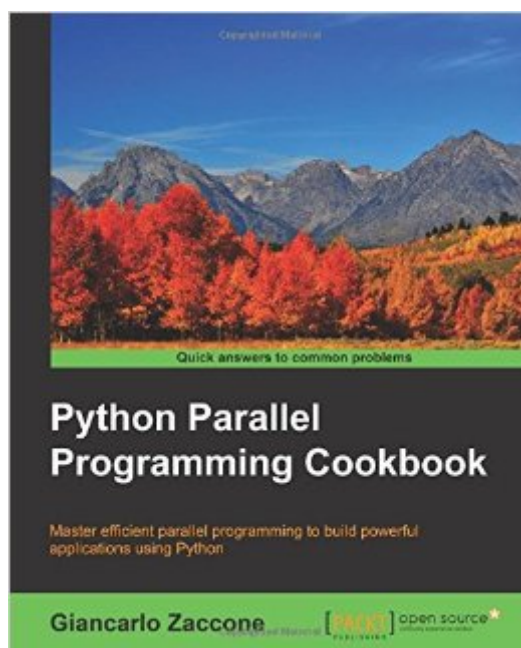


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# Python Parallel Programming Cookbook



## Synopsis

Master efficient parallel programming to build powerful applications using Python About This Book Design and implement efficient parallel software Master new programming techniques to address and solve complex programming problems Explore the world of parallel programming with this book, which is a go-to resource for different kinds of parallel computing tasks in Python, using examples and topics covered in great depth Who This Book Is For Python Parallel Programming Cookbook is intended for software developers who are well versed with Python and want to use parallel programming techniques to write powerful and efficient code. This book will help you master the basics and the advanced of parallel computing. What You Will Learn Synchronize multiple threads and processes to manage parallel tasks Implement message passing communication between processes to build parallel applications Program your own GPU cards to address complex problems Manage computing entities to execute distributed computational tasks Write efficient programs by adopting the event-driven programming model Explore the cloud technology with Django and Google App Engine Apply parallel programming techniques that can lead to performance improvements In Detail This book will teach you parallel programming techniques using examples in Python and will help you explore the many ways in which you can write code that allows more than one process to happen at once. Starting with introducing you to the world of parallel computing, it moves on to cover the fundamentals in Python. This is followed by exploring the thread-based parallelism model using the Python threading module by synchronizing threads and using locks, mutex, semaphores queues, GIL, and the thread pool. Next you will be taught about process-based parallelism where you will synchronize processes using message passing along with learning about the performance of MPI Python Modules. You will then go on to learn the asynchronous parallel programming model using the Python asyncio module along with handling exceptions. Moving on, you will discover distributed computing with Python, and learn how to install a broker, use Celery Python Module, and create a worker. You will understand anche Pycsp, the Scoop framework, and disk modules in Python. Further on, you will learnGPU programming withPython using the PyCUDA module along with evaluating performance limitations. Style and approach A step-by-step guide to parallel programming using Python, with recipes accompanied by one or more programming examples. It is a practically oriented book and has all the necessary underlying parallel computing concepts.

## Book Information

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## Customer Reviews

For readers already familiar with the Python cookbooks from Packt, you'll know the recipes in the cookbooks strive to share practical examples without getting into esoteric details. The "Python Parallel Programming Cookbook" is more than a cookbook: It includes introductions to core concepts of programming architectures and programming architectures. These introductions are necessary to take advantage of parallel processing (not just with Python). Cookbook examples are also supported with discussion of other parallel processing concepts when relevant. This is definitely helpful in understanding the "why" some recipes are efficient. (Disclaimer: I've not tried all of the recipes in the book, but the descriptions with the examples I tried were helpful.) Also an important note about this book: It does not start with a quick intro to the basics of the Python language or how to configure a Python environment. This book is definitely for developers familiar with Python that need to take Python to the next level of performance--a good one to have in the collection.

While an experienced Python programmer I didn't have much practical experience in parallel programming prior to reading this book and was eager to learn. In the end this book proved to be an overall excellent source of examples and explanation on how to go about writing parallel programs in Python. In particular I found the mix of theory and examples to be well balanced. The only reason the book rated four stars for me rather than five is that there is a lot of very awkward grammar that makes reading a fair bit of it a chore. I found the awkward grammar structure sometimes forcing me to re-read a section two or three times in order to understand the point. A good round of editing to

clean up the grammar issues would easily make this book a five star title. Grammar problems notwithstanding the content of the book is well worth the effort of deciphering the grammar shortfalls.

Excellent book. Parallel processing is a crucial part of many software roles and this book helps you gain a great foothold. The beginning gives the reader a great understanding of how hardware works, which is critical in understanding why certain ways of processing work better than others. It then takes each aspect of threads, processes, distributed processing, and GPU processing and breaks them into tiny bite-sized pieces. The ideas are built upon each other, but not the recipes. You can literally look at the table of contents, find what you need, and jump right to that item and use it as-is. It shows the code, the reason for it, and even the drawbacks (usually related to deadlocks) and how to avoid them for that recipe. If you read the book that way, you will miss some of the overall best practice ideas that become apparent from understanding all the pitfalls of each type of processing. The best part of this book, is that it gives you a lot of ways to run a similar model. This allows the reader to choose which method is best for their need rather than the author attempting to force the reader into a specific frame of thought. Some of the topics require certain hardware (CUDA for GPU processing), but generally the whole book should be usable on most machines where you can install python.

For all the users I did not have enough experience with this language, I could experience that with this book it helps me a lot to understand the procedures and everything about this. With the recipes I could develop the main idea of a system, I really recommend this book. for all the user or developers that like to develop with language. You will understand anche Pycsp, the Scoop framework, and disk modules in Python. Further on, you will learn GPU programming with Python using the PyCUDA module along with evaluating performance limitations.

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