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Reference Python Data Science Handbook

This book contains a comprehensive treatment of advanced LaTeX features. The focus is on the development of high quality documents and presentations, by revealing powerful insights into the LaTeX language. The well-established advantages of the typesetting system LaTeX are the preparation and publication of platform-independent high-quality documents and automatic numbering and cross-referencing of illustrations or references. These can be extended beyond the typical applications, by creating highly dynamic electronic documents. This is commonly performed in connection with the portable document format (PDF), as well as other programming tools which allow the development of extremely flexible electronic documents.

Python Programming for Arduino Morgan & Claypool Publishers

This book provides a solid foundation in the Python programming language, numerical methods, and data analysis, all embedded within the context of astronomy and astrophysics. It not only enables students to learn programming with the aid of examples from these fields but also provides ample motivation for engagement in independent research. The book opens by outlining the importance of computational methods and programming algorithms in contemporary astronomical and astrophysical research, showing why programming in Python is a good choice for beginners. The performance of basic calculations with Python is then explained with reference to, for example, Kepler's laws of planetary motion and gravitational and tidal forces. Here, essential background knowledge is provided as necessary. Subsequent

chapters are designed to teach the reader to define and use important functions in Python and to utilize numerical methods to solve differential equations and landmark dynamical problems in astrophysics. Finally, the analysis of astronomical data is discussed, with various hands-on examples as well as guidance on astronomical image analysis and applications of artificial neural networks.

Numerical Python Packt Publishing Ltd

A fully updated tutorial on the basics of the Python programming language for science students Python is a computer programming language that has gained popularity throughout the sciences. This fully updated second edition of A Student's Guide to Python for Physical Modeling aims to help you, the student, teach yourself enough of the Python programming language to get started with physical modeling. You will learn how to install an open-source Python programming environment and use it to accomplish many common scientific computing tasks: importing, exporting, and visualizing data; numerical analysis; and simulation. No prior programming experience is assumed. This guide introduces a wide range of useful tools, including: Basic Python programming and scripting Numerical arrays Two- and three-dimensional graphics Animation Monte Carlo simulations Numerical methods, including solving ordinary differential equations Image processing Numerous code samples and exercises—with solutions—illustrate new ideas as they are introduced. This guide also includes supplemental online resources: code samples, data sets, tutorials, and more. This edition includes new material on symbolic calculations with SymPy, an introduction to Python libraries for data science and machine

learning (pandas and sklearn), and a primer on Python classes and object-oriented programming. A new appendix also introduces command line tools and version control with Git.

Introduction to Python for Engineers and Scientists "O'Reilly Media, Inc."

If you want a basic understanding of computer vision's underlying theory and algorithms, this hands-on introduction is the ideal place to start. You'll learn techniques for object recognition, 3D reconstruction, stereo imaging, augmented reality, and other computer vision applications as you follow clear examples written in Python.

Programming Computer Vision with Python explains computer vision in broad terms that won't bog you down in theory. You get complete code samples with explanations on how to reproduce and build upon each example, along with exercises to help you apply what you've learned. This book is ideal for students, researchers, and enthusiasts with basic programming and standard mathematical skills. Learn techniques used in robot navigation, medical image analysis, and other computer vision applications Work with image mappings and transforms, such as texture warping and panorama creation Compute 3D reconstructions from several images of the same scene Organize images based on similarity or content, using clustering methods Build efficient image retrieval techniques to search for images based on visual content Use algorithms to classify image content and recognize objects Access the popular OpenCV library through a Python interface

Python for Finance Springer Nature Leverage the power of Matplotlib to visualize and understand your data more effectively Key Features Perform effective data visualization with

Matplotlib and get actionable insights from your data Design attractive graphs, charts, and 2D plots, and deploy them to the web Get the most out of Matplotlib in this practical guide with updated code and examples Book Description Python is a general-purpose programming language increasingly being used for data analysis and visualization.

Matplotlib is a popular data visualization package in Python used to design effective plots and graphs. This is a practical, hands-on resource to help you visualize data with Python using the Matplotlib library. Matplotlib for Python Developers, Second Edition shows you how to create attractive graphs, charts, and plots using Matplotlib. You will also get a quick introduction to third-party packages, Seaborn, Pandas, Basemap, and Geopandas, and learn how to use them with Matplotlib. After that, you'll embed and customize your plots in third-party tools such as GTK+3, Qt 5, and wxWidgets. You'll also be able to tweak the look and feel of your visualization with the help of practical examples provided in this book. Further on, you'll explore Matplotlib 2.1.x on the web, from a cloud-based platform using third-party packages such as Django. Finally, you will integrate interactive, real-time visualization techniques into your current workflow with the help of practical real-world examples. By the end of this book, you'll be thoroughly comfortable with using the popular Python data visualization library Matplotlib 2.1.x and leveraging its power to build attractive, insightful, and powerful visualizations. What you will learn Create 2D and 3D static plots such as bar charts, heat maps, and scatter plots Get acquainted with GTK+3, Qt5, and wxWidgets to understand the UI backend of Matplotlib Develop advanced

static plots with third-party packages such as Pandas, GeoPandas, and Seaborn Create interactive plots with real-time updates Develop web-based, Matplotlib-powered graph visualizations with third-party packages such as Django Write data visualization code that is readily expandable on the cloud platform Who this book is for This book is essentially for anyone who wants to create intuitive data visualizations using the Matplotlib library. If you're a data scientist or analyst and wish to create attractive visualizations using Python, you'll find this book useful. Some knowledge of Python programming is all you need to get started.

Artificial Intelligence with Python Packt Publishing Ltd

Do you have a biological question that could be readily answered by computational techniques, but little experience in programming? Do you want to learn more about the core techniques used in computational biology and bioinformatics? Written in an accessible style, this guide provides a foundation for both newcomers to computer programming and those interested in learning more about computational biology. The chapters guide the reader through: a complete beginners' course to programming in Python, with an introduction to computing jargon; descriptions of core bioinformatics methods with working Python examples; scientific computing techniques, including image analysis, statistics and machine learning. This book also functions as a language reference written in straightforward English, covering the most common Python language elements and a glossary of computing and biological terms. This title will teach undergraduates, postgraduates and

professionals working in the life sciences how to program with Python, a powerful, flexible and easy-to-use language.

Python Recipes for Earth Sciences Apress

Python is used in a wide range of geoscientific applications, such as in processing images for remote sensing, in generating and processing digital elevation models, and in analyzing time series. This book introduces methods of data analysis in the geosciences using Python that include basic statistics for univariate, bivariate, and multivariate data sets, time series analysis, and signal processing; the analysis of spatial and directional data; and image analysis. The text includes numerous examples that demonstrate how Python can be used on data sets from the earth sciences. The supplementary electronic material (available online through Springer Link) contains the example data as well as recipes that include all the Python commands featured in the book.

Advanced LaTeX in Academia Packt Publishing Ltd

Python Data Science Handbook"O'Reilly Media, Inc."

Python for Data Analysis Springer Nature

If you understand basic mathematics and know how to program with Python, you're ready to dive into signal processing. While most resources start with theory to teach this complex subject, this practical book introduces techniques by showing you how they're applied in the real world. In the first chapter alone, you'll be able to decompose a sound into its harmonics, modify the harmonics, and generate new sounds. Author Allen Downey explains techniques such as spectral decomposition, filtering, convolution, and the Fast Fourier Transform. This book also provides exercises and code

examples to help you understand the material. You'll explore: Periodic signals and their spectrums Harmonic structure of simple waveforms Chirps and other sounds whose spectrum changes over time Noise signals and natural sources of noise The autocorrelation function for estimating pitch The discrete cosine transform (DCT) for compression The Fast Fourier Transform for spectral analysis Relating operations in time to filters in the frequency domain Linear time-invariant (LTI) system theory Amplitude modulation (AM) used in radio Other books in this series include *Think Stats* and *Think Bayes*, also by Allen Downey.

Problem Solving with Python 3. 7

Edition Springer Nature

Scientific Python is taught from scratch in this book via copious, downloadable, useful and adaptable code snippets. Everything the working scientist needs to know is covered, quickly providing researchers and research students with the skills to start using Python effectively.

Numerical Methods in Engineering with Python 3 Packt Publishing Ltd

Probability is the bedrock of machine learning. You cannot develop a deep understanding and application of machine learning without it. Cut through the equations, Greek letters, and confusion, and discover the topics in probability that you need to know. Using clear explanations, standard Python libraries, and step-by-step tutorial lessons, you will discover the importance of probability to machine learning, Bayesian probability, entropy, density estimation, maximum likelihood, and much more.

A Student's Guide to Python for Physical Modeling: Second Edition Springer Nature

Learn how to use Python and its structures, how to install Python, and which tools are best suited for data analyst work. This book provides you with a handy reference and tutorial on topics ranging from basic Python concepts through to data mining, manipulating and importing datasets, and data analysis. *Python for Data Mining Quick Syntax Reference* covers each concept concisely, with many illustrative examples. You'll be introduced to several data mining packages, with examples of how to use each of them. The first part covers core Python including objects, lists, functions, modules, and error handling. The second part covers Python's most important data mining packages: NumPy and SciPy for mathematical functions and random data generation, pandas for dataframe management and data import, Matplotlib for drawing charts, and scikitlearn for machine learning. What You'll Learn Install Python and choose a development environment Understand the basic concepts of object-oriented programming Import, open, and edit files Review the differences between Python 2.x and 3.x Who This Book Is For Programmers new to Python's data mining packages or with experience in other languages, who want a quick guide to Pythonic tools and techniques.

Hands-On Data Visualization with Bokeh

Python for the Lab is the first book covering how to develop instrumentation software. It is ideal for researchers willing to automatize their setups and bring their experiments to the next level. The book is the product of countless workshops at different universities, and a carefully design pedagogical strategy. With an easy to follow and task-oriented design, the book uncovers all the best

practices in the field. It also shows how to design code for long-term maintainability, opening the doors of fruitful collaboration among researchers from different labs.

Programming Computer Vision with Python Packt Publishing Ltd

Build attractive, insightful, and powerful visualizations to gain quality insights from your data Key Features Master Matplotlib for data visualization Customize basic plots to make and deploy figures in cloud environments Explore recipes to design various data visualizations from simple bar charts to advanced 3D plots Book Description Matplotlib provides a large library of customizable plots, along with a comprehensive set of backends. Matplotlib 3.0 Cookbook is your hands-on guide to exploring the world of Matplotlib, and covers the most effective plotting packages for Python 3.7. With the help of this cookbook, you'll be able to tackle any problem you might come across while designing attractive, insightful data visualizations. With the help of over 150 recipes, you'll learn how to develop plots related to business intelligence, data science, and engineering disciplines with highly detailed visualizations. Once you've familiarized yourself with the fundamentals, you'll move on to developing professional dashboards with a wide variety of graphs and sophisticated grid layouts in 2D and 3D. You'll annotate and add rich text to the plots, enabling the creation of a business storyline. In addition to this, you'll learn how to save figures and animations in various formats for downstream deployment, followed by extending the functionality offered by various internal and third-party toolkits, such as axisartist, axes_grid, Cartopy, and

Seaborn. By the end of this book, you'll be able to create high-quality customized plots and deploy them on the web and on supported GUI applications such as Tkinter, Qt 5, and wxPython by implementing real-world use cases and examples. What you will learn Develop simple to advanced data visualizations in Matplotlib Use the pyplot API to quickly develop and deploy different plots Use object-oriented APIs for maximum flexibility with the customization of figures Develop interactive plots with animation and widgets Use maps for geographical plotting Enrich your visualizations using embedded texts and mathematical expressions Embed Matplotlib plots into other GUIs used for developing applications Use toolkits such as axisartist, axes_grid1, and cartopy to extend the base functionality of Matplotlib Who this book is for The Matplotlib 3.0 Cookbook is for you if you are a data analyst, data scientist, or Python developer looking for quick recipes for a multitude of visualizations. This book is also for those who want to build variations of interactive visualizations.

Python Made Easy Lulu.com

This is the book for you if you are a student, hobbyist, developer, or designer with little or no programming and hardware prototyping experience, and you want to develop IoT applications. If you are a software developer or a hardware designer and want to create connected devices applications, then this book will help you get started.

Python Data Analytics Springer

This book follows a cookbook style approach that puts orthogonal and non-redundant recipes in your hands. Rather than rehashing the user manual, the explanations expose the underlying logic

behind Matplotlib. If you are an engineer or scientist who wants to create great visualizations with Python, rather than yet another specialized language, this is the book for you. While there are several very competent plotting packages, Matplotlib is just a Python module. Thus, if you know some Python already, you will feel at home from the first steps on. In case you are an application writer, you won't be left out since the integration of Matplotlib is covered.

Hands-On Data Science and Python Machine Learning Packt Publishing Ltd

Build real-world Artificial Intelligence applications with Python to intelligently interact with the world around you

About This Book Step into the amazing world of intelligent apps using this comprehensive guide

Enter the world of Artificial Intelligence, explore it, and create your own applications

Work through simple yet insightful examples that will get you up and running with Artificial Intelligence in no time

Who This Book Is For This book is for Python developers who want to build real-world Artificial Intelligence applications. This book is friendly to Python beginners, but being familiar with Python would be useful to play around with the code. It will also be useful for experienced Python programmers who are looking to use Artificial Intelligence techniques in their existing technology stacks.

What You Will Learn

- Realize different classification and regression techniques
- Understand the concept of clustering and how to use it to automatically segment data
- See how to build an intelligent recommender system
- Understand logic programming and how to use it
- Build automatic speech recognition systems
- Understand the basics of heuristic search and genetic programming
- Develop games using

Artificial Intelligence

Learn how reinforcement learning works

Discover how to build intelligent applications centered on images, text, and time series data

See how to use deep learning algorithms and build applications based on it

In Detail Artificial Intelligence is becoming increasingly relevant in the modern world where everything is driven by technology and data. It is used extensively across many fields such as search engines, image recognition, robotics, finance, and so on. We will explore various real-world scenarios in this book and you'll learn about various algorithms that can be used to build Artificial Intelligence applications. During the course of this book, you will find out how to make informed decisions about what algorithms to use in a given context. Starting from the basics of Artificial Intelligence, you will learn how to develop various building blocks using different data mining techniques. You will see how to implement different algorithms to get the best possible results, and will understand how to apply them to real-world scenarios. If you want to add an intelligence layer to any application that's based on images, text, stock market, or some other form of data, this exciting book on Artificial Intelligence will definitely be your guide!

Style and approach This highly practical book will show you how to implement Artificial Intelligence. The book provides multiple examples enabling you to create smart applications to meet the needs of your organization. In every chapter, we explain an algorithm, implement it, and then build a smart application.

Matplotlib 3.0 Cookbook MIT Press

Unlock deeper insights into visualization in form of 2D and 3D graphs using Matplotlib 2.x

About This Book Create

and customize live graphs, by adding style, color, font to make appealing graphs. A complete guide with insightful use cases and examples to perform data visualizations with Matplotlib's extensive toolkits. Create timestamp data visualizations on 2D and 3D graphs in form of plots, histogram, bar charts, scatterplots and more. Who This Book Is For This book is for anyone interested in data visualization, to get insights from big data with Python and Matplotlib 2.x. With this book you will be able to extend your knowledge and learn how to use python code in order to visualize your data with Matplotlib. Basic knowledge of Python is expected. What You Will Learn Familiarize with the latest features in Matplotlib 2.x Create data visualizations on 2D and 3D charts in the form of bar charts, bubble charts, heat maps, histograms, scatter plots, stacked area charts, swarm plots and many more. Make clear and appealing figures for scientific publications. Create interactive charts and animation. Extend the functionalities of Matplotlib with third-party packages, such as Basemap, GeoPandas, Mplot3d, Pandas, Scikit-learn, and Seaborn. Design intuitive infographics for effective storytelling. In Detail Big data analytics are driving innovations in scientific research, digital marketing, policy-making and much more. Matplotlib offers simple but powerful plotting interface, versatile plot types and robust customization. Matplotlib 2.x By Example illustrates the methods and applications of various plot types through real world examples. It begins by giving readers the basic know-how on how to create and customize plots by Matplotlib. It further covers how to plot different types of economic data in the form of 2D and 3D graphs, which give insights from a deluge of data from

public repositories, such as Quandl Finance. You will learn to visualize geographical data on maps and implement interactive charts. By the end of this book, you will become well versed with Matplotlib in your day-to-day work to perform advanced data visualization. This book will guide you to prepare high quality figures for manuscripts and presentations. You will learn to create intuitive info-graphics and reshaping your message crisply understandable. Style and approach Step by step comprehensive guide filled with real world examples.

[Python Data Science Handbook](#) Machine Learning Mastery

This book covers the fundamentals of machine learning with Python in a concise and dynamic manner. It covers data mining and large-scale machine learning using Apache Spark. About This Book Take your first steps in the world of data science by understanding the tools and techniques of data analysis Train efficient Machine Learning models in Python using the supervised and unsupervised learning methods Learn how to use Apache Spark for processing Big Data efficiently Who This Book Is For If you are a budding data scientist or a data analyst who wants to analyze and gain actionable insights from data using Python, this book is for you.

Programmers with some experience in Python who want to enter the lucrative world of Data Science will also find this book to be very useful, but you don't need to be an expert Python coder or mathematician to get the most from this book. What You Will Learn Learn how to clean your data and ready it for analysis Implement the popular clustering and regression methods in Python Train efficient machine learning models using decision trees and random forests

Visualize the results of your analysis using Python's Matplotlib library Use Apache Spark's MLlib package to perform machine learning on large datasets In Detail Join Frank Kane, who worked on Amazon and IMDb's machine learning algorithms, as he guides you on your first steps into the world of data science. Hands-On Data Science and Python Machine Learning gives you the tools that you need to understand and explore the core topics in the field, and the confidence and practice to build and analyze your own machine learning models. With the help of interesting and easy-to-follow practical examples, Frank Kane explains potentially complex topics such as Bayesian methods and K-means clustering in a way that anybody can understand them. Based on Frank's successful data science course, Hands-On Data Science and Python Machine Learning empowers you to conduct data analysis and perform efficient machine learning using Python. Let Frank help you unearth the value in your data using the various data mining and data analysis techniques available in Python, and to develop efficient predictive models to predict future results. You will also learn how to perform large-scale machine learning on Big Data using Apache Spark. The book covers preparing your data for analysis, training machine learning models, and visualizing the final data analysis. Style and approach This comprehensive book is a perfect blend of theory and hands-on code examples in Python which can be used for your reference at any time.

A Gentle Introduction to Effective Computing in Quantitative Research

Machine Learning Mastery

A complete guide for Python

programmers to master scientific

computing using Python APIs and tools

About This Book The basics of scientific computing to advanced concepts involving parallel and large scale computation are all covered. Most of the Python APIs and tools used in scientific computing are discussed in detail The concepts are discussed with suitable example programs Who This Book Is For If you are a Python programmer and want to get your hands on scientific computing, this book is for you. The book expects you to have had exposure to various concepts of Python programming. What You Will Learn Fundamentals and components of scientific computing Scientific computing data management Performing numerical computing using NumPy and SciPy Concepts and programming for symbolic computing using SymPy Using the plotting library matplotlib for data visualization Data analysis and visualization using Pandas, matplotlib, and IPython Performing parallel and high performance computing Real-life case studies and best practices of scientific computing In Detail In today's world, along with theoretical and experimental work, scientific computing has become an important part of scientific disciplines. Numerical calculations, simulations and computer modeling in this day and age form the vast majority of both experimental and theoretical papers. In the scientific method, replication and reproducibility are two important contributing factors. A complete and concrete scientific result should be reproducible and replicable. Python is suitable for scientific computing. A large community of users, plenty of help and documentation, a large collection of scientific libraries and environments, great performance, and good support makes Python a great choice for scientific computing. At

present Python is among the top choices for developing scientific workflow and the book targets existing Python developers to master this domain using Python. The main things to learn in the book are the concept of scientific workflow, managing scientific workflow data and performing computation on this

data using Python. The book discusses NumPy, SciPy, SymPy, matplotlib, Pandas and IPython with several example programs. Style and approach This book follows a hands-on approach to explain the complex concepts related to scientific computing. It details various APIs using appropriate examples.

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