwise cannot be analyzed through traditional systems. Crafting an enterprise-scale cost-efficient Big Data and machine learning solution to uncover insights and value from your organization's data is a challenge. Today, with hundreds of new Big Data systems, machine learning packages and BI Tools, selecting the right combination of technologies is an even greater challenge. This book will help you do that. With the help of this guide, you will be able to bridge the gap between the theoretical world of technology with the practical ground reality of building corporate Big Data and data science platforms. You will get hands-on exposure to Hadoop and Spark, build machine learning dashboards using R and R Shiny, create web-based apps using NoSQL databases such as MongoDB and even learn how to write R code for neural networks. By the end of the book, you will have a very clear and concrete understanding of what Big Data analytics means, how it drives revenues for organizations, and how you can develop your own Big Data analytics solution using different tools and methods articulated in this book. What you will learn - Get a 360-degree view into the world of Big Data, data science and machine learning - Broad range of technical and business Big Data analytics topics that caters to the interests of the technical experts as well as corporate

IT executives - Get hands-on experience with industry-standard Big Data and machine learning tools such as Hadoop, Spark, MongoDB, KDB+ and R - Create production-grade machine learning BI Dashboards using R and R Shiny with step-by-step instructions - Learn how to combine open-source Big Data, machine learning and BI Tools to create low-cost business analytics applications - Understand corporate strategies for successful Big Data and data science projects - Go beyond general-purpose analytics to develop cutting-edge Big Data applications using emerging technologies Who this book is for The book is intended for existing and aspiring Big Data professionals who wish to become the go-to person in their organization when it comes to Big Data architecture, analytics, and governance. While no prior knowledge of Big Data or related technologies is assumed, it will be helpful to have some programming experience.

Discover how graph algorithms can help you leverage the relationships within your data to develop more intelligent solutions and enhance your machine learning models. You'll learn how graph analytics are uniquely suited to unfold complex structures and reveal difficult-to-find patterns lurking in your data. Whether you are trying to build dynamic network models or forecast real-world behavior, this book illustrates how graph algorithms deliver value—from finding vulnerabilities and bottlenecks to detecting communities and improving machine learning predictions. This practical book walks you through hands-on examples of how to use graph algorithms in Apache Spark and Neo4j—two of the most common choices for graph analytics. Also included: sample code and tips for

over 20 practical graph algorithms that cover optimal pathfinding, importance through centrality, and community detection. Learn how graph analytics vary from conventional statistical analysis Understand how classic graph algorithms work, and how they are applied Get guidance on which algorithms to use for different types of questions Explore algorithm examples with working code and sample datasets from Spark and Neo4j See how connected feature extraction can increase machine learning accuracy and precision Walk through creating an ML workflow for link prediction combining Neo4j and Spark

"This video is a comprehensive tutorial to help you learn all the aspects of real-time analytics with Apache Spark, one of the trending big data processing frameworks on the market today. We will show you how to leverage the various components of the Spark framework to efficiently process, analyze, and visualize data. You will learn how to use SparkSQL and DataFrames API for structured data processing. You will also see how to build efficient machine learning models using the Spark MLlib module. We'll show you how to analyze and process graphs and streams of data in real-time using the GraphX and Spark Streaming modules. Finally, you'll discover how to create an effective Spark dashboard to visualize the data analysis, and gain insights to make informed business decisions. By the end of this video, you will be well-versed with all the aspects of real-time analytics and implementing them in Spark."--Resource description page.

Learning Spark SQL

Big Data Processing with Apache Spark

The Complete Guide to Large-Scale Analysis and Modeling

High Performance Spark

Hands-on techniques to implement enterprise analytics and machine learning using Hadoop, Spark, NoSQL and R

Big Data SMACK

If you're like most R users, you have deep knowledge and love for statistics. But as your organization continues to collect huge amounts of data, adding tools such as Apache Spark makes a lot of sense. With this practical book, data scientists and professionals working with large-scale data applications will learn how to use Spark from R to tackle big data and big compute problems. Authors Javier Luraschi, Kevin Kuo, and Edgar Ruiz show you how to use R with Spark to solve different data analysis problems. This book covers relevant data science topics, cluster computing, and issues that should interest even the most advanced users. Analyze, explore, transform, and visualize data in Apache Spark with R Create statistical models to extract information and predict outcomes; automate the process in production-ready workflows Perform analysis and modeling across many machines using distributed computing techniques Use large-scale data from multiple sources and different formats with ease from within Spark Learn about alternative modeling frameworks for graph processing, geospatial analysis, and genomics at scale Dive into advanced

topics including custom transformations, real-time data processing, and creating custom Spark extensions

Learn how to use, deploy, and maintain Apache Spark with this comprehensive guide, written by the creators of the open-source cluster-computing framework. With an emphasis on improvements and new features in Spark 2.0, authors Bill Chambers and Matei Zaharia break down Spark topics into distinct sections, each with unique goals. You'll explore the basic operations and common functions of Spark's structured APIs, as well as Structured Streaming, a new high-level API for building end-to-end streaming applications. Developers and system administrators will learn the fundamentals of monitoring, tuning, and debugging Spark, and explore machine learning techniques and scenarios for employing MLlib, Spark's scalable machine-learning library. Get a gentle overview of big data and Spark Learn about DataFrames, SQL, and Datasets—Spark's core APIs—through worked examples Dive into Spark's low-level APIs, RDDs, and execution of SQL and DataFrames Understand how Spark runs on a cluster Debug, monitor, and tune Spark clusters and applications Learn the power of Structured Streaming, Spark's stream-processing engine Learn how you can apply MLlib to a variety of problems, including classification or recommendation

Apache Spark is amazing when everything clicks. But if you haven't seen the

performance improvements you expected, or still don't feel confident enough to use Spark in production, this practical book is for you. Authors Holden Karau and Rachel Warren demonstrate performance optimizations to help your Spark queries run faster and handle larger data sizes, while using fewer resources. Ideal for software engineers, data engineers, developers, and system administrators working with large-scale data applications, this book describes techniques that can reduce data infrastructure costs and developer hours. Not only will you gain a more comprehensive understanding of Spark, you'll also learn how to make it sing. With this book, you'll explore: How Spark SQL's new interfaces improve performance over SQL's RDD data structure The choice between data joins in Core Spark and Spark SQL Techniques for getting the most out of standard RDD transformations How to work around performance issues in Spark's key/value pair paradigm Writing high-performance Spark code without Scala or the JVM How to test for functionality and performance when applying suggested improvements Using Spark MLlib and Spark ML machine learning libraries Spark's Streaming components and external community packages

Analyze vast amounts of data in record time using Apache Spark with Databricks in the Cloud. Learn the fundamentals, and more, of running analytics on large clusters in Azure and AWS, using Apache Spark with Databricks

on top. Discover how to squeeze the most value out of your data at a mere fraction of what classical analytics solutions cost, while at the same time getting the results you need, incrementally faster. This book explains how the confluence of these pivotal technologies gives you enormous power, and cheaply, when it comes to huge datasets. You will begin by learning how cloud infrastructure makes it possible to scale your code to large amounts of processing units, without having to pay for the machinery in advance. From there you will learn how Apache Spark, an open source framework, can enable all those CPUs for data analytics use. Finally, you will see how services such as Databricks provide the power of Apache Spark, without you having to know anything about configuring hardware or software. By removing the need for expensive experts and hardware, your resources can instead be allocated to actually finding business value in the data. This book guides you through some advanced topics such as analytics in the cloud, data lakes, data ingestion, architecture, machine learning, and tools, including Apache Spark, Apache Hadoop, Apache Hive, Python, and SQL. Valuable exercises help reinforce what you have learned. What You Will Learn Discover the value of big data analytics that leverage the power of the cloudGet started with Databricks using SQL and Python in either Microsoft Azure or AWSUnderstand the

underlying technology, and how the cloud and Apache Spark fit into the bigger picture See how these tools are used in the real world Run basic analytics, including machine learning, on billions of rows at a fraction of a cost or free Who This Book Is For Data engineers, data scientists, and cloud architects who want or need to run advanced analytics in the cloud. It is assumed that the reader has data experience, but perhaps minimal exposure to Apache Spark and Azure Databricks. The book is also recommended for people who want to get started in the analytics field, as it provides a strong foundation.

Create scalable machine learning applications to power a modern data-driven business using Spark 2.x About This Book Get to the grips with the latest version of Apache Spark Utilize Spark's machine learning library to implement predictive analytics Leverage Spark's powerful tools to load, analyze, clean, and transform your data Who This Book Is For If you have a basic knowledge of machine learning and want to implement various machine-learning concepts in the context of Spark ML, this book is for you. You should be well versed with the Scala and Python languages. What You Will Learn Get hands-on with the latest version of Spark ML Create your first Spark program with Scala and Python Set up and configure a development environment for Spark on your own computer, as well as on Amazon EC2 Access public

machine learning datasets and use Spark to load, process, clean, and transform data Use Spark's machine learning library to implement programs by utilizing well-known machine learning models Deal with large-scale text data, including feature extraction and using text data as input to your machine learning models Write Spark functions to evaluate the performance of your machine learning models In Detail This book will teach you about popular machine learning algorithms and their implementation. You will learn how various machine learning concepts are implemented in the context of Spark ML. You will start by installing Spark in a single and multinode cluster. Next you'll see how to execute Scala and Python based programs for Spark ML. Then we will take a few datasets and go deeper into clustering, classification, and regression. Toward the end, we will also cover text processing using Spark ML. Once you have learned the concepts, they can be applied to implement algorithms in either green-field implementations or to migrate existing systems to this new platform. You can migrate from Mahout or Scikit to use Spark ML. By the end of this book, you will acquire the skills to leverage Spark's features to create your own scalable machine learning applications and power a modern data-driven business. Style and approach This practical tutorial with real-world use cases enables you to develop your own machine learning systems with Spark. The examples

will help you combine various techniques and models into an intelligent machine learning system.

R and Data Mining

Big Data Cluster Computing in Production

Beginning Apache Spark Using Azure Databricks

Apache Spark Fundamentals

Unleashing Large Cluster Analytics in the Cloud

Apache Spark Graph Processing

Big Data Analytics with Spark is a step-by-step guide for learning Spark, which is an open-source fast and general-purpose cluster computing framework for large-scale data analysis. You will learn how to use Spark for different types of big data analytics projects, including batch, interactive, graph, and stream data analysis as well as machine learning. In addition, this book will help you become a much sought-after Spark expert. Spark is one of the hottest Big Data technologies. The amount of data generated today by devices, applications and users is exploding. Therefore, there is a critical need for tools that can analyze large-scale data and unlock value from it. Spark is a powerful technology that meets that need. You can, for example, use Spark to perform low latency computations through the use of efficient caching and iterative algorithms; leverage the features of its shell for easy and interactive Data analysis; employ its fast batch processing and low latency features to process your real time data streams and so on. As a result, adoption of Spark is rapidly

growing and is replacing Hadoop MapReduce as the technology of choice for big data analytics. This book provides an introduction to Spark and related big-data technologies. It covers Spark core and its add-on libraries, including Spark SQL, Spark Streaming, GraphX, and MLlib. Big Data Analytics with Spark is therefore written for busy professionals who prefer learning a new technology from a consolidated source instead of spending countless hours on the Internet trying to pick bits and pieces from different sources. The book also provides a chapter on Scala, the hottest functional programming language, and the program that underlies Spark. You ' ll learn the basics of functional programming in Scala, so that you can write Spark applications in it. What's more, Big Data Analytics with Spark provides an introduction to other big data technologies that are commonly used along with Spark, like Hive, Avro, Kafka and so on. So the book is self-sufficient; all the technologies that you need to know to use Spark are covered. The only thing that you are expected to know is programming in any language. There is a critical shortage of people with big data expertise, so companies are willing to pay top dollar for people with skills in areas like Spark and Scala. So reading this book and absorbing its principles will provide a boost—possibly a big boost—to your career.

Develop applications for the big data landscape with Spark and Hadoop. This book also explains

the role of Spark in developing scalable machine learning and analytics applications with Cloud technologies. Beginning Apache Spark 2 gives you an introduction to Apache Spark and shows you how to work with it. Along the way, you ' ll discover resilient distributed datasets (RDDs); use Spark SQL for structured data; and learn stream processing and build real-time applications with Spark Structured Streaming. Furthermore, you ' ll learn the fundamentals of Spark ML for machine learning and much more. After you read this book, you will have the fundamentals to become proficient in using Apache Spark and know when and how to apply it to your big data applications. What You Will Learn Understand Spark unified data processing platform How to run Spark in Spark Shell or Databricks Use and manipulate RDDs Deal with structured data using Spark SQL through its operations and advanced functions Build real-time applications using Spark Structured Streaming Develop intelligent applications with the Spark Machine Learning library Who This Book Is For Programmers and developers active in big data, Hadoop, and Java but who are new to the Apache Spark platform.

R and Data Mining introduces researchers, post-graduate students, and analysts to data mining using R, a free software environment for statistical computing and graphics. The book provides practical methods for using R in applications from academia to industry to extract knowledge from

vast amounts of data. Readers will find this book a valuable guide to the use of R in tasks such as classification and prediction, clustering, outlier detection, association rules, sequence analysis, text mining, social network analysis, sentiment analysis, and more. Data mining techniques are growing in popularity in a broad range of areas, from banking to insurance, retail, telecom, medicine, research, and government. This book focuses on the modeling phase of the data mining process, also addressing data exploration and model evaluation. With three in-depth case studies, a quick reference guide, bibliography, and links to a wealth of online resources, R and Data Mining is a valuable, practical guide to a powerful method of analysis. Presents an introduction into using R for data mining applications, covering most popular data mining techniques Provides code examples and data so that readers can easily learn the techniques Features case studies in real-world applications to help readers apply the techniques in their work

Apache Spark is a fast, scalable, and flexible open source distributed processing engine for big data systems and is one of the most active open source big data projects to date. In just 24 lessons of one hour or less, Sams Teach Yourself Apache Spark in 24 Hours helps you build practical Big Data solutions that leverage Spark ' s amazing speed, scalability, simplicity, and versatility. This book ' s straightforward, step-by-step approach shows you

how to deploy, program, optimize, manage, integrate, and extend Spark – now, and for years to come. You ' ll discover how to create powerful solutions encompassing cloud computing, real-time stream processing, machine learning, and more. Every lesson builds on what you ' ve already learned, giving you a rock-solid foundation for real-world success. Whether you are a data analyst, data engineer, data scientist, or data steward, learning Spark will help you to advance your career or embark on a new career in the booming area of Big Data. Learn how to • Discover what Apache Spark does and how it fits into the Big Data landscape • Deploy and run Spark locally or in the cloud • Interact with Spark from the shell • Make the most of the Spark Cluster Architecture • Develop Spark applications with Scala and functional Python • Program with the Spark API, including transformations and actions • Apply practical data engineering/analysis approaches designed for Spark • Use Resilient Distributed Datasets (RDDs) for caching, persistence, and output • Optimize Spark solution performance • Use Spark with SQL (via Spark SQL) and with NoSQL (via Cassandra) • Leverage cutting-edge functional programming techniques • Extend Spark with streaming, R, and Sparkling Water • Start building Spark-based machine learning and graph-processing applications • Explore advanced messaging technologies, including Kafka • Preview and prepare for Spark ' s next generation

of innovations Instructions walk you through common questions, issues, and tasks; Q-and-As, Quizzes, and Exercises build and test your knowledge; "Did You Know?" tips offer insider advice and shortcuts; and "Watch Out!" alerts help you avoid pitfalls. By the time you're finished, you'll be comfortable using Apache Spark to solve a wide spectrum of Big Data problems.

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

Mastering Spark with R

Spark: The Definitive Guide

Covers Apache Spark 3 with Examples in Java, Python, and Scala

PySpark Cookbook

The Zen of Real-Time Analytics Using Apache Spark

Learning Spark

Combine the power of Apache Spark and Python to build effective big data applications Key Features Perform effective data processing, machine learning, and analytics using PySpark Overcome challenges in developing and deploying Spark solutions using Python Explore recipes for efficiently combining Python and Apache Spark to process data Book Description Apache Spark is an open source framework for efficient cluster computing with a strong interface for data parallelism and fault tolerance. The PySpark Cookbook presents effective and time-saving recipes for leveraging the power of Python and putting it to use in the Spark ecosystem. You'll start by learning the Apache Spark architecture

and how to set up a Python environment for Spark. You'll then get familiar with the modules available in PySpark and start using them effortlessly. In addition to this, you'll discover how to abstract data with RDDs and DataFrames, and understand the streaming capabilities of PySpark. You'll then move on to using ML and MLlib in order to solve any problems related to the machine learning capabilities of PySpark and use GraphFrames to solve graph-processing problems. Finally, you will explore how to deploy your applications to the cloud using the spark-submit command. By the end of this book, you will be able to use the Python API for Apache Spark to solve any problems associated with building data-intensive applications. What you will learn Configure a local instance of PySpark in a virtual environment Install and configure Jupyter in local and multi-node environments Create DataFrames from JSON and a dictionary using pyspark.sql Explore regression and clustering models available in the ML module Use DataFrames to transform data used for modeling Connect to PubNub and perform aggregations on

streams Who this book is for The PySpark Cookbook is for you if you are a Python developer looking for hands-on recipes for using the Apache Spark 2.x ecosystem in the best possible way. A thorough understanding of Python (and some familiarity with Spark) will help you get the best out of the book.
Learn how to integrate full-stack open source big data architecture and to choose the correct technology—Scala/Spark, Mesos, Akka, Cassandra, and Kafka—in every layer. Big data architecture is becoming a requirement for many different enterprises. So far, however, the focus has largely been on collecting, aggregating, and crunching large data sets in a timely manner. In many cases now, organizations need more than one paradigm to perform efficient analyses. Big Data SMACK explains each of the full-stack technologies and, more importantly, how to best integrate them. It provides detailed coverage of the practical benefits of these technologies and incorporates real-world examples in every situation. This book focuses on the problems and scenarios solved by the

architecture, as well as the solutions provided by every technology. It covers the six main concepts of big data architecture and how integrate, replace, and reinforce every layer: The language: Scala The engine: Spark (SQL, MLib, Streaming, GraphX) The container: Mesos, Docker The view: Akka The storage: Cassandra The message broker: Kafka What You Will Learn: Make big data architecture without using complex Greek letter architectures Build a cheap but effective cluster infrastructure Make queries, reports, and graphs that business demands Manage and exploit unstructured and No-SQL data sources Use tools to monitor the performance of your architecture Integrate all technologies and decide which ones replace and which ones reinforce Who This Book Is For: Developers, data architects, and data scientists looking to integrate the most successful big data open stack architecture and to choose the correct technology in every layer

If you want to build an enterprise-quality application that uses natural language text but aren't sure where to begin or what tools to use, this practical guide

will help get you started. Alex Thomas, principal data scientist at Wisecube, shows software engineers and data scientists how to build scalable natural language processing (NLP) applications using deep learning and the Apache Spark NLP library. Through concrete examples, practical and theoretical explanations, and hands-on exercises for using NLP on the Spark processing framework, this book teaches you everything from basic linguistics and writing systems to sentiment analysis and search engines. You'll also explore special concerns for developing text-based applications, such as performance. In four sections, you'll learn NLP basics and building blocks before diving into application and system building: Basics: Understand the fundamentals of natural language processing, NLP on Apache Stark, and deep learning Building blocks: Learn techniques for building NLP applications—including tokenization, sentence segmentation, and named-entity recognition—and discover how and why they work Applications: Explore the design, development, and experimentation process for building

your own NLP applications Building NLP systems: Consider options for productionizing and deploying NLP models, including which human languages to support
Combine advanced analytics including Machine Learning, Deep Learning Neural Networks and Natural Language Processing with modern scalable technologies including Apache Spark to derive actionable insights from Big Data in real-time Key FeaturesMake a hands-on start in the fields of Big Data, Distributed Technologies and Machine LearningLearn how to design, develop and interpret the results of common Machine Learning algorithmsUncover hidden patterns in your data in order to derive real actionable insights and business valueBook Description Every person and every organization in the world manages data, whether they realize it or not. Data is used to describe the world around us and can be used for almost any purpose, from analyzing consumer habits to fighting disease and serious organized crime. Ultimately, we manage data in order to derive value from it, and many organizations around

the world have traditionally invested in technology to help process their data faster and more efficiently. But we now live in an interconnected world driven by mass data creation and consumption where data is no longer rows and columns restricted to a spreadsheet, but an organic and evolving asset in its own right. With this realization comes major challenges for organizations: how do we manage the sheer size of data being created every second (think not only spreadsheets and databases, but also social media posts, images, videos, music, blogs and so on)? And once we can manage all of this data, how do we derive real value from it? The focus of Machine Learning with Apache Spark is to help us answer these questions in a hands-on manner. We introduce the latest scalable technologies to help us manage and process big data. We then introduce advanced analytical algorithms applied to real-world use cases in order to uncover patterns, derive actionable insights, and learn from this big data. What you will learnUnderstand how Spark fits in the context of the big data ecosystemUnderstand how to deploy and

configure a local development environment using Apache SparkUnderstand how to design supervised and unsupervised learning modelsBuild models to perform NLP, deep learning, and cognitive services using Spark ML librariesDesign real-time machine learning pipelines in Apache SparkBecome familiar with advanced techniques for processing a large volume of data by applying machine learning algorithmsWho this book is for This book is aimed at Business Analysts, Data Analysts and Data Scientists who wish to make a hands-on start in order to take advantage of modern Big Data technologies combined with Advanced Analytics.

Summary Spark in Action teaches you the theory and skills you need to effectively handle batch and streaming data using Spark. Fully updated for Spark 2.0. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Big data systems distribute datasets across clusters of machines, making it a challenge to efficiently query, stream,

and interpret them. Spark can help. It is a processing system designed specifically for distributed data. It provides easy-to-use interfaces, along with the performance you need for production-quality analytics and machine learning. Spark 2 also adds improved programming APIs, better performance, and countless other upgrades. About the Book Spark in Action teaches you the theory and skills you need to effectively handle batch and streaming data using Spark. You'll get comfortable with the Spark CLI as you work through a few introductory examples. Then, you'll start programming Spark using its core APIs. Along the way, you'll work with structured data using Spark SQL, process near-real-time streaming data, apply machine learning algorithms, and munge graph data using Spark GraphX. For a zero-effort startup, you can download the preconfigured virtual machine ready for you to try the book's code. What's Inside Updated for Spark 2.0 Real-life case studies Spark DevOps with Docker Examples in Scala, and online in Java and Python About the Reader Written for experienced programmers with some

background in big data or machine learning. About the Authors Petar Zečević and Marko Bonaći are seasoned developers heavily involved in the Spark community. Table of Contents PART 1 - FIRST STEPS Introduction to Apache Spark Spark fundamentals Writing Spark applications The Spark API in depth PART 2 - MEET THE SPARK FAMILY Sparkling queries with Spark SQL Ingesting data with Spark Streaming Getting smart with MLlib ML: classification and clustering Connecting the dots with GraphX PART 3 - SPARK OPS Running Spark Running on a Spark standalone cluster Running on YARN and Mesos PART 4 - BRINGING IT TOGETHER Case study: real-time dashboard Deep learning on Spark with H2O

Beginning Apache Spark 2
Graph Algorithms
Pro Spark Streaming
Spark in Action
Mastering Apache Spark
With Resilient Distributed Datasets, Spark SQL, Structured Streaming and Spark Machine Learning library

Frank Kane's hands-on Spark training course,

based on his bestselling Taming Big Data with Apache Spark and Python video, now available in a book. Understand and analyze large data sets using Spark on a single system or on a cluster. About This Book Understand how Spark can be distributed across computing clusters Develop and run Spark jobs efficiently using Python A hands-on tutorial by Frank Kane with over 15 real-world examples teaching you Big Data processing with Spark Who This Book Is For If you are a data scientist or data analyst who wants to learn Big Data processing using Apache Spark and Python, this book is for you. If you have some programming experience in Python, and want to learn how to process large amounts of data using Apache Spark, Frank Kane's Taming Big Data with Apache Spark and Python will also help you. What You Will Learn Find out how you can identify Big Data problems as Spark problems Install and run Apache Spark on your computer or on a cluster Analyze large data sets across many CPUs using Spark's Resilient Distributed Datasets Implement machine learning on Spark using the MLlib library Process continuous streams of data in real time using the Spark streaming module Perform complex network analysis using Spark's GraphX library Use Amazon's Elastic MapReduce service to run your Spark jobs on a cluster In

Detail Frank Kane's Taming Big Data with Apache Spark and Python is your companion to learning Apache Spark in a hands-on manner. Frank will start you off by teaching you how to set up Spark on a single system or on a cluster, and you'll soon move on to analyzing large data sets using Spark RDD, and developing and running effective Spark jobs quickly using Python. Apache Spark has emerged as the next big thing in the Big Data domain – quickly rising from an ascending technology to an established superstar in just a matter of years. Spark allows you to quickly extract actionable insights from large amounts of data, on a real-time basis, making it an essential tool in many modern businesses. Frank has packed this book with over 15 interactive, fun-filled examples relevant to the real world, and he will empower you to understand the Spark ecosystem and implement production-grade real-time Spark projects with ease. Style and approach Frank Kane's Taming Big Data with Apache Spark and Python is a hands-on tutorial with over 15 real-world examples carefully explained by Frank in a step-by-step manner. The examples vary in complexity, and you can move through them at your own pace.

In this practical book, four Cloudera data scientists present a set of self-contained

patterns for performing large-scale data analysis with Spark. The authors bring Spark, statistical methods, and real-world data sets together to teach you how to approach analytics problems by example. You'll start with an introduction to Spark and its ecosystem, and then dive into patterns that apply common techniques—classification, collaborative filtering, and anomaly detection among others—to fields such as genomics, security, and finance. If you have an entry-level understanding of machine learning and statistics, and you program in Java, Python, or Scala, you'll find these patterns useful for working on your own data applications. Patterns include: Recommending music and the Audioscrobbler data set Predicting forest cover with decision trees Anomaly detection in network traffic with K-means clustering Understanding Wikipedia with Latent Semantic Analysis Analyzing co-occurrence networks with GraphX Geospatial and temporal data analysis on the New York City Taxi Trips data Estimating financial risk through Monte Carlo simulation Analyzing genomics data and the BDG project Analyzing neuroimaging data with PySpark and Thunder

Data is bigger, arrives faster, and comes in a variety of formats—and it all needs to be

processed at scale for analytics or machine learning. But how can you process such varied workloads efficiently? Enter Apache Spark. Updated to include Spark 3.0, this second edition shows data engineers and data scientists why structure and unification in Spark matters. Specifically, this book explains how to perform simple and complex data analytics and employ machine learning algorithms. Through step-by-step walk-throughs, code snippets, and notebooks, you'll be able to: Learn Python, SQL, Scala, or Java high-level Structured APIs Understand Spark operations and SQL Engine Inspect, tune, and debug Spark operations with Spark configurations and Spark UI Connect to data sources: JSON, Parquet, CSV, Avro, ORC, Hive, S3, or Kafka Perform analytics on batch and streaming data using Structured Streaming Build reliable data pipelines with open source Delta Lake and Spark Develop machine learning pipelines with MLlib and productionize models using MLflow

Summary The Spark distributed data processing platform provides an easy-to-implement tool for ingesting, streaming, and processing data from any source. In Spark in Action, Second Edition, you'll learn to take advantage of Spark's core features and incredible processing speed, with applications including real-time computation,

delayed evaluation, and machine learning. Spark skills are a hot commodity in enterprises worldwide, and with Spark's powerful and flexible Java APIs, you can reap all the benefits without first learning Scala or Hadoop. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Analyzing enterprise data starts by reading, filtering, and merging files and streams from many sources. The Spark data processing engine handles this varied volume like a champ, delivering speeds 100 times faster than Hadoop systems. Thanks to SQL support, an intuitive interface, and a straightforward multilanguage API, you can use Spark without learning a complex new ecosystem. About the book Spark in Action, Second Edition, teaches you to create end-to-end analytics applications. In this entirely new book, you'll learn from interesting Java-based examples, including a complete data pipeline for processing NASA satellite data. And you'll discover Java, Python, and Scala code samples hosted on GitHub that you can explore and adapt, plus appendixes that give you a cheat sheet for installing tools and understanding Spark-specific terms. What's inside Writing Spark applications in Java Spark application architecture Ingestion through files, databases,

streaming, and Elasticsearch Querying distributed datasets with Spark SQL About the reader This book does not assume previous experience with Spark, Scala, or Hadoop. About the author Jean-Georges Perrin is an experienced data and software architect. He is France's first IBM Champion and has been honored for 12 consecutive years. Table of Contents PART 1 - THE THEORY CRIPPLED BY AWESOME EXAMPLES 1 So, what is Spark, anyway? 2 Architecture and flow 3 The majestic role of the dataframe 4 Fundamentally lazy 5 Building a simple app for deployment 6 Deploying your simple app PART 2 - INGESTION 7 Ingestion from files 8 Ingestion from databases 9 Advanced ingestion: finding data sources and building your own 10 Ingestion through structured streaming PART 3 - TRANSFORMING YOUR DATA 11 Working with SQL 12 Transforming your data 13 Transforming entire documents 14 Extending transformations with user-defined functions 15 Aggregating your data PART 4 - GOING FURTHER 16 Cache and checkpoint: Enhancing Spark's performances 17 Exporting data and building full data pipelines 18 Exploring deployment

Ready to use statistical and machine-learning techniques across large data sets? This practical guide shows you why the Hadoop ecosystem is

perfect for the job. Instead of deployment, operations, or software development usually associated with distributed computing, you'll focus on particular analyses you can build, the data warehousing techniques that Hadoop provides, and higher order data workflows this framework can produce. Data scientists and analysts will learn how to perform a wide range of techniques, from writing MapReduce and Spark applications with Python to using advanced modeling and data management with Spark MLlib, Hive, and HBase. You'll also learn about the analytical processes and data systems available to build and empower data products that can handle—and actually require—huge amounts of data. Understand core concepts behind Hadoop and cluster computing Use design patterns and parallel analytical algorithms to create distributed data analysis jobs Learn about data management, mining, and warehousing in a distributed context using Apache Hive and HBase Use Sqoop and Apache Flume to ingest data from relational databases Program complex Hadoop and Spark applications with Apache Pig and Spark DataFrames Perform machine learning techniques such as classification, clustering, and collaborative filtering with Spark's MLlib Lightning-Fast Big Data Analysis

Practical Examples in Apache Spark and Neo4j
Uncover patterns, derive actionable insights, and learn from big data using MLlib
Examples and Case Studies
Advanced Analytics with Spark
Practical Apache Spark

By introducing in-memory persistent storage, Apache Spark eliminates the need to store intermediate data in filesystems, thereby increasing processing speed by up to 100 times. This book will focus on how to analyze large and complex sets of data. Starting with installing and configuring Apache Spark with various cluster managers, you will cover setting up development environments. You will then cover various recipes to perform interactive queries using Spark SQL and real-time streaming with various sources such as Twitter Stream and Apache Kafka. You will then focus on machine learning, including supervised learning, unsupervised learning, and recommendation engine algorithms. After mastering graph processing using GraphX, you will cover various recipes for cluster optimization and troubleshooting.

No need to spend hours ploughing through endless data - let Spark, one of the fastest big data processing engines available, do the hard work for you. Key FeaturesGet up and running with Apache Spark and PythonIntegrate Spark with AWS for real-time analyticsApply processed data streams to machine learning APIs of Apache SparkBook Description

Processing big data in real time is challenging due to scalability, information consistency, and fault-tolerance. This book teaches you how to use Spark to make your overall analytical workflow faster and more efficient. You'll explore all core concepts and tools within the Spark ecosystem, such as Spark Streaming, the Spark Streaming API, machine learning extension, and structured streaming. You'll begin by learning data processing fundamentals using Resilient Distributed Datasets (RDDs), SQL, Datasets, and Dataframes APIs. After grasping these fundamentals, you'll move on to using Spark Streaming APIs to consume data in real time from TCP sockets, and integrate Amazon Web Services (AWS) for stream consumption. By the end of this book, you'll not only have understood how to use machine learning extensions and structured streams but you'll also be able to apply Spark in your own upcoming big data projects. What you will learnWrite your own Python programs that can interact with SparkImplement data stream consumption using Apache SparkRecognize common operations in Spark to process known data streamsIntegrate Spark streaming with Amazon Web Services (AWS)Create a collaborative filtering model with the movielens datasetApply processed data streams to Spark machine learning APIsWho this book is for Data Processing with Apache Spark is for you if you are a software engineer, architect, or IT professional who wants to

explore distributed systems and big data analytics. Although you don‘t need any knowledge of Spark, prior experience of working with Python is recommended.
Learning SparkLightning-Fast Big Data Analysis"O'Reilly Media, Inc."
A practical guide for solving complex data processing challenges by applying the best optimizations techniques in Apache Spark. Key Features Learn about the core concepts and the latest developments in Apache Spark Master writing efficient big data applications with Spark's built-in modules for SQL, Streaming, Machine Learning and Graph analysis Get introduced to a variety of optimizations based on the actual experience Book Description Apache Spark is a ?exible framework that allows processing of batch and real-time data. Its unified engine has made it quite popular for big data use cases. This book will help you to get started with Apache Spark 2.0 and write big data applications for a variety of use cases. It will also introduce you to Apache Spark - one of the most popular Big Data processing frameworks. Although this book is intended to help you get started with Apache Spark, but it also focuses on explaining the core concepts. This practical guide provides a quick start to the Spark 2.0 architecture and its components. It teaches you how to set up Spark on your local machine. As we move ahead, you will be introduced to resilient distributed datasets (RDDs) and DataFrame APIs, and their

corresponding transformations and actions. Then, we move on to the life cycle of a Spark application and learn about the techniques used to debug slow-running applications. You will also go through Spark's built-in modules for SQL, streaming, machine learning, and graph analysis. Finally, the book will lay out the best practices and optimization techniques that are key for writing efficient Spark applications. By the end of this book, you will have a sound fundamental understanding of the Apache Spark framework and you will be able to write and optimize Spark applications. What you will learn Learn core concepts such as RDDs, DataFrames, transformations, and more Set up a Spark development environment Choose the right APIs for your applications Understand Spark's architecture and the execution ?ow of a Spark application Explore built-in modules for SQL, streaming, ML, and graph analysis Optimize your Spark job for better performance Who this book is for If you are a big data enthusiast and love processing huge amount of data, this book is for you. If you are data engineer and looking for the best optimization techniques for your Spark applications, then you will find this book helpful. This book also helps data scientists who want to implement their machine learning algorithms in Spark. You need to have a basic understanding of any one of the programming languages such as Scala, Python or Java. Design, implement, and deliver successful

streaming applications, machine learning pipelines and graph applications using Spark SQL API About This Book Learn about the design and implementation of streaming applications, machine learning pipelines, deep learning, and large-scale graph processing applications using Spark SQL APIs and Scala. Learn data exploration, data munging, and how to process structured and semi-structured data using real-world datasets and gain hands-on exposure to the issues and challenges of working with noisy and "dirty" real-world data. Understand design considerations for scalability and performance in web-scale Spark application architectures. Who This Book Is For If you are a developer, engineer, or an architect and want to learn how to use Apache Spark in a web-scale project, then this is the book for you. It is assumed that you have prior knowledge of SQL querying. A basic programming knowledge with Scala, Java, R, or Python is all you need to get started with this book. What You Will Learn Familiarize yourself with Spark SQL programming, including working with DataFrame/Dataset API and SQL Perform a series of hands-on exercises with different types of data sources, including CSV, JSON, Avro, MySQL, and MongoDB Perform data quality checks, data visualization, and basic statistical analysis tasks Perform data munging tasks on publically available datasets Learn how to use Spark SQL and Apache Kafka to build

streaming applications Learn key performance-tuning tips and tricks in Spark SQL applications Learn key architectural components and patterns in large-scale Spark SQL applications In Detail In the past year, Apache Spark has been increasingly adopted for the development of distributed applications. Spark SQL APIs provide an optimized interface that helps developers build such applications quickly and easily. However, designing web-scale production applications using Spark SQL APIs can be a complex task. Hence, understanding the design and implementation best practices before you start your project will help you avoid these problems. This book gives an insight into the engineering practices used to design and build real-world, Spark-based applications. The book's hands-on examples will give you the required confidence to work on any future projects you encounter in Spark SQL. It starts by familiarizing you with data exploration and data munging tasks using Spark SQL and Scala. Extensive code examples will help you understand the methods used to implement typical use-cases for various types of applications. You will get a walkthrough of the key concepts and terms that are common to streaming, machine learning, and graph applications. You will also learn key performance-tuning details including Cost Based Optimization (Spark 2.2) in Spark SQL applications. Finally, you will move on to learning how such systems are architected and

deployed for a successful delivery of your project. Style and approach This book is a hands-on guide to designing, building, and deploying Spark SQL-centric production applications at scale.

Apache Spark 2.x for Java Developers

Best Practices for Scaling and Optimizing Apache Spark

Patterns for Learning from Data at Scale

Machine Learning with Apache Spark Quick Start Guide

Frank Kane's Taming Big Data with Apache Spark and Python

Study Guide for the Developer Certification for Apache Spark

Unleash the data processing and analytics capability of Apache Spark with the language of choice: Java About This Book Perform big data processing with Spark—without having to learn Scala! Use the Spark Java API to implement efficient enterprise-grade applications for data processing and analytics Go beyond mainstream data processing by adding querying capability, Machine Learning, and graph processing using Spark Who This Book Is For If you are a Java developer interested in learning to use the popular Apache Spark framework, this book is the resource you need to get started. Apache Spark developers who are looking to build enterprise-grade applications in Java will

also find this book very useful. What You Will Learn Process data using different file formats such as XML, JSON, CSV, and plain and delimited text, using the Spark core Library. Perform analytics on data from various data sources such as Kafka, and Flume using Spark Streaming Library Learn SQL schema creation and the analysis of structured data using various SQL functions including Windowing functions in the Spark SQL Library Explore Spark Mlib APIs while implementing Machine Learning techniques to solve real-world problems Get to know Spark GraphX so you understand various graph-based analytics that can be performed with Spark In Detail Apache Spark is the buzzword in the big data industry right now, especially with the increasing need for real-time streaming and data processing. While Spark is built on Scala, the Spark Java API exposes all the Spark features available in the Scala version for Java developers. This book will show you how you can implement various functionalities of the Apache Spark framework in Java, without stepping out of your comfort zone. The book starts with an introduction to the Apache Spark 2.x ecosystem, followed by explaining how to install and configure Spark, and refreshes the Java concepts that will be useful to you when consuming Apache Spark's APIs. You

will explore RDD and its associated common Action and Transformation Java APIs, set up a production-like clustered environment, and work with Spark SQL. Moving on, you will perform near-real-time processing with Spark streaming, Machine Learning analytics with Spark MLlib, and graph processing with GraphX, all using various Java packages. By the end of the book, you will have a solid foundation in implementing components in the Spark framework in Java to build fast, real-time applications. Style and approach This practical guide teaches readers the fundamentals of the Apache Spark framework and how to implement components using the Java language. It is a unique blend of theory and practical examples, and is written in a way that will gradually build your knowledge of Apache Spark.

Gain expertise in processing and storing data by using advanced techniques with Apache SparkAbout This Book- Explore the integration of Apache Spark with third party applications such as H20, Databricks and Titan- Evaluate how Cassandra and Hbase can be used for storage- An advanced guide with a combination of instructions and practical examples to extend the most up-to date Spark functionalitiesWho This Book Is ForIf you are a developer with some

experience with Spark and want to strengthen your knowledge of how to get around in the world of Spark, then this book is ideal for you. Basic knowledge of Linux, Hadoop and Spark is assumed. Reasonable knowledge of Scala is expected.What You Will Learn- Extend the tools available for processing and storage- Examine clustering and classification using MLlib- Discover Spark stream processing via Flume, HDFS- Create a schema in Spark SQL, and learn how a Spark schema can be populated with data- Study Spark based graph processing using Spark GraphX- Combine Spark with H20 and deep learning and learn why it is useful- Evaluate how graph storage works with Apache Spark, Titan, HBase and Cassandra- Use Apache Spark in the cloud with Databricks and AWSIn DetailApache Spark is an in-memory cluster based parallel processing system that provides a wide range of functionality like graph processing, machine learning, stream processing and SQL. It operates at unprecedented speeds, is easy to use and offers a rich set of data transformations.This book aims to take your limited knowledge of Spark to the next level by teaching you how to expand Spark functionality. The book commences with an overview of the Spark eco-system. You will learn how to use MLlib to create a fully

working neural net for handwriting recognition. You will then discover how stream processing can be tuned for optimal performance and to ensure parallel processing. The book extends to show how to incorporate H20 for machine learning, Titan for graph based storage, Databricks for cloud-based Spark. Intermediate Scala based code examples are provided for Apache Spark module processing in a CentOS Linux and Databricks cloud environment.Style and approachThis book is an extensive guide to Apache Spark modules and tools and shows how Spark's functionality can be extended for real-time processing and storage with worked examples.

Work with Apache Spark using Scala to deploy and set up single-node, multi-node, and high-availability clusters. This book discusses various components of Spark such as Spark Core, DataFrames, Datasets and SQL, Spark Streaming, Spark MLib, and R on Spark with the help of practical code snippets for each topic. Practical Apache Spark also covers the integration of Apache Spark with Kafka with examples. You'll follow a learn-to-do-by-yourself approach to learning – learn the concepts, practice the code snippets in Scala, and complete the assignments given to get an overall

exposure. On completion, you'll have knowledge of the functional programming aspects of Scala, and hands-on expertise in various Spark components. You'll also become familiar with machine learning algorithms with real-time usage. What You Will LearnDiscover the functional programming features of Scala Understand the complete architecture of Spark and its componentsIntegrate Apache Spark with Hive and Kafka Use Spark SQL, DataFrames, and Datasets to process data using traditional SQL queries Work with different machine learning concepts and libraries using Spark's MLlib packages Who This Book Is For Developers and professionals who deal with batch and stream data processing.

Apache Spark is a popular open-source big-data processing framework thatÕs built around speed, ease of use, and unified distributed computing architecture. Not only it supports developing applications in different languages like Java, Scala, Python, and R, itÕs also hundred times faster in memory and ten times faster even when running on disk compared to traditional data processing frameworks. Whether you are currently working on a big data project or interested in learning more about topics like machine learning, streaming data

processing, and graph data analytics, this book is for you. You can learn about Apache Spark and develop Spark programs for various use cases in big data analytics using the code examples provided. This book covers all the libraries in Spark ecosystem: Spark Core, Spark SQL, Spark Streaming, Spark ML, and Spark GraphX.

Solve Data Analytics Problems with Spark, PySpark, and Related Open Source Tools Spark is at the heart of today's Big Data revolution, helping data professionals supercharge efficiency and performance in a wide range of data processing and analytics tasks. In this guide, Big Data expert Jeffrey Aven covers all you need to know to leverage Spark, together with its extensions, subprojects, and wider ecosystem. Aven combines a language-agnostic introduction to foundational Spark concepts with extensive programming examples utilizing the popular and intuitive PySpark development environment. This guide's focus on Python makes it widely accessible to large audiences of data professionals, analysts, and developers—even those with little Hadoop or Spark experience. Aven's broad coverage ranges from basic to advanced Spark programming, and Spark SQL to machine learning. You'll learn how to efficiently manage all forms of data with

Spark: streaming, structured, semi-structured, and unstructured. Throughout, concise topic overviews quickly get you up to speed, and extensive hands-on exercises prepare you to solve real problems. Coverage includes: • Understand Spark's evolving role in the Big Data and Hadoop ecosystems • Create Spark clusters using various deployment modes • Control and optimize the operation of Spark clusters and applications • Master Spark Core RDD API programming techniques • Extend, accelerate, and optimize Spark routines with advanced API platform constructs, including shared variables, RDD storage, and partitioning • Efficiently integrate Spark with both SQL and nonrelational data stores • Perform stream processing and messaging with Spark Streaming and Apache Kafka • Implement predictive modeling with SparkR and Spark MLlib

Natural Language Processing with Spark NLP

Spark

A Guide to Apache Spark, Mesos, Akka, Cassandra, and Kafka

Learning to Understand Text at Scale

Quickly Learn the Art of Writing Efficient Big Data Applications with Apache Spark

Over 60 recipes for implementing big data processing and analytics using Apache

Spark and Python

Learn about the fastest-growing open source project in the world, and find out how it revolutionizes big data analytics About This Book Exclusive guide that covers how to get up and running with fast data processing using Apache Spark Explore and exploit various possibilities with Apache Spark using real-world use cases in this book Want to perform efficient data processing at real time? This book will be your one-stop solution. Who This Book Is For This guide appeals to big data engineers, analysts, architects, software engineers, even technical managers who need to perform efficient data processing on Hadoop at real time. Basic familiarity with Java or Scala will be helpful. The assumption is that readers will be from a mixed background, but would be typically people with background in engineering/data science with no prior Spark experience and want to understand how Spark can help them on their analytics journey. What You Will Learn Get an overview of big data analytics and its importance for organizations

and data professionals Delve into Spark to see how it is different from existing processing platforms Understand the intricacies of various file formats, and how to process them with Apache Spark. Realize how to deploy Spark with YARN, MESOS or a Stand-alone cluster manager. Learn the concepts of Spark SQL, SchemaRDD, Caching and working with Hive and Parquet file formats Understand the architecture of Spark MLLib while discussing some of the off-the-shelf algorithms that come with Spark. Introduce yourself to the deployment and usage of SparkR. Walk through the importance of Graph computation and the graph processing systems available in the market Check the real world example of Spark by building a recommendation engine with Spark using ALS. Use a Telco data set, to predict customer churn using Random Forests. In Detail Spark juggernaut keeps on rolling and getting more and more momentum each day. Spark provides key capabilities in the form of Spark SQL, Spark Streaming, Spark ML and Graph X all accessible via Java, Scala, Python and R. Deploying

the key capabilities is crucial whether it is on a Standalone framework or as a part of existing Hadoop installation and configuring with Yarn and Mesos. The next part of the journey after installation is using key components, APIs, Clustering, machine learning APIs, data pipelines, parallel programming. It is important to understand why each framework component is key, how widely it is being used, its stability and pertinent use cases. Once we understand the individual components, we will take a couple of real life advanced analytics examples such as 'Building a Recommendation system', 'Predicting customer churn' and so on. The objective of these real life examples is to give the reader confidence of using Spark for real-world problems. Style and approach With the help of practical examples and real-world use cases, this guide will take you from scratch to building efficient data applications using Apache Spark. You will learn all about this excellent data processing engine in a step-by-step manner, taking one aspect of it at a time. This highly practical guide

will include how to work with data pipelines, dataframes, clustering, SparkSQL, parallel programming, and such insightful topics with the help of real-world use cases.

Big Data Processing Made Simple

An Introduction for Data Scientists

Learning PySpark

Big Data Analytics with Spark

Apache Spark in 24 Hours, Sams Teach Yourself