[DOC] High Performance Python Practical Performant Programming For Humans

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High Performance Python-Micha Gorelick 2020-04-30 Your Python code may run correctly, but you need it to run faster. Updated for Python 3, this expanded edition shows you how to locate performance bottlenecks and significantly speed up your code in high-data-volume programs. By exploring the fundamental theory behind design choices, High Performance Python helps you gain a deeper understanding of Python's implementation. How do you take advantage of multicore architectures or clusters? Or build a system that scales up and down without losing reliability? Experienced Python programmers will learn concrete solutions to many issues, along with war stories from companies that use high-performance Python for social media analytics, productionized machine learning, and more. Get a better grasp of NumPy, Cython, and profilers Learn how Python abstracts the underlying computer architecture Use profiling to find bottlenecks in CPU time and memory usage Write efficient programs by choosing appropriate data structures Speed up matrix and vector computations Use tools to compile Python down to machine code Manage multiple I/O and computational operations concurrently Convert multiprocessing code to run on local or remote clusters Deploy code faster using tools like Docker

High Performance Python-Micha Gorelick 2020-09-08 Your Python code may run correctly, but you need it to run faster. By exploring the fundamental theory behind design choices, the updated edition of this practical guide, expanded and enhanced for Python 3, helps you gain a deeper understanding of Python's implementation. You'll learn how to locate performance bottlenecks and significantly speed up your code in high-data-volume programs. How can you take advantage of multicore architectures or clusters? Or build a system that can scale up and down without losing reliability? Experienced Python programmers and students alike will learn concrete solutions to these and other issues, along with war stories from companies that use high-performance Python for social media analytics, productionized machine learning, and other situations. Get a better grasp of NumPy, Cython, and profilers Learn how Python abstracts the underlying computer architecture Understand performant pandas Use profiling to find bottlenecks in CPU time and memory usage Write efficient programs by choosing appropriate data structures Speed up matrix, vector, and even tensor computations Use tools to compile Python down to machine code, on CPUs and GPUs Manage multiple I/O and computational operations concurrently Convert multiprocessing code to run on a local or remote cluster Deploy code faster using tools like Docker Solve large problems while using less RAM Get real-life stories and lessons from Python programmers

High Performance Python-Micha Gorelick 2014-08-22 "If you're an experienced Python programmer, High Performance Python will guide you through the various routes of code optimization. You'll learn how to use smarter algorithms and leverage peripheral technologies, such as numpy, cython, cpython, and various multi-threaded and multi-node strategies. There's a lack of good learning and reference material available if you want to learn Python for highly computational tasks. Because of it, fields from physics to biology and systems infrastructure to data science are hitting barriers. They need the fast prototyping nature of Python, but too few people know how to wield it"--Publisher's description.

Python High Performance-Gabriele Lanaro 2017-05-24 Learn how to use Python to create efficient applications About This Book Identify the bottlenecks in your applications and solve them using the best profiling techniques Write efficient numerical code in NumPy, Cython, and Pandas Adapt your programs to run on multiple processors and machines with parallel programming Who This Book Is For The book is aimed at Python developers who want to improve the performance of their application. Basic knowledge of Python is expected What You Will Learn Write efficient numerical code with the NumPy and Pandas libraries Use Cython and Numba to achieve native performance Find bottlenecks in your Python code using profilers Write asynchronous code using Asyncio and RxPy Use Tensorflow and Theano for automatic parallelism in Python Set up and run distributed algorithms on a cluster using Dask and PySpark In Detail Python is a versatile language that has found applications in many industries. The clean syntax, rich standard library, and vast selection of third-party libraries make Python a wildly popular language. Python High Performance is a practical guide that shows how to leverage the power of both native and third-party Python libraries to build robust applications. The book explains how to use various profilers to find performance bottlenecks and apply the correct algorithm to fix them. The reader will learn how to effectively use NumPy and Cython to speed up numerical code. The book explains concepts of concurrent programming and how to implement robust and responsive applications using Reactive programming. Readers will learn how to write code for parallel architectures using Tensorflow and Theano, and use a cluster of computers for large-scale computations using technologies such as Dask and PySpark. By the end of the book, readers will have learned to achieve performance and scale from their Python applications. Style and approach A step-by-step practical guide filled with real-world use cases and examples

HIGH PERFORMANCE PYTHON.-GORELICK. 2016

Using Asyncio in Python-Caleb Hattingh 2020-01-30 If you're among the Python developers put off by asyncio's complexity, it's time to take another look. Asyncio is complicated because it aims to solve problems in concurrent network programming for both framework and end-user developers. The features you need to consider are a small subset of the whole asyncio API, but picking out the right features is the tricky part. That's where this practical book comes in. Veteran Python developer Caleb Hattingh helps you gain a basic understanding of asyncio's building blocks—enough to get started writing simple event-based programs. You'll learn why asyncio offers a safer alternative to preemptive multitasking (threading) and how this API provides a simpleway to support thousands of simultaneous socket connections. Get a critical comparison of asyncio and threading for concurrent network programming Take an asyncio walk-through, including a quickstart guidefor hitting the ground looping with event-based programming Learn the difference between asyncio features for end-user developers and those for framework developers Understand asyncio's new async/await language syntax, including coroutines and task and future APIs Get detailed case studies (with code) of some popular asyncio-compatible third-party libraries

High Performance Computing-John Levesque 2010-12-14 High Performance Computing: Programming and Applications presents techniques that address new performance issues in the programming of high performance computing (HPC) applications. Omitting tedious details, the book discusses hardware architecture concepts and programming techniques that are the most pertinent to application developers for achievi

Cython-Kurt W. Smith 2015-01-21 Build software that combines Python's expressivity with the performance and control of C (and C++). It's possible with Cython, the compiler and hybrid programming language used by foundational packages such as NumPy, and prominent in projects including Pandas, h5py, and scikits-learn. In this practical guide, you'll learn how to use Cython to improve Python's performance—up to 3000x— and to wrap C and C++ libraries in Python with ease. Author Kurt Smith takes you through Cython's capabilities, with sample code and in-depth practice exercises. If you're just starting with Cython, or want to go deeper, you'll learn how this language is an essential part of any performance-oriented Python programmer's arsenal. Use Cython's static typing to speed up Python code Gain hands-on experience using Cython features to boost your numeric-heavy Python Create new types with Cython—and see how fast object-oriented programming in Python can be Effectively organize Cython code into separate modules and packages without sacrificing performance Use Cython to give Pythonic interfaces to C and C++ libraries Optimize code with Cython's runtime and compile-time profiling tools Use Cython's prange function to parallelize loops transparently with OpenMP

Python Programming in Context-Bradley N. Miller 2010-10-27 A user-friendly, object-oriented language, Python is quickly becoming the favorite introductory programming language among students and instructors. Many find Python to be a more lucid language than Java but with much of the functionality and therefore the ideal first language for those entering the world of Computer Science. Python Programming in Context is a clear, accessible introduction to the fundamental programming and problem solving concepts necessary for students at this level. The authors carefully build upon the many important computer science concepts and problem solving techniques throughout the text and offer relevant, real-world examples and exercises to reinforce key material. Programming skills throughout the text are linked to applied areas such as Image Processing, Cryptography, Astronomy, Music, the Internet, and Bioinformatics, giving students a well rounded look of its capabilities.

Mastering Python High Performance-Fernando Doglio 2015-09-09 Measure, optimize, and improve the performance of your Python code with this easy-to-follow guide About This Book Master the do's and don'ts of Python performance programming Learn how to use exiting new tools that will help you improve your scripts A step-by-step, conceptual guide to teach you how to optimize and fine-tune your critical pieces of code Who This Book Is For If you're a Python developer looking to improve the speed of your scripts or simply wanting to take your skills to the next level, then this book is perfect for you. What You Will Learn Master code optimization step-by-step and learn how to use different tools Understand what a profiler is and how to read its output Interpret visual output from profiling tools and improve the performance of your script Use Cython to create fast applications using Python and C Take advantage of PyPy to improve performance of Python code Optimize number-crunching code with NumPy, Numba, Parakeet, and Pandas In Detail Simply knowing how to code is not enough; on mission-critical pieces of code, every bit of memory and every CPU cycle counts, and knowing how to squish every bit of processing power out of your code is a crucial and sought-after skill. Nowadays, Python is used for many scientific projects, and sometimes the calculations done in those projects require some serious fine-tuning. Profilers are tools designed to help you measure the performance of your code and help you during the optimization process, so knowing how to use them and read their output is very handy. This book starts from the basics and progressively moves on to more advanced topics. You'll learn everything from profiling all the way up to writing a real-life application and applying a full set of tools designed to improve it in different ways. In the middle, you'll stop to learn about the major profilers used in Python and about some graphic tools to help you make sense of their output. You'll then move from generic optimization techniques onto Python-specific ones, going over the main constructs of the language that will help you improve your speed without much of a change. Finally, the book covers some number-crunching-specific libraries and how to use them properly to get the best speed out of them. After reading this book, you will know how to take any Python code, profile it, find out where the bottlenecks are, and apply different techniques to remove them. Style and approach This easy-to-follow, practical guide will help you enhance your optimization skills by improving real-world code.

Web Scraping with Python-Ryan Mitchell 2015-06-15 Learn web scraping and crawling techniques to access unlimited data from any web source in any format. With this practical guide, you'll learn how to use Python scripts and web APIs to gather and process data from thousands—or even millions—of web pages at once. Ideal for programmers, security professionals, and web administrators familiar with Python, this book not only teaches basic web scraping mechanics, but also delves into more advanced topics, such as analyzing raw data or using scrapers for frontend website testing. Code samples are available to help you understand the concepts in practice. Learn how to parse complicated HTML pages Traverse multiple pages and sites Get a general overview of APIs and how they work Learn several methods for storing the data you scrape Download, read, and extract data from documents Use tools and techniques to clean badly formatted data Read and write natural languages Crawl through forms and logins Understand how to scrape JavaScript Learn image processing and text recognition

Techniques for Optimizing Applications-Rajat P. Garg 2002 Software -- Programming Techniques.

Python in Practice-Mark Summerfield 2013-08-20 Winner of the 2014 Jolt Award for "Best Book" "Whether you are an experienced programmer or are starting your career, Python in Practice is full of valuable advice and example to help you improve your craft by thinking about problems from different perspectives, introducing tools, and detailing techniques to create more effective solutions." —Doug Hellmann, Senior Developer, DreamHost If you're an experienced Python programmer, Python in Practice will help you improve the quality, reliability, speed, maintainability, and usability of all your Python programs. Mark Summerfield focuses on four key themes: design patterns for coding elegance, faster processing through concurrency and compiled Python (Cython), high-level networking, and graphics. He identifies well-proven design patterns that are useful in Python, illuminates them with expert-quality code, and explains why some object-oriented design patterns are irrelevant to Python. He also explodes several counterproductive myths about Python programming—showing, for example, how Python can take full advantage of multicore hardware. All examples, including three complete case studies, have been tested with Python 3.3 (and, where possible, Python 3.2 and 3.1) and crafted to maintain compatibility with future Python 3.x versions. All code has been tested on Linux, and most code has also been tested on OS X and Windows. All code may be downloaded at www.qtrac.eu/pipbook.html. Coverage includes Leveraging Python's most effective creational, structural, and behavioral design patterns Supporting concurrency with Python's multiprocessing, threading, and concurrent.futures modules Avoiding concurrency problems using thread-safe queues and futures rather than fragile locks Simplifying networking with high-level modules, including xmlrpclib and RPyC Accelerating Python code with Cython, C-based Python modules, profiling, and other techniques Creating modern-looking GUI applications with Tkinter Leveraging today's powerful graphics hardware via the OpenGL API using pyglet and PyOpenGL

The World of Programming Languages-Michael Marcotty 2012-12-06 The earth, viewed through the window of an airplane, shows a regularity and reption of features, for example, hills, valleys, rivers, lakes, and forests. Nevertheless, there is great local variation; Vermont does not look like Utah. Similarly, if we rise above the details of a few programming languages, we can discern features that are common to many languages. This is the programming language landscape; the main features include variables, types, control structures, and input/output. Again, there is local variation; Pascal does not look like Basic. This work is a broad and comprehensive discussion of the principal features of the major programming languages. A Study of Concepts The text surveys the landscape of programming languages and its features. Each chapter concentrates on a single language concept. A simple model of the feature, expressed as a mini-language, is presented. This allows us to study an issue in depth and relative isolation. Each chapter concludes with a discussion of the way in which the concept is incorporated into some well-known languages. This permits a reasonably complete coverage of language issues.

Python for DevOps-Noah Gift 2019-12-12 Much has changed in technology over the past decade. Data is hot, the cloud is ubiquitous, and many organizations need some form of automation. Throughout these transformations, Python has become one of the most popular languages in the world. This practical resource shows you how to use Python for everyday Linux systems administration tasks with today's most useful DevOps tools, including Docker, Kubernetes, and Terraform. Learning how to interact and automate with Linux is essential for millions of professionals. Python makes it much easier. With this book, you'll learn how to develop software and solve problems using containers, as well as how to monitor, instrument, load-test, and operationalize your software. Looking for effective ways to "get stuff done" in Python? This is your guide. Python foundations, including a brief introduction to the language How to automate text, write command-line tools, and automate the filesystem Linux utilities, package management, build systems, monitoring and instrumentation, and automated testing Cloud computing, infrastructure as code, Kubernetes, and serverless Machine learning operations and data engineering from a DevOps perspective Building, deploying, and operationalizing a machine learning project

Java 9 High Performance-Mayur Ramgir 2017-11-01 Best practices to adapt and bottlenecks to avoid About This Book Tackle all kinds of performance-related issues and streamline your development Master the new features and new APIs of Java 9 to implement highly efficient and reliable codes Gain an in-depth knowledge of Java application performance and obtain best results from performance testing Who This Book Is For This book is for Java developers who would like to build reliable and high-performance applications. Prior Java programming knowledge is assumed. What You Will Learn Work with JIT compilers Understand the usage of profiling tools Generate JSON with code examples Leverage the command-line tools to speed up application development Build microservices in Java 9 Explore the use of APIs to improve application code Speed up your application with reactive programming and concurrency In Detail This book focuses on the practicalities rather than theory of Java application performance tuning. This book will be your one-stop guide to optimize the performance of your Java applications. We will begin by understanding the new features and APIs of Java 9. You will then be taught the practicalities of Java application performance tuning, how to make the best use of garbage collector, and find out how to optimize code with microbenchmarking. Moving ahead, you will be introduced to

multithreading and learning about concurrent programming with Java 9 to build highly concurrent and efficient applications. You will learn how to fine tune your Java code for best results. You will discover techniques on how to benchmark performance and reduce various bottlenecks in your applications. We'll also cover best practices of Java programming that will help you improve the quality of your codebase. By the end of the book, you will be armed with the knowledge to build and deploy efficient, scalable, and concurrent applications in Java. Style and approach This step-by-step guide provides real-world examples to give you a hands-on experience.

Embedded Systems-Raj Kamal 2011

The Hacker's Guide to Scaling Python-Julien Danjou Python is a wonderful programming language that allows writing applications quickly. But how do you make those applications scale for thousands of users and requests? It takes years of practice, research, trial and errors to build experience and knowledge along the way. Simple questions such as "How do I make my code faster?" or "How do I make sure there is no bottleneck?" cost hours to find good answers. Without enough background on the topic, you'll never be sure that any answer you'll come up with will be correct. The Hacker's Guide to Scaling Python will help you solve that by providing guidelines, tips and best practice. Adding a few interviews of experts on the subject, you will learn how you can distribute your Python application so it is able to process thousands of requests.

Modern Fluoropolymers-John Scheirs 1997-09-09 The last 25 years have seen the introduction of numerous new fluoropolymers and fluoroelastomers and these developments have widened considerably the scope and applications of fluorine-containing polymers. Modern Fluoropolymers provides an overview of a comprehensive range of commercial fluoropolymers with an emphasis on structure/property behaviour and their diverse fields of application Topics covered include: crystalline and amorphous fluoropolymers, fluoroelastomers, coatings, sealants, linings, electrical properties, surface properties, effects of radiation, chemical resistance and failure modes of fluoropolymers. With chapters written by experts from industry and academia from North America, Europe, Japan, Australia and Russia, the book is truly international in scope and will be welcomed by researchers, processors and users of all types of fluoropolymers.

High Performance Computing-Thomas Sterling 2017-12-05 High Performance Computing: Modern Systems and Practices is a fully comprehensive and easily accessible treatment of high performance computing, covering fundamental concepts and essential knowledge while also providing key skills training. With this book, domain scientists will learn how to use supercomputers as a key tool in their quest for new knowledge. In addition, practicing engineers will discover how supercomputers can employ HPC systems and methods to the design and simulation of innovative products, and students will begin their careers with an understanding of possible directions for future research and development in HPC. Those who maintain and administer commodity clusters will find this textbook provides essential coverage of not only what HPC systems do, but how they are used. Covers enabling technologies, system architectures and operating systems, parallel programming languages and algorithms, scientific visualization, correctness and performance debugging tools and methods, GPU accelerators and big data problems Provides numerous examples that explore the basics of supercomputing, while also providing practical training in the real use of high-end computers Helps users with informative and practical examples that build knowledge and skills through incremental steps Features sidebars of background and context to present a live history and culture of this unique field Includes online resources, such as recorded lectures from the authors' HPC courses

High Performance Spark-Holden Karau 2017-05-25 Apache Spark is amazing when everything clicks. But if you haven't seen the performance improvements you expected, or still don't feel confident enough to use Spark in production, this practical book is for you. Authors Holden Karau and Rachel Warren demonstrate performance optimizations to help your Spark queries run faster and handle larger data sizes, while using fewer resources. Ideal for software engineers, data engineers, developers, and system administrators working with large-scale data applications, this book describes techniques that can reduce data infrastructure costs and developer hours. Not only will you gain a more comprehensive understanding of Spark, you'll also learn how to make it sing. With this book, you'll explore: How Spark SQL's new interfaces improve performance over SQL's RDD data structure The choice between data joins in Core Spark and Spark SQL Techniques for getting the most out of standard RDD transformations How to work around performance issues in Spark's key/value pair paradigm Writing high-performance Spark code without Scala or the JVM How to test for functionality and performance when applying suggested improvements Using Spark MLlib and Spark ML machine learning libraries Spark's Streaming components and external community packages

Modelling and Control of Robot Manipulators-Lorenzo Sciavicco 2001-02-19 Fundamental and technological topics are blended uniquely and developed clearly in nine chapters with a gradually increasing level of complexity. A wide variety of relevant problems is raised throughout, and the proper tools to find engineering-oriented solutions are introduced and explained, step by step. Fundamental coverage includes: Kinematics; Statics and dynamics of manipulators; Trajectory planning and motion control in free space. Technological aspects include: Actuators; Sensors; Hardware/software control architectures; Industrial robot-control algorithms. Furthermore, established research results involving description of end-effector orientation, closed kinematic chains, kinematic redundancy and singularities, dynamic parameter identification, robust and adaptive control and force/motion control are provided. To provide readers with a homogeneous background, three appendices are included on: Linear algebra; Rigid-body mechanics; Feedback control. To acquire practical skill, more than 50 examples and case studies are carefully worked out and interwoven through the text, with frequent resort to simulation. In addition, more than 80 end-of-chapter exercises are proposed, and the book is accompanied by a solutions manual containing the MATLAB code for computer problems; this is available from the publisher free of charge to those adopting this work as a textbook for courses.

Hands-On GPU Programming with Python and CUDA-Dr. Brian Tuomanen 2018-11-27 Build real-world applications by writing effective GPU code, CUDA kernels, and device functions with the latest features of Python 3.7, CUDA 9 and CUDA 10 Key Features Expand your background in GPU programming—PyCUDA, scikit-cuda, and Nsight Effectively use CUDA libraries such as cuBLAS, cuFFT, and cuSolver Apply GPU programming to modern data science applications Book Description Hands-On GPU Programming with Python and CUDA hits the ground running: you'll start by learning how to apply Amdahl's Law, use a code profiler to identify bottlenecks in your Python code, and set up an appropriate GPU programming environment. You'll then see how to "query" the GPU's features and copy arrays of data to and from the GPU's own memory. As you make your way through the book, you'll launch code directly onto the GPU and write full blown GPU kernels and device functions in CUDA C. You'll get to grips with profiling GPU code effectively and fully test and debug your code using Nsight IDE. Next, you'll explore some of the more well-known NVIDIA libraries, such as cuFFT and cuBLAS. With a solid background in place, you will now apply your new-found knowledge to develop your very own GPU-based deep neural network from scratch. You'll then explore advanced topics, such as warp shuffling, dynamic parallelism, and PTX assembly. In the final chapter, you'll see some topics and applications related to GPU programming that you may wish to pursue, including AI, graphics, and blockchain. By the end of this book, you will be able to apply GPU programming to problems related to data science and high-performance computing. What you will learn Launch GPU code directly from Python Write effective and efficient GPU kernels and device functions Use libraries such as cuFFT, cuBLAS, and cuSolver Debug and profile your code with Nsight and Visual Profiler Apply GPU programming to datascience problems Build a GPU-based deep neuralnetwork from scratch Explore advanced GPU hardware features, such as warp shuffling Who this book is for Hands-On GPU Programming with Python and CUDA is for developers and data scientists who want to learn the basics of effective GPU programming to improve performance using Python code. You should have an understanding of first-year college or university-level engineering mathematics and physics, and have some experience with Python as well as in any C-based programming language such as C, C++, Go, or Java.

Fundamentals of Queueing Networks-Hong Chen 2013-04-17 This accessible book aims to collect in a single volume the essentials of stochastic networks. Stochastic networks have become widely used as a basic model of many physical systems in a diverse range of fields. Written by leading authors in the field, this book is meant to be used as a reference or supplementary reading by practitioners in operations research, computer systems, communications networks, production planning, and logistics.

High Performance JavaScript-Nicholas C. Zakas 2010-03-11 If you're like most developers, you rely heavily on JavaScript to build interactive and quick-responding web applications. The problem is that all of those lines of JavaScript code can slow down your apps. This book reveals techniques and strategies to help you eliminate performance bottlenecks during development. You'll learn how to improve execution time, downloading, interaction with the DOM, page life cycle, and more. Yahoo! frontend engineer Nicholas C. Zakas and five other JavaScript experts—Ross Harmes, Julien Lecomte, Steven Levithan, Stoyan Stefanov, and Matt

Sweeney—demonstrate optimal ways to load code onto a page, and offer programming tips to help your JavaScript run as efficiently and quickly as possible. You'll learn the best practices to build and deploy your files to a production environment, and tools that can help you find problems once your site goes live. Identify problem code and use faster alternatives to accomplish the same task Improve scripts by learning how JavaScript stores and accesses data Implement JavaScript code so that it doesn't slow down interaction with the DOM Use optimization techniques to improve runtime performance Learn ways to ensure the UI is responsive at all times Achieve faster client-server communication Use a build system to minify files, and HTTP compression to deliver them to the browser

Passive Infrared Detection-J. Caniou 2013-03-09 Familiarization with the infrared world Thermal imaging systems extend human perception beyond the visible spectrum. Since their principle is based on the natural emission of energy by physical bodies, they represent today the subject of a great deal of interest in many fields, whether in the military field or in industry or in research laboratories. They can be employed to analyse physical properties of objects, such as their energy level or their surface appearance; they are also commonly used to observe scenes in particular conditions like night vision, or in order to increase the visibility range through haze and fogs. All of these applications exploit the properties of infrared radiation whose characteristics are described in this book. This is achieved in a manner which differs from other publications on the same subject in that the book is governed by the intention to progressively lead the reader to a complete understanding of the infrared. The author intends to link physical theory to each specific aspect of the elements involved in the detection process, from their physical origin up to energy mapping in a two-dimensional picture. However we thought that it was unnecessary to demonstrate again that which the reader will easily find in scientific literature, nor to write another data book. Our aim is to fill the gap between theory and practical application. The subject is vast: infrared systems combines a wide variety of disciplines and image interpretation depends on the precise understanding of various phenomena.

Introduction to High Performance Scientific Computing-David L. Chopp 2019-03-01 Based on a course developed by the author, Introduction to High Performance Scientific Computing introduces methods for adding parallelism to numerical methods for solving differential equations. It contains exercises and programming projects that facilitate learning as well as examples and discussions based on the C programming language, with additional comments for those already familiar with C++. The text provides an overview of concepts and algorithmic techniques for modern scientific computing and is divided into six self-contained parts that can be assembled in any order to create an introductory course using available computer hardware. Part I introduces the C programming language for those not already familiar with programming in a compiled language. Part II describes parallelism on shared memory architectures using OpenMP. Part III details parallelism on computer clusters using MPI for coordinating a computation. Part IV demonstrates the use of graphical programming units (GPUs) to solve problems using the CUDA language for NVIDIA graphics cards. Part V addresses programming on GPUs for non-NVIDIA graphics cards using the OpenCL framework. Finally, Part VI contains a brief discussion of numerical methods and applications, giving the reader an opportunity to test the methods on typical computing problems.

Advanced Python Programming-Dr. Gabriele Lanaro 2019-02-28 Create distributed applications with clever design patterns to solve complex problems Key Features Set up and run distributed algorithms on a cluster using Dask and PySpark Master skills to accurately implement concurrency in your code Gain practical experience of Python design patterns with real-world examples Book Description This Learning Path shows you how to leverage the power of both native and third-party Python libraries for building robust and responsive applications. You will learn about profilers and reactive programming, concurrency and parallelism, as well as tools for making your apps quick and efficient. You will discover how to write code for parallel architectures using TensorFlow and Theano, and use a cluster of computers for large-scale computations using technologies such as Dask and PySpark. With the knowledge of how Python design patterns work, you will be able to clone objects, secure interfaces, dynamically choose algorithms, and accomplish much more in high performance computing. By the end of this Learning Path, you will have the skills and confidence to build engaging models that quickly offer efficient solutions to your problems. This Learning Path includes content from the following Packt products: Python High Performance - Second Edition by Gabriele Lanaro Mastering Concurrency in Python by Quan Nguyen Mastering Python Design Patterns by Sakis Kasampalis What you will learn Use NumPy and pandas to import and manipulate datasets Achieve native performance with Cython and Numba Write asynchronous code using asyncio and RxPy Design highly scalable programs with application scaffolding Explore abstract methods to maintain data consistency Clone objects using the prototype pattern Use the adapter pattern to make incompatible interfaces compatible Employ the strategy pattern to dynamically choose an algorithm Who this book is for This Learning Path is specially designed for Python developers who want to build high-performance applications and learn about single core and multi-core programming, distributed concurrency, and Python design patterns. Some experience with Python programming language will help you get the most out of this Learning Path.

Pro Python-Marty Alchin 2014-12-22 You've learned the basics of Python, but how do you take your skills to the next stage? Even if you know enough to be productive, there are a number of features that can take you to the next level in Python. Pro Python, Second Edition explores concepts and features normally left to experimentation, allowing you to be even more productive and creative. In addition to pure code concerns, Pro Python develops your programming techniques and approaches, which will help make you a better Python programmer. This book will improve not only your code but also your understanding and interaction with the many established Python communities. This book takes your Python knowledge and coding skills to the next level. It shows you how to write clean, innovative code that will be respected by your peers. With this book, make your code do more with introspection and meta-programming. And learn and later use the nuts and bolts of an application, tier-by-tier as a complex case study along the way. For more information, including a link to the source code referenced in the book, please visit http://propython.com/.

High Performance IOS Apps-Gaurav Vaish 2016-06-16 Ready to build mobile apps that out-perform the rest? If you're an iOS developer with app-building experience, this practical guide provides tips and best practices to help you solve many common performance issues. You'll learn how to design and optimize iOS apps that deliver a smooth experience even when the network is poor and memory is low. Today's picky users want fast and responsive apps that don't hog resources. In this book, author Gaurav Vaish demonstrates methods for writing optimal code from an engineering perspective, using reusable Objective-C code that you can use right away. Up your game and create high-performance native iOS apps that truly stand out from the crowd. Measure key performance indicators—attributes that constitute and affect app performance Write efficient apps by minimizing memory and power consumption, and explore options for using available CPU cores Optimize your app's lifecycle and UI, as well as its networking, data sharing, and security features Learn about application testing, debugging and analysis tools, and monitoring your app in the wild Collect data from real users to analyze app usage, identify bottlenecks, and provide fixes Use iOS 9 upgrades to improve your app's performance

Optimization of Photovoltaic Power Systems-Djamila Rekioua 2012-01-03 Photovoltaic generation is one of the cleanest forms of energy conversion available. One of the advantages offered by solar energy is its potential to provide sustainable electricity in areas not served by the conventional power grid. Optimisation of Photovoltaic Power Systems details explicit modelling, control and optimisation of the most popular stand-alone applications such as pumping, power supply, and desalination. Each section is concluded by an example using the MATLAB® and Simulink® packages to help the reader understand and evaluate the performance of different photovoltaic systems. Optimisation of Photovoltaic Power Systems provides engineers, graduate and postgraduate students with the means to understand, assess and develop their own photovoltaic systems. As such, it is an essential tool for all those wishing to specialise in stand-alone photovoltaic systems. Optimisation of Photovoltaic Power Systems aims to enable all researchers in the field of electrical engineering to thoroughly understand the concepts of photovoltaic systems; find solutions to their problems; and choose the appropriate mathematical model for optimising photovoltaic energy.

Advances in Food Extrusion Technology-Medeni Maskan 2016-04-19 A fresh view of the state-of-the-art, Advances in Food Extrusion Technology focuses on extruder selection, extrudate development, quality parameters, and troubleshooting in the 21st century extrusion process. In particular, the book:Introduces the history, nomenclature, and working principles of extrusion technologyPresents an overview of various t

Fundamentals of Multicore Software Development-Victor Pankratius 2011-12-12 With multicore processors now in every computer, server, and embedded device, the need for cost-effective, reliable parallel software has never been greater. By explaining key aspects of multicore programming, Fundamentals of Multicore Software Development helps software engineers understand parallel programming and master the multicore challenge. Accessible to newcomers to the field, the book captures the state of the art of multicore programming in computer science. It covers the fundamentals of multicore hardware, parallel design patterns, and parallel programming in

C++, .NET, and Java. It also discusses manycore computing on graphics cards and heterogeneous multicore platforms, automatic parallelization, automatic performance tuning, transactional memory, and emerging applications. As computing power increasingly comes from parallelism, software developers must embrace parallel programming. Written by leaders in the field, this book provides an overview of the existing and up-and-coming programming choices for multicores. It addresses issues in systems architecture, operating systems, languages, and compilers.

Pro Django-Marty Alchin 2013-07-09 Learn how to leverage Django, the leading Python web application development framework, to its full potential in this advanced tutorial and reference. Updated for Django 1.5 and Python 3, Pro Django, Second Edition examines in great detail the complex problems that Python web application developers can face and how to solve them. It provides in-depth information about advanced tools and techniques available in every Django installation, running the gamut from the theory of Django's internal operations to actual code that solves real-world problems for high-volume environments. Pro Django, Second Edition goes above and beyond other books, leaving the basics far behind and showing how Django can do things even its core developers never expected. By drawing on the dynamic nature of Python, you can write Django applications that stretch the limits of what you thought possible! What you'll learn Use Django's models, views, forms, and templates Handle HTTP and customizing back ends Get the most out of Django's common tooling Employ Django in various environments Build an API using Django's own components Make this code reusable—even distributable Who this book is for This book is for companies looking for a framework capable of supporting enterprise needs, as well as advanced Python or web developers looking to solve unusual, complex problems. Table of Contents Understanding Django Django Is Python Models URLs and Views Forms Templates Handling HTTP Backend Protocols Common Tools Coordinating Applications Enhancing Applications

Professional PHP5-Ed Lecky-Thompson 2007-01-29 What is this book about? With the release of PHP 5 and the Zend Engine 2, PHP finally graduates from it earliest days as a lightweight scripting syntax to an powerful object oriented programming language that can hold its own against the Java and .NET architectures that currently dominate corporate software development. This book has a pragmatic focus on how to use PHP in the larger scheme of enterprise-class software development. What does this book cover? Unlike Java or .NET, there is little discussion of the application of design patterns, component architectures, and best-practices to the development of applications using PHP. Software written in the absence of this sort of higher-order architecture will never be able to match the robust frameworks that Java and .NET ship with out of the box. This book addresses this issue by covering the following material: Part 1 discusses the OO concepts that were initially explored in Beginning PHP 5 and a demonstration of how to implement them in PHP 5. This section also covers UML modeling and provides a brief introduction to project management techniques that are covered in more depth in Part 4. Parts 2 and 3 present objects and object hierarchies that, when completed, comprise a robust toolkit that developers will be able to reuse on future projects. These chapters are designed to arm the professional PHP developer with the sort of constructs that are available out of the box with platforms such as Java and .NET — from simple utility classes like Collection and Iterator, to more complex constructs like Model/View/Controller architectures and state machines. Part 4 shows how to use the toolkit from Parts 2 and 3 to create real-world applications. We look at the development of a robust contact management system that will leverage the componentry and concepts already discussed and introduce project management and software architecture concepts that enable developers to accurately identify business requirements, design scalable, extensible platforms, and handle change management effectively. It covers the waterfall and spiral project management paradigms and include a discussion on eXtreme Programming and other approaches to software development. The Appendices include an extended discussion on the effective use of CVS, introduce the Zend Studio IDE and related tools, and discuss performance tuning and scalability.

Modeling and Forecasting Primary Commodity Prices-Walter C. Labys 2006 This book provides new insights into the modeling and forecasting of primary commodity prices by featuring comprehensive applications of the most recent methods of statistical time series analysis.

Intelligent Systems: Principles, Paradigms, and Pragmatics-Robert J. Schalkoff 2011-08-24 Artificial Intelligence has changed significantly in recent years and many new resources and approaches are now available to explore and implement this important technology. Intelligent Systems: Principles, Paradigms, and Pragmatics takes a modern, 21st-century approach to the concepts of Artificial Intelligence and includes the latest developments, developmental tools, programming, and approaches related to AI. The author is careful to make the important distinction between theory and practice, and focuses on a broad core of technologies, providing students with an accessible and comprehensive introduction to key AI topics.

Architecture Patterns with Python-Harry Percival 2020-03-05 As Python continues to grow in popularity, projects are becoming larger and more complex. Many Python developers are now taking an interest in high-level software design patterns such as hexagonal/clean architecture, event-driven architecture, and the strategic patterns prescribed by domain-driven design (DDD). But translating those patterns into Python isn't always straightforward. With this hands-on guide, Harry Percival and Bob Gregory from MADE.com introduce proven architectural design patterns to help Python developers manage application complexity—and get the most value out of their test suites. Each pattern is illustrated with concrete examples in beautiful, idiomatic Python, avoiding some of the verbosity of Java and C# syntax. Patterns include: Dependency inversion and its links to ports and adapters (hexagonal/clean architecture) Domain-driven design's distinction between entities, value objects, and aggregates Repository and Unit of Work patterns for persistent storage Events, commands, and the message bus Command-query responsibility segregation (CQRS) Event-driven architecture and reactive microservices

High Performance Images-Colin Bendell 2016-11-03 High-quality images have an amazing power of attraction. Just add some stunning photos and graphics to your website or app and watch your user engagement and conversion numbers climb. It can be tricky, but with this practical guide, you'll master the many facets of delivering high performance images on the internet—without adversely affecting site performance. You'll learn the nuts and bolts of color theory, image formats, storage and management, operations delivery, browser and application behavior, the responsive web, and many other topics. Ideal for developers, this book also provides useful tips, tricks, and practical theory for processing and displaying powerful images that won't slow down your online product. Explore digital image theory and the different formats available Dive into JPEGs, SVG and vector images, lossless compression, and other formats Use techniques for downloading and rendering images in a browser, and for loading images on mobile devices and cellular networks Examine specific rendering techniques, such as lazy loading, image processing, image consolidation, and responsive images Take responsive images to the next level by using content negotiation between browser and server with the Client Hints HTTP standard Learn how to operationalize your image workflow Contributors include Colin Bendell, Tim Kadlec, Yoav Weiss, Guy Podjarny, Nick Doyle, and Mike McCall from Akamai Technologies.

Monty Python Encyclopedia-Robert Ross 2001 This guide includes everything you ever wanted to know about the history and stars of the Python comedy team from And Now For Something Completely Different to The Wind In The Willows via Dead Parrots, Twelve Monkeys and Basil the Rat.