

Subramanian Python Data Science Cookbook

A Cookbook that will help you implement Machine Learning algorithms and techniques by building real-world projects

- KEY FEATURES

- Learn how to handle an entire Machine Learning Pipeline supported with adequate mathematics. Create Predictive Models and choose the right model for various types of Datasets. Learn the art of tuning a model to improve accuracy as per Business requirements. Get familiar with concepts related to Data Analytics with Visualization, Data Science and Machine Learning.

DESCRIPTION Machine Learning does not have to be intimidating at all. This book focuses on the concepts of Machine Learning and Data Analytics with mathematical explanations and programming examples. All the codes are written in Python as it is one of the most popular programming languages used for Data Science and Machine Learning. Here I have leveraged multiple libraries like NumPy, Pandas, scikit-learn, etc. to ease our task and not reinvent the wheel. There are five projects in total, each addressing a unique problem. With the recipes in this cookbook, one will learn how to solve Machine Learning problems for real-time data and perform Data Analysis and Analytics, Classification, and beyond. The datasets used are also unique and will help one to think, understand the problem and proceed towards the goal. The book is not saturated with Mathematics, but mostly all the Mathematical concepts are covered for the important topics. Every chapter typically starts with some theory and prerequisites, and then it gradually dives into the implementation of the same concept using Python, keeping a project in the background.

- WHAT WILL YOU LEARN

- Understand the working of the O.S.E.M.N. framework in Data Science.
- Get familiar with the end-to-end implementation of Machine

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Learning Pipeline. Learn how to implement Machine Learning algorithms and concepts using Python. Learn how to build a Predictive Model for a Business case. WHO THIS BOOK IS FORÊ This cookbook is meant for anybody who is passionate enough to get into the World of Machine Learning and has a preliminary understanding of the Basics of Linear Algebra, Calculus, Probability, and Statistics. This book also serves as a reference guidebook for intermediate Machine Learning practitioners. Ê TABLE OF CONTENTS 1. Boston Crime 2. World Happiness Report 3. Iris Species 4. Credit Card Fraud Detection 5. Heart Disease UCI

The use of additives in food is a dynamic one, as consumers demand fewer additives in foods and as governments review the list of additives approved and their permitted levels. Scientists also refine the knowledge of the risk assessment process as well as improve analytical methods and the use of alternative additives, processes or ingredients. Since the first edition of the Food Additives Databook was published, there have been numerous changes due to these developments and some additives are no longer permitted, some have new permitted levels of use and new additives have been assessed and approved. The revised second edition of this major reference work covers all the "must-have" technical data on food additives. Compiled by food industry experts with a proven track record of producing high quality reference work, this volume is the definitive resource for technologists in small, medium and large companies, and for workers in research, government and academic institutions. Coverage is of Preservatives, Enzymes, Gases, Nutritive additives, Emulsifiers, Flour additives, Acidulants, Sequestrants, Antioxidants, Flavour enhancers, Colour, Sweeteners, Polysaccharides, Solvents. Entries include information on: Function and Applications, Safety issues, International legal issues, Alternatives, Synonyms, Molecular Formula and mass, Alternative forms, Appearance, Boiling,

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melting, and flash points, density, purity, water content, solubility, Synergists, Antagonists, and more with full and easy-to-follow-up references. Reviews of the first edition: "Additives have their advantages for the food industry in order to provide safe and convenient food products. It is therefore essential that as much information as possible is available to allow an informed decision on the selection of an additive for a particular purpose. This data book provides such information - consisting of over 1000 pages and covering around 350 additives. This data book does provide a vast amount of information; it is what it claims to be! Overall, this is a very useful publication and a good reference book for anyone working in the food and dairy industry." —International Journal of Dairy Technology, Volume 59 Issue 2, May 2006 "This book is the best I have ever seen ... a clear winner over all other food additive books a superb edition." —SAAFOST (South African Association for Food Science and Technology)

This book presents practical solutions to the most common reinforcement learning problems. The recipes in this book will help you understand the fundamental concepts to develop popular RL algorithms. You will gain practical experience in the RL domain using the modern offerings of the PyTorch 1.x library.

Over 60 practical recipes to help you explore Python and its robust data science capabilities

About This Book

- The book is packed with simple and concise Python code examples to effectively demonstrate advanced concepts in action
- Explore concepts such as programming, data mining, data analysis, data visualization, and machine learning using Python
- Get up to speed on machine learning algorithms with the help of easy-to-follow, insightful recipes

Who This Book Is For

This book is intended for all levels of Data Science professionals, both students and practitioners, starting from novice to experts. Novices can

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spend their time in the first five chapters getting themselves acquainted with Data Science. Experts can refer to the chapters starting from 6 to understand how advanced techniques are implemented using Python. People from non-Python backgrounds can also effectively use this book, but it would be helpful if you have some prior basic programming experience.

What You Will Learn

- Explore the complete range of Data Science algorithms
- Get to know the tricks used by industry engineers to create the most accurate data science models
- Manage and use Python libraries such as numpy, scipy, scikit learn, and matplotlib effectively
- Create meaningful features to solve real-world problems
- Take a look at Advanced Regression methods for model building and variable selection
- Get a thorough understanding of the underlying concepts and implementation of Ensemble methods
- Solve real-world problems using a variety of different datasets from numerical and text data modalities
- Get accustomed to modern state-of-the art algorithms such as Gradient Boosting, Random Forest, Rotation Forest, and so on

In Detail Python is increasingly becoming the language for data science. It is overtaking R in terms of adoption, it is widely known by many developers, and has a strong set of libraries such as Numpy, Pandas, scikit-learn, Matplotlib, Ipython and Scipy, to support its usage in this field. Data Science is the emerging new hot tech field, which is an amalgamation of different disciplines including statistics, machine learning, and computer science. It's a disruptive technology changing the face of today's business and altering the economy of various verticals including retail, manufacturing, online ventures, and hospitality, to name a few, in a big way. This book will walk you through the various steps, starting from simple to the most complex algorithms available in the Data Science arsenal, to effectively mine data and derive intelligence from it. At every step, we provide simple and efficient Python recipes that

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will not only show you how to implement these algorithms, but also clarify the underlying concept thoroughly. The book begins by introducing you to using Python for Data Science, followed by working with Python environments. You will then learn how to analyse your data with Python. The book then teaches you the concepts of data mining followed by an extensive coverage of machine learning methods. It introduces you to a number of Python libraries available to help implement machine learning and data mining routines effectively. It also covers the principles of shrinkage, ensemble methods, random forest, rotation forest, and extreme trees, which are a must-have for any successful Data Science Professional. Style and approach This is a step-by-step recipe-based approach to Data Science algorithms, introducing the math philosophy behind these algorithms.

Get to grips with the most popular Python packages that make data analysis possible
Key Features Explore the tools you need to become a data analyst Discover practical examples to help you grasp data processing concepts Walk through hierarchical indexing and grouping for data analysis
Book Description Python, a multi-paradigm programming language, has become the language of choice for data scientists for visualization, data analysis, and machine learning. Hands-On Data Analysis with NumPy and Pandas starts by guiding you in setting up the right environment for data analysis with Python, along with helping you install the correct Python distribution. In addition to this, you will work with the Jupyter notebook and set up a database. Once you have covered Jupyter, you will dig deep into Python's NumPy package, a powerful extension with advanced mathematical functions. You will then move on to creating NumPy arrays and employing different array methods and functions. You will explore Python's pandas extension which will help you get to grips with data mining and learn to subset your

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data. Last but not the least you will grasp how to manage your datasets by sorting and ranking them. By the end of this book, you will have learned to index and group your data for sophisticated data analysis and manipulation. What you will learn Understand how to install and manage Anaconda Read, sort, and map data using NumPy and pandas Find out how to create and slice data arrays using NumPy Discover how to subset your DataFrames using pandas Handle missing data in a pandas DataFrame Explore hierarchical indexing and plotting with pandas Who this book is for Hands-On Data Analysis with NumPy and Pandas is for you if you are a Python developer and want to take your first steps into the world of data analysis. No previous experience of data analysis is required to enjoy this book.

Harness the power of OpenStack Networking for public and private clouds using 90 hands-on recipes About This Book Build and manage virtual switching, routing, and firewall-based networks in OpenStack using Neutron Develop plugins and drivers for Neutron to enhance the built-in networking capabilities Monitor and automate OpenStack networks using tools like Ceilometer and Heat Who This Book Is For This book is aimed at network and system administrators who want to deploy and manage OpenStack-based cloud and IT infrastructure. If you have basic knowledge of OpenStack and virtualization, this book will help you leverage the rich functionality of OpenStack Networking in your cloud deployments. What You Will Learn Operate OpenStack Networking for public and private clouds Configure advanced routing services for your workloads Secure data traffic using firewall-as-a-service capabilities of OpenStack Discover how to leverage VXLAN to implement SDN in your OpenStack cloud Monitor the virtual networks using Ceilometer Develop plugins to enhance and customize OpenStack Networking Provide HA and VPN connectivity for your virtual machines

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Troubleshoot and solve common problems with OpenStack Networking In Detail Networking in OpenStack has evolved from Nova Network to Neutron. This has resulted in a rich suite of networking services available to OpenStack users and administrators. Advanced services such as routers, firewall, and load balancers use building blocks such as network and subnets. Recent improvements support powerful customization using plugins. The evolution of Neutron continues as it integrates with tools like Ceilometer and Heat. This book will explore the built-in capabilities of Neutron to effectively deploy cloud solutions. You will begin with the most fundamental constructs of OpenStack Networking for switching and routing. You will then learn how to provide your tenants with services like firewalls and load-balancers. The step-by-step recipes will help you configure and troubleshoot networking problems in your cloud. This book will also introduce you to advanced topics like Ceilometer, Heat, and other upcoming tools in OpenStack Style and approach The book is full of step-by-step recipes to configure and manage the networking aspects of your OpenStack cloud. In addition to covering basic configuration involved in OpenStack Networking, the books also shares various troubleshooting tips and techniques. As much as possible the book uses OpenStack dashboard (Horizon) to help the user get a feel of real OpenStack Networking Build neural network models in text, vision and advanced analytics using PyTorch Key Features Learn PyTorch for implementing cutting-edge deep learning algorithms. Train your neural networks for higher speed and flexibility and learn how to implement them in various scenarios; Cover various advanced neural network architecture such as ResNet, Inception, DenseNet and more with practical examples; Book Description Deep learning powers the most intelligent systems in the world, such as Google Voice, Siri, and Alexa. Advancements in

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powerful hardware, such as GPUs, software frameworks such as PyTorch, Keras, Tensorflow, and CNTK along with the availability of big data have made it easier to implement solutions to problems in the areas of text, vision, and advanced analytics. This book will get you up and running with one of the most cutting-edge deep learning libraries—PyTorch. PyTorch is grabbing the attention of deep learning researchers and data science professionals due to its accessibility, efficiency and being more native to Python way of development. You'll start off by installing PyTorch, then quickly move on to learn various fundamental blocks that power modern deep learning. You will also learn how to use CNN, RNN, LSTM and other networks to solve real-world problems. This book explains the concepts of various state-of-the-art deep learning architectures, such as ResNet, DenseNet, Inception, and Seq2Seq, without diving deep into the math behind them. You will also learn about GPU computing during the course of the book. You will see how to train a model with PyTorch and dive into complex neural networks such as generative networks for producing text and images. By the end of the book, you'll be able to implement deep learning applications in PyTorch with ease. What you will learn

- Use PyTorch for GPU-accelerated tensor computations
- Build custom datasets and data loaders for images and test the models using torchvision and torchtext
- Build an image classifier by implementing CNN architectures using PyTorch
- Build systems that do text classification and language modeling using RNN, LSTM, and GRU
- Learn advanced CNN architectures such as ResNet, Inception, Densenet, and learn how to use them for transfer learning
- Learn how to mix multiple models for a powerful ensemble model
- Generate new images using GAN's and generate artistic images using style transfer

Who this book is for
This book is for machine learning engineers, data analysts, data scientists interested in deep

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learning and are looking to explore implementing advanced algorithms in PyTorch. Some knowledge of machine learning is helpful but not a mandatory need. Working knowledge of Python programming is expected.

Step-by-step instructions are included and the needs of a beginner are totally satisfied by the book. The book consists of plenty of examples with accompanying screenshots and code for an easy learning curve. You are a web developer with knowledge of server side scripting, and have experience with installing applications on the server. You have a desire to want more than Google maps, by offering dynamically built maps on your site with your latest geospatial data stored in MySQL, PostGIS, MsSQL or Oracle. If this is the case, this book is meant for you.

Publishers Weekly says "Ramnarayan provides a detailed, contemporary primer that illuminates the promise and peril of the brave new world of social media. Ramnarayan herself acknowledges that social media is no panacea-her crisp presentation, with chapter summaries to highlight the main pointers, confirms that companies that choose not to listen to customers stand to lose ground to competitors who do." WHAT OTHERS ARE SAYING ABOUT THE BOOK "Sujata Ramnarayan's excellent book does several things that I have not seen in other treatments of this subject. She takes a reasoned perspective on a topic that is often full of hyperbole. The book is filled with advice for the marketer that is both practical and strategic. It helps the marketer to leverage social media where it can best impact business performance. I highly recommend the book." - Gordon Wyner, Editor-In-Chief, Marketing Management "This practical guide to social media marketing cuts through the noise with clear advice on how to turn strategy into practice. With the help of effective charts and analysis, the reader can gain

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real insight into social media's influence in corporate marketing. By showing how building quality content in social media is no longer an option for corporations, this is also a lesson in building a brand by listening to your customers." -Rajesh Subramaniam, SVP, Global Marketing and Customer Experience, FedEx Services "Owned social media presence is critical to generating earned media, which is where the growing value and rewards come in for social media marketing. This important book will help you to understand these concepts and reality to better evaluate, plan, and execute your social media marketing efforts." - Devin Redmond, CEO and Co-Founder, SocialiQ Networks "Are you overwhelmed by the changing digital landscape? If so, Sujata's book is a must read with actionable insights, tips on digital sharing, and more." -Porter Gale, Former VP of Marketing at Virgin America and author of "Your Network is Your Net Worth" ABOUT THE BOOK Like most marketers, you are drowning in social media noise and chaos. Businesses have simply jumped in without tying social media outcomes to any business objectives. The purpose of this book is to help you: - See how social media fits into your overall marketing strategy - Understand how best to develop social media with allocation among different tools - Figure out the extent to which social media is relevant to your business or department, and how best to implement it given an increasingly digital world of sharing and an empowered customer voice Whether you are a senior manager experienced in social media marketing or a novice, this book will help clarify how social media fits into your overall marketing strategy, how much you should be allocating given the return on investment, and at what time frame you should be looking, depending on the specific metrics adopted. This book will help you focus more and understand all the different elements to which you need to be paying attention. If you are a novice, the glossary and additional resources sections at the

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end of the book should be helpful.

REST architecture (style) is a pivot of distributed systems, simplify data integration amongst modern and legacy applications leverages through the RESTful paradigm. This book is fully loaded with many RESTful API patterns, samples, hands-on implementations and also discuss the capabilities of many REST API frameworks for Java, Scala, Python and Go

Over 70 recipes to get you started with popular Python libraries based on the principal concepts of data visualization About This Book Learn how to set up an optimal Python environment for data visualization Understand how to import, clean and organize your data Determine different approaches to data visualization and how to choose the most appropriate for your needs Who This Book Is For If you already know about Python programming and want to understand data, data formats, data visualization, and how to use Python to visualize data then this book is for you. What You Will Learn Introduce yourself to the essential tooling to set up your working environment Explore your data using the capabilities of standard Python Data Library and Panda Library Draw your first chart and customize it Use the most popular data visualization Python libraries Make 3D visualizations mainly using mplot3d Create charts with images and maps Understand the most appropriate charts to describe your data Know the matplotlib hidden gems Use plot.ly to share your visualization online In Detail Python Data Visualization Cookbook will progress the reader from the point of installing and setting up a Python environment for data manipulation and visualization all the way to 3D animations using Python libraries. Readers will benefit from over 60 precise and reproducible recipes that will guide the reader towards a better understanding of data concepts and the building blocks for subsequent and sometimes more advanced concepts. Python Data Visualization Cookbook

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starts by showing how to set up matplotlib and the related libraries that are required for most parts of the book, before moving on to discuss some of the lesser-used diagrams and charts such as Gantt Charts or Sankey diagrams. Initially it uses simple plots and charts to more advanced ones, to make it easy to understand for readers. As the readers will go through the book, they will get to know about the 3D diagrams and animations. Maps are irreplaceable for displaying geo-spatial data, so this book will also show how to build them. In the last chapter, it includes explanation on how to incorporate matplotlib into different environments, such as a writing system, LaTeX, or how to create Gantt charts using Python. Style and approach A step-by-step recipe based approach to data visualization. The topics are explained sequentially as cookbook recipes consisting of a code snippet and the resulting visualization.

The next step in the information age is to gain insights from the deluge of data coming our way. Data mining provides a way of finding this insight, and Python is one of the most popular languages for data mining, providing both power and flexibility in analysis. This book teaches you to design and develop data mining applications using a variety of datasets, starting with basic classification and affinity analysis. Next, we move on to more complex data types including text, images, and graphs. In every chapter, we create models that solve real-world problems. There is a rich and varied set of libraries available in Python for data mining. This book covers a large number, including the IPython Notebook, pandas, scikit-learn and NLTK. Each chapter of this book introduces you to new algorithms and techniques. By the end of the book, you will gain a large insight into using Python for data mining, with a good knowledge and understanding of the algorithms and implementations.

Using the latest features of Java 5, this unique object-oriented presentation introduces readers

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to data structures via thirty, manageable chapters. KEY Features TOPICS: Introduces each ADT in its own chapter, including examples or applications. Provides a variety of exercises and projects, plus additional self-assessment questions throughout. the text Includes generic data types as well as enumerations, for-each loops, the interface Iterable, the class Scanner, assert statements, and autoboxing and unboxing. Identifies important Java code as a Listing. Provides Notes and Programming Tips in each chapter. For programmers and software engineers interested in learning more about data structures and abstractions.

Master the art of getting the maximum out of your machine data using Splunk About This Book A practical and comprehensive guide to the advanced functions of Splunk,, including the new features of Splunk 6.3 Develop and manage your own Splunk apps for greater insight from your machine data Full coverage of high-level Splunk techniques including advanced searches, manipulations, and visualization Who This Book Is For This book is for Splunk developers looking to learn advanced strategies to deal with big data from an enterprise architectural perspective. It is expected that readers have a basic understanding and knowledge of using Splunk Enterprise. What You Will Learn Find out how to develop and manage apps in Splunk Work with important search commands to perform data analytics on uploaded data Create visualizations in Splunk Explore tweaking Splunk Integrate Splunk with any pre-existing application to perform data crunching efficiently and in real time Make your big data speak with analytics and visualizations using Splunk Use SDK and Enterprise integration with tools such as R and Tableau In Detail Master the power of Splunk and learn the advanced strategies to get the most out of your machine data with this practical advanced guide. Make sense of the hidden data of your organization – the insight of your servers, devices, logs, traffic

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and clouds. Advanced Splunk shows you how. Dive deep into Splunk to find the most efficient solution to your data problems. Create the robust Splunk solutions you need to make informed decisions in big data machine analytics. From visualizations to enterprise integration, this well-organized high level guide has everything you need for Splunk mastery. Start with a complete overview of all the new features and advantages of the latest version of Splunk and the Splunk Environment. Go hands on with uploading data, search commands for basic and advanced analytics, advanced visualization techniques, and dashboard customizing. Discover how to tweak Splunk to your needs, and get a complete on Enterprise Integration of Splunk with various analytics and visualization tools. Finally, discover how to set up and use all the new features of the latest version of Splunk. Style and approach This book follows a step by step approach. Every new concept is built on top of its previous chapter, and it is full of examples and practical scenarios to help the reader experiment as they read.

This IBM® Redbooks® Product Guide publication describes the IBM FlashSystem® 9200 solution, which is a comprehensive, all-flash, and NVMe-enabled enterprise storage solution that delivers the full capabilities of IBM FlashCore® technology. In addition, it provides a rich set of software-defined storage (SDS) features, including data reduction and de-duplication, dynamic tiering, thin-provisioning, snapshots, cloning, replication, data copy services, and IBM HyperSwap® for high availability (HA). Scale-out and scale-up configurations further enhance capacity and throughput for better availability.

From an idea to a prototype – a complete guide for web development with the Django framework About This Book Explore the best practices to develop applications of a superior quality with Django framework Unravel the common problems of web development in Django

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This course teaches you major Django functions and will help you improve your skills by developing models, forms, views, and templates Experience the challenges of working on an end-to-end social network project Who This Book Is For Web developers who want to use modern Python-based web frameworks like Django to build powerful web applications. The course is mostly self-contained and introduces web development with Python to a reader who is familiar with web development concepts and can help him become an expert in this trade. It's intended for all levels of web developers, both students and practitioners from novice to experts. What You Will Learn Use Django models to store information in the database and generate queries to access a database across models Quickly develop web pages to create, read, update, and delete data from the model using class-based views Generate very maintainable forms with Django Import data from local sources and external web services as well as exporting your data to third parties Deep dive into various aspects of Django from models and views to testing and deployment Familiarize yourself with the various nuances of web development such as browser attacks and databases In Detail Data science is hot right now, and the need for multitalented developers is greater than ever before. A basic grounding in building apps with a framework as minimalistic, powerful, and easy-to-learn as Django will be a useful skill to launch your career as an entrepreneur or web developer. Django is a web framework that was designed to strike a balance between rapid web development and high performance. This course will take you on a journey to become an efficient web developer thoroughly understanding the key concepts of Django framework. This learning path is divided into three modules. The course begins with basic concepts of the Django framework. The first module, Django Essentials, is like a practical guide, filled with many real-world examples to

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build highly effective Django web application. After getting familiar with core concepts of Django, it's time to practice your learning from the first module with the help of over 90 recipes available in this module. In the second module, Web Development with Django Cookbook, you'll learn varying complexities to help you create multilingual, responsive, and scalable websites with Django. By the end of this module, you will have a good understanding of the new features added to Django 1.8 and be an expert at web development processes. The next step is to discover the latest best practices and idioms in this rapidly evolving Django framework. This is what you'll be learning in our third module, Django Design Patterns and Best Practices. This module will teach you common design patterns to develop better Django code. By the end of the module, you will be able to leverage the Django framework to develop a fully functional web application with minimal effort. Style and approach This course includes all the resources that will help you jump into the web development field with Django and learn how to make scalable and robust web applications. The aim is to create a smooth learning path that will teach you how to get started with the powerful Django framework and perform various web development techniques in depth. Through this comprehensive course, you'll learn web development with Django from scratch to finish!

This book is for programmers, scientists, and engineers who have knowledge of the Python language and know the basics of data science. It is for those who wish to learn different data analysis methods using Python and its libraries. This book contains all the basic ingredients you need to become an expert data analyst.

A Practical Guide to the Highly Dynamic Area of Massively Parallel Sequencing The development of genome and transcriptome sequencing technologies has led to a paradigm

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shift in life science research and disease diagnosis and prevention. Scientists are now able to see how human diseases and phenotypic changes are connected to DNA mutation, polymorphi

Explore the world of data science through Python and learn how to make sense of data About This Book Master data science methods using Python and its libraries Create data visualizations and mine for patterns Advanced techniques for the four fundamentals of Data Science with Python - data mining, data analysis, data visualization, and machine learning Who This Book Is For If you are a Python developer who wants to master the world of data science then this book is for you. Some knowledge of data science is assumed. What You Will Learn Manage data and perform linear algebra in Python Derive inferences from the analysis by performing inferential statistics Solve data science problems in Python Create high-end visualizations using Python Evaluate and apply the linear regression technique to estimate the relationships among variables. Build recommendation engines with the various collaborative filtering algorithms Apply the ensemble methods to improve your predictions Work with big data technologies to handle data at scale In Detail Data science is a relatively new knowledge domain which is used by various organizations to make data driven decisions. Data scientists have to wear various hats to work with data and to derive value from it. The Python programming language, beyond having conquered the scientific community in the last decade, is now an indispensable tool for the data science practitioner and a must-know tool for every aspiring data scientist. Using Python will offer you a fast, reliable, cross-platform, and mature environment for data analysis, machine learning, and algorithmic problem solving. This comprehensive guide helps you move beyond the hype and transcend the theory by providing

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you with a hands-on, advanced study of data science. Beginning with the essentials of Python in data science, you will learn to manage data and perform linear algebra in Python. You will move on to deriving inferences from the analysis by performing inferential statistics, and mining data to reveal hidden patterns and trends. You will use the matplotlib library to create high-end visualizations in Python and uncover the fundamentals of machine learning. Next, you will apply the linear regression technique and also learn to apply the logistic regression technique to your applications, before creating recommendation engines with various collaborative filtering algorithms and improving your predictions by applying the ensemble methods. Finally, you will perform K-means clustering, along with an analysis of unstructured data with different text mining techniques and leveraging the power of Python in big data analytics. Style and approach This book is an easy-to-follow, comprehensive guide on data science using Python. The topics covered in the book can all be used in real world scenarios.

Big Data Analytics with R and Hadoop is a tutorial style book that focuses on all the powerful big data tasks that can be achieved by integrating R and Hadoop. This book is ideal for R developers who are looking for a way to perform big data analytics with Hadoop. This book is also aimed at those who know Hadoop and want to build some intelligent applications over Big data with R packages. It would be helpful if readers have basic knowledge of R.

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

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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

Python Data Science Cookbook Packt Publishing

Build and train neural network models with high speed and flexibility in text, vision, and advanced analytics using PyTorch 1.x

Key Features

- Gain a thorough understanding of the PyTorch framework and learn to implement neural network architectures
- Understand GPU computing to perform heavy deep learning computations using Python
- Apply cutting-edge natural language processing (NLP) techniques to solve problems with textual data

Book Description

PyTorch is gaining the attention of deep learning researchers and data science professionals due to its accessibility and efficiency, along with the fact that it's more native to the Python way of development. This book will get you up and running with this cutting-edge deep learning library, effectively guiding you through implementing deep learning concepts. In this second edition, you'll learn the fundamental aspects that power modern deep learning, and explore the new features of the PyTorch 1.x library. You'll understand how to solve real-world problems using CNNs, RNNs, and LSTMs, along with discovering state-of-the-art modern deep learning architectures, such as ResNet, DenseNet, and Inception. You'll then focus on applying neural networks to domains such as computer vision and NLP. Later chapters will demonstrate

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how to build, train, and scale a model with PyTorch and also cover complex neural networks such as GANs and autoencoders for producing text and images. In addition to this, you'll explore GPU computing and how it can be used to perform heavy computations. Finally, you'll learn how to work with deep learning-based architectures for transfer learning and reinforcement learning problems. By the end of this book, you'll be able to confidently and easily implement deep learning applications in PyTorch. What you will learn

- Build text classification and language modeling systems using neural networks
- Implement transfer learning using advanced CNN architectures
- Use deep reinforcement learning techniques to solve optimization problems in PyTorch
- Mix multiple models for a powerful ensemble model
- Build image classifiers by implementing CNN architectures using PyTorch

Get up to speed with reinforcement learning, GANs, LSTMs, and RNNs with real-world examples

Who this book is for

This book is for data scientists and machine learning engineers looking to work with deep learning algorithms using PyTorch 1.x. You will also find this book useful if you want to migrate to PyTorch 1.x. Working knowledge of Python programming and some understanding of machine learning will be helpful.

Create web services that are lightweight, maintainable, scalable, and secure using the best tools and techniques designed for Python

About This Book

Develop RESTful Web Services using the most popular frameworks in Python

Configure and fine-tune your APIs using the best tools and techniques available

This practical guide will help you to implement complete REST-based APIs from scratch

Who This Book Is For

This book is for web developers who have working knowledge of Python and would like to build amazing web services by taking advantage of the various frameworks of Python. You should have some knowledge of RESTful

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APIs. What You Will Learn Develop complex RESTful APIs from scratch with Python combined with and without data sources Choose the most appropriate (micro) framework based on the specific requirements of a RESTful API / web service Debug, test, and profile RESTful APIs with each of the frameworks Develop a complex RESTful API that interacts with a PostgreSQL database Add authentication and permissions to a RESTful API built in each of the frameworks Map URL patterns to request handlers and check how the API works Profile an existing API and refactor it to take advantage of asynchronous code In Detail Python is the language of choice for millions of developers worldwide, due to its gentle learning curve as well as its vast applications in day-to-day programming. It serves the purpose of building great web services in the RESTful architecture. This book will show you the best tools you can use to build your own web services. Learn how to develop RESTful APIs using the popular Python frameworks and all the necessary stacks with Python, Django, Flask, and Tornado, combined with related libraries and tools. We will dive deep into each of these frameworks to build various web services, and will provide use cases and best practices on when to use a particular framework to get the best results. We will show you everything required to successfully develop RESTful APIs with the four frameworks such as request handling, URL mapping, serialization, validation, authentication, authorization, versioning, ORMs, databases, custom code for models and views, and asynchronous callbacks. At the end of each framework, we will add authentication and security to the RESTful APIs and prepare tests for it. By the end of the book, you will have a deep understanding of the stacks needed to build RESTful web services. Style and approach The book takes a straightforward approach, not spending time getting you started with RESTful APIs and web services. It will give you the best use cases for each

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framework to build great web services in Python.

Elementary Materials Science covers the subject of materials science with few equations; it is intended primarily for students with limited science backgrounds who are interested in materials. The book also will be useful for non-technical professionals in the materials industry. The learn-by-doing approach of this book will enable you to dive right into the heart of text processing from the very first page. Each recipe is carefully designed to fulfill your appetite for Natural Language Processing. Packed with numerous illustrative examples and code samples, it will make the task of using the NLTK for Natural Language Processing easy and straightforward. This book is for Python programmers who want to quickly get to grips with using the NLTK for Natural Language Processing. Familiarity with basic text processing concepts is required. Programmers experienced in the NLTK will also find it useful. Students of linguistics will find it invaluable.

The bestselling guide to being a ladies? man? revised and updated. Providing clear, no-nonsense solutions for many difficult dating/relationship problems, this is an invaluable guide for any man who?s been stymied by the ?rules? of the dating game. Intended for single or divorced men, it delivers specific, detailed advice on how and where to meet women, how to talk to them, how to ask a woman out, how to prepare for a date and keep the conversation flowing. It explains how to be a success romantically, revealing the five keys and five blocks to intimacy that can keep a relationship going or derail it completely. Readers will also learn how to know if she?s the one?and know when it?s over.

The book adopts a tutorial-based approach to introduce the user to Scikit-learn. If you are a programmer who wants to explore machine learning and data-based methods to build

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intelligent applications and enhance your programming skills, this the book for you. No previous experience with machine-learning algorithms is required.

Mixed Signal Test Methods Demystified is a less theoretical, less mathematical, and more applications-oriented approach than other books available on the topic. In effect, this book will give readers a "just in time" understanding of the essentials of mixed signal testing techniques. Emphasis will be on commonly used devices and systems (such as PLLs and DSP) that engineers encounter in their daily tasks. Sampling theory is covered in detail, as this is the foundation for understanding all mixed signal testing technique, and readers will have a strong intuitive grasp of this topic after finishing this book. Baker aims to develop an intuitive understanding of mixed signal testing that minimizes the mathematics required and is germane to the sort of testing requirements found in typical engineering situations. *Takes a less theoretical, less mathematical, and more applications-oriented approach *Emphasizes commonly used devices and systems that engineers encounter in their daily tasks *Aims to develop an intuitive understanding of mixed signal testing

Get up to speed with the deep learning concepts of Pytorch using a problem-solution approach. Starting with an introduction to PyTorch, you'll get familiarized with tensors, a type of data structure used to calculate arithmetic operations and also learn how they operate. You will then take a look at probability distributions using PyTorch and get acquainted with its concepts. Further you will dive into transformations and graph computations with PyTorch. Along the way you will take a look at common issues faced with neural network implementation and tensor differentiation, and get the best solutions for them. Moving on to algorithms; you will learn how PyTorch works with supervised and unsupervised algorithms. You will see how convolutional

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neural networks, deep neural networks, and recurrent neural networks work using PyTorch. In conclusion you will get acquainted with natural language processing and text processing using PyTorch. What You Will Learn Master tensor operations for dynamic graph-based calculations using PyTorch Create PyTorch transformations and graph computations for neural networks Carry out supervised and unsupervised learning using PyTorch Work with deep learning algorithms such as CNN and RNN Build LSTM models in PyTorch Use PyTorch for text processing Who This Book Is For Readers wanting to dive straight into programming PyTorch. The innovative Handbook offers 23 state-of-the-art peer-reviewed essays by leading international authorities summarizing evidence-based research on ancient and modern India. For example, Kautilya's Economics text published some 2000 years before Adam Smith is shown to include ideas in Marx's Labor Theory of Value, UN's Human Rights, optimization, etc. Hindu India topics include: beef eating, astrology, rituals, sacraments, pilgrimages, guilt-free pursuit of wealth and pleasures, caste system's huge costs and benefits in nurturing entrepreneurship, charity, Hindu Law, gender issues, overpopulation problem, yoga for business management and human capital growth. The scholarly essays provide a unique reference work for students, teachers, businessmen, India investors and general readers. Michael Szenberg, editor of The American Economist wrote: "Hindu Economics and Business Handbook is an engaging and informative survey of the economics of Hinduism. I highly recommend it. Jagdish Bhagwati of Columbia University said "... interesting collection ... will be widely read" Prof. Panchamukhi, Former Chairman, Indian Council for Social Science Research, New Delhi and editor of Indian Journal of Economics wrote: ".. systematically arranged into different themes and chapters ...Protection and prosperity, Importance of

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animals, Four-fold Objectives of Life, Hindu Social Corporate form, Ayurvedic Medicines, Impact of Rituals, (etc.)...perceptive articles on the recent thoughts on development and governance ...extremely valuable reading material...the most useful addition to the literature" Prof. Rishi Raj of CCNY, president of SIAA, wrote: "...many methods and strategies ..(by).. Hindu economists are desperately needed to help solve the present day world economic crisis." Narain Kataria, President of Indian American Intellectual Forum wrote: "...review of contrasting viewpoints... This unique reference work edited by Prof. Vinod belongs not only in every public library, but also in the home of everyone interested in India, including non-Hindus and international investors." List of distinguished authors includes the likes of: (1) former Harvard professor and president of Janata Party, Subramanian Swamy, (2) Suresh Tendulkar, Chair, Indian Prime Minister's Economic Advisory Council, (3) Shankar Abhyankar, founder of Aditya Pratishthan, (4) Anil Bokil, founder of ArthaKranti Pratishthan, (5) Prof. R. Vaidyanathan, IIM Bangalore, (6) Balbir Sihag of U. Mass. (7) M.G. Prasad of Stevens Tech. (8) M. V. Patwardhan former Fellow Institute of Bankers, London, (9) Gautam Naresh, formerly at the National Institute of Public Finance, (10) M. V. Nadkarni, founder of Journal of Social and Economic Development, (11) Prof. R. Kulkarni, IIT Bombay, (12) K. Kulkarni, editor of the Indian Journal of Economics and Business, (13) Prof. S. Kaushik, Pace University, NY, Founder of Women's College in India, (14) H. Mhaskar, von Neumann distinguished professor, Technical University, Munich, Germany, (15) Vasant Lad, founder of Ayurvedic Institute in Albuquerque, NM, (16) Yogi S. Vinod, founder MVRF, Pune, (17) S. Kalyanaraman, Director, Sarasvati Research Centre, Chennai, (18) M. and P. Joshi, founders of Gurukul Yoga Center, NJ, (19) Advocate S. Deshmukh, formerly at Citibank and president, Maharashtra Foundation,

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and (20) Advocate C. Vaidya, among others.

This open access book explores ways to leverage information technology and machine learning to combat disease and promote health, especially in resource-constrained settings. It focuses on digital disease surveillance through the application of machine learning to non-traditional data sources. Developing countries are uniquely prone to large-scale emerging infectious disease outbreaks due to disruption of ecosystems, civil unrest, and poor healthcare infrastructure – and without comprehensive surveillance, delays in outbreak identification, resource deployment, and case management can be catastrophic. In combination with context-informed analytics, students will learn how non-traditional digital disease data sources – including news media, social media, Google Trends, and Google Street View – can fill critical knowledge gaps and help inform on-the-ground decision-making when formal surveillance systems are insufficient.

Part I: Process design -- Introduction to design -- Process flowsheet development -- Utilities and energy efficient design -- Process simulation -- Instrumentation and process control -- Materials of construction -- Capital cost estimating -- Estimating revenues and production costs -- Economic evaluation of projects -- Safety and loss prevention -- General site considerations -- Optimization in design -- Part II: Plant design -- Equipment selection, specification and design -- Design of pressure vessels -- Design of reactors and mixers -- Separation of fluids -- Separation columns (distillation, absorption and extraction) -- Specification and design of solids-handling equipment -- Heat transfer equipment -- Transport and storage of fluids.

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This book primarily targets Python developers who want to learn and use Python's machine learning capabilities and gain valuable insights from data to develop effective solutions for business problems.

A practical book filled with advanced recipes as well as plenty of code and real-life examples which will make your learning curve quick and easy. If you are a software developer who wants to develop distributed applications based on messaging [BISAC]; then this book is for you. It's assumed that you have some experience with multithreading applications and distributed applications. You are also expected to know the basic concepts of Web and cloud applications in order to follow the recipes effectively.

Learn the basics of analytics on big data using Java, machine learning and other big data tools About This Book Acquire real-world set of tools for building enterprise level data science applications Surpasses the barrier of other languages in data science and learn create useful object-oriented codes Extensive use of Java compliant big data tools like apache spark, Hadoop, etc. Who This Book Is For This book is for Java developers who are looking to perform data analysis in production environment. Those who wish to implement data analysis in their Big data applications will find this book helpful. What You Will Learn Start from simple analytic tasks on big data Get into more complex tasks with predictive analytics on big data using machine learning Learn real time analytic tasks Understand the concepts with examples and case studies Prepare

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and refine data for analysis Create charts in order to understand the data See various real-world datasets In Detail This book covers case studies such as sentiment analysis on a tweet dataset, recommendations on a movielens dataset, customer segmentation on an ecommerce dataset, and graph analysis on actual flights dataset. This book is an end-to-end guide to implement analytics on big data with Java. Java is the de facto language for major big data environments, including Hadoop. This book will teach you how to perform analytics on big data with production-friendly Java. This book basically divided into two sections. The first part is an introduction that will help the readers get acquainted with big data environments, whereas the second part will contain a hardcore discussion on all the concepts in analytics on big data. It will take you from data analysis and data visualization to the core concepts and advantages of machine learning, real-life usage of regression and classification using Naive Bayes, a deep discussion on the concepts of clustering, and a review of simple neural networks on big data using deepLearning4j or plain Java Spark code. This book is a must-have book for Java developers who want to start learning big data analytics and want to use it in the real world. Style and approach The approach of book is to deliver practical learning modules in manageable content. Each chapter is a self-contained unit of a concept in big data analytics. Book will step by step builds the competency in the area of big data analytics. Examples using real world case studies to give ideas of real applications and how to use the techniques mentioned. The examples and case studies will be shown

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using both theory and code.

Design efficient machine learning systems that give you more accurate results About This Book Gain an understanding of the machine learning design process Optimize machine learning systems for improved accuracy Understand common programming tools and techniques for machine learning Develop techniques and strategies for dealing with large amounts of data from a variety of sources Build models to solve unique tasks Who This Book Is For This book is for data scientists, scientists, or just the curious. To get the most out of this book, you will need to know some linear algebra and some Python, and have a basic knowledge of machine learning concepts. What You Will Learn Gain an understanding of the machine learning design process Optimize the error function of your machine learning system Understand the common programming patterns used in machine learning Discover optimizing techniques that will help you get the most from your data Find out how to design models uniquely suited to your task In Detail Machine learning is one of the fastest growing trends in modern computing. It has applications in a wide range of fields, including economics, the natural sciences, web development, and business modeling. In order to harness the power of these systems, it is essential that the practitioner develops a solid understanding of the underlying design principles. There are many reasons why machine learning models may not give accurate results. By looking at these systems from a design perspective, we gain a deeper understanding of the underlying algorithms and the optimisational

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methods that are available. This book will give you a solid foundation in the machine learning design process, and enable you to build customised machine learning models to solve unique problems. You may already know about, or have worked with, some of the off-the-shelf machine learning models for solving common problems such as spam detection or movie classification, but to begin solving more complex problems, it is important to adapt these models to your own specific needs. This book will give you this understanding and more. Style and approach This easy-to-follow, step-by-step guide covers the most important machine learning models and techniques from a design perspective.

Generate effective results in a variety of visually appealing charts using the plotting packages in Python About This Book Explore various tools and their strengths while building meaningful representations that can make it easier to understand data Packed with computational methods and algorithms in diverse fields of science Written in an easy-to-follow categorical style, this book discusses some niche techniques that will make your code easier to work with and reuse Who This Book Is For If you are a Python developer who performs data visualization and wants to develop existing knowledge about Python to build analytical results and produce some amazing visual display, then this book is for you. A basic knowledge level and understanding of Python libraries is assumed. What You Will Learn Gather, cleanse, access, and map data to a visual framework Recognize which visualization method is applicable and learn best

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practices for data visualization Get acquainted with reader-driven narratives and author-driven narratives and the principles of perception Understand why Python is an effective tool to be used for numerical computation much like MATLAB, and explore some interesting data structures that come with it Explore with various visualization choices how Python can be very useful in computation in the field of finance and statistics Get to know why Python is the second choice after Java, and is used frequently in the field of machine learning Compare Python with other visualization approaches using Julia and a JavaScript-based framework such as D3.js Discover how Python can be used in conjunction with NoSQL such as Hive to produce results efficiently in a distributed environment In Detail Python has a handful of open source libraries for numerical computations involving optimization, linear algebra, integration, interpolation, and other special functions using array objects, machine learning, data mining, and plotting. Pandas have a productive environment for data analysis. These libraries have a specific purpose and play an important role in the research into diverse domains including economics, finance, biological sciences, social science, health care, and many more. The variety of tools and approaches available within Python community is stunning, and can bolster and enhance visual story experiences. This book offers practical guidance to help you on the journey to effective data visualization. Commencing with a chapter on the data framework, which explains the transformation of data into information and eventually knowledge, this book subsequently covers the

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complete visualization process using the most popular Python libraries with working examples. You will learn the usage of Numpy, Scipy, IPython, Matplotlib, Pandas, Patsy, and Scikit-Learn with a focus on generating results that can be visualized in many different ways. Further chapters are aimed at not only showing advanced techniques such as interactive plotting; numerical, graphical linear, and non-linear regression; clustering and classification, but also in helping you understand the aesthetics and best practices of data visualization. The book concludes with interesting examples such as social networks, directed graph examples in real-life, data structures appropriate for these problems, and network analysis. By the end of this book, you will be able to effectively solve a broad set of data analysis problems. Style and approach

The approach of this book is not step by step, but rather categorical. The categories are based on fields such as bioinformatics, statistical and machine learning, financial computation, and linear algebra. This approach is beneficial for the community in many different fields of work and also helps you learn how one approach can make sense across many fields

Get valuable insights from your data by building data analysis systems from scratch with R. About This Book A handy guide to take your understanding of data analysis with R to the next level Real-world projects that focus on problems in finance, network analysis, social media, and more From data manipulation to analysis to visualization in R, this book will teach you everything you need to know about building end-to-end data

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analysis pipelines using R Who This Book Is For If you are looking for a book that takes you all the way through the practical application of advanced and effective analytics methodologies in R, then this is the book for you. A fundamental understanding of R and the basic concepts of data analysis is all you need to get started with this book. What You Will Learn Build end-to-end predictive analytics systems in R Build an experimental design to gather your own data and conduct analysis Build a recommender system from scratch using different approaches Use and leverage RShiny to build reactive programming applications Build systems for varied domains including market research, network analysis, social media analysis, and more Explore various R Packages such as RShiny, ggplot, recommenderlab, dplyr, and find out how to use them effectively Communicate modeling results using Shiny Dashboards Perform multi-variate time-series analysis prediction, supplemented with sensitivity analysis and risk modeling In Detail R offers a large variety of packages and libraries for fast and accurate data analysis and visualization. As a result, it's one of the most popularly used languages by data scientists and analysts, or anyone who wants to perform data analysis. This book will demonstrate how you can put to use your existing knowledge of data analysis in R to build highly efficient, end-to-end data analysis pipelines without any hassle. You'll start by building a content-based recommendation system, followed by building a project on sentiment analysis with tweets. You'll implement time-series modeling for anomaly detection, and understand cluster analysis

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of streaming data. You'll work through projects on performing efficient market data research, building recommendation systems, and analyzing networks accurately, all provided with easy to follow codes. With the help of these real-world projects, you'll get a better understanding of the challenges faced when building data analysis pipelines, and see how you can overcome them without compromising on the efficiency or accuracy of your systems. The book covers some popularly used R packages such as dplyr, ggplot2, RShiny, and others, and includes tips on using them effectively. By the end of this book, you'll have a better understanding of data analysis with R, and be able to put your knowledge to practical use without any hassle. Style and approach This book takes a unique, learn-as-you-do approach, as you build on your understanding of data analysis progressively with each project. This book is designed in a way that implementing each project will empower you with a unique skill set, and enable you to implement the next project more confidently.

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