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# Python For Finance: Analyze Big Financial Data



## Synopsis

The financial industry has adopted Python at a tremendous rate recently, with some of the largest investment banks and hedge funds using it to build core trading and risk management systems. This hands-on guide helps both developers and quantitative analysts get started with Python, and guides you through the most important aspects of using Python for quantitative finance. Using practical examples through the book, author Yves Hilpisch also shows you how to develop a full-fledged framework for Monte Carlo simulation-based derivatives and risk analytics, based on a large, realistic case study. Much of the book uses interactive IPython Notebooks, with topics that include: Fundamentals: Python data structures, NumPy array handling, time series analysis with pandas, visualization with matplotlib, high performance I/O operations with PyTables, date/time information handling, and selected best practices Financial topics: mathematical techniques with NumPy, SciPy and SymPy such as regression and optimization; stochastics for Monte Carlo simulation, Value-at-Risk, and Credit-Value-at-Risk calculations; statistics for normality tests, mean-variance portfolio optimization, principal component analysis (PCA), and Bayesian regression Special topics: performance Python for financial algorithms, such as vectorization and parallelization, integrating Python with Excel, and building financial applications based on Web technologies

## Book Information

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## Customer Reviews

This book could not be more timely. While Python has been the lingua franca for many data science

centric disciplines, quantitative finance has only recently embraced the many benefits of this language and its rich ecosystem of high quality scientific packages. The book manages to cater to all audiences and is suited for people with a background in finance who want to pick up Python, to Pythonistas who want to get started in Finance, as well as beginners in both disciplines. What I particularly like about this book is its strong focus on applicability. The many code examples of analyzing real world data sets equips readers with the hands-on knowledge required to start analyzing financial data themselves. Special note should also be made of how state-of-the-art the concepts are the book illustrates. Not an easy feat for any book about a topic that moves at the speed of Python. In sum, I highly recommend this book to anyone who wants to get started with, or sharpen her skills in Python for Finance.

The intro, which is normally worthless in textbooks, was informative. I only wish some of the textbooks that I used in grad school had been so well laid out. I haven't found any glaring errors, which I usually find in most of my texts, but that may come at a later time when I'm going over something I've already read. As someone who started using Matlab and R while getting my MBA in finance, I am finding this book to be very helpful in gaining a working knowledge of the other programming languages that I can use in my work and play.

This is an excellent book that works both as teaching medium as well as a reference. It targets finance people with some kind of programming experience (Matlab, R, VBA, etc) in a style that is easily accessible. The topics are well rounded and include chapters: on Data Structures; Performance Computing; on Excel integration, on Web, etc. The book also shows that Python is well suited for typically demanding analytics tasks (simulation, HPC, hardware-bound IO). This is illustrated with real world use cases such as the DX Analytics case study which illustrates how efficient and powerful (the standard) Python (stack) can be. In addition, this book shows how the latest "trends and fads" are being "followed" using Python (PCA, Bayesian MC, Web-based apps). This book really helps the reader take the best of Python in (Quant) Finance -- no matter what kind of institution she/he/ai works for or what kind of academic research she/he/ai is involved in.

A well balanced book between theory and practice. I like the fact that the author devotes attention to interactive use of the solutions (although I will probably stick to command line use of the examples for my learning efforts). Quite a bit of code interspersed with explanations that will appeal to diverse audiences.

The problem with this book is that it's not really a book in a normal sense. It's text inserted between sequential lines of Python code: three or four lines of code followed by one or two lines of text, ad infinitum. You read it but you don't feel like you've learned anything at all other than... I am not sure what.

This book addresses a niche audience who is experienced in financial analysis but has little programming experience. In the first few chapters we are introduced to Python and why it has become popular in the financial field. Some sample code is shown for how you would setup an options simulation using Monte Carlo methods. The middle chapters cover different Python libraries which are useful in finance such as Numpy and Pandas. The later chapters cover financial simulations again. I did not really understand this ordering of the chapters. It felt like the book dived too fast into simulations, then took a bunch of steps back to cover Python, and then switched back to financial discussion. Python 2.7 is the language used in this book along with the IPython interactive prompt. I did not understand this decision at all either as Python 3 and files would have been a lot better to stay up to date with current programming practices. Some of the programming practices mentioned were just plainly inaccurate in certain cases. For example there is the reduce function mentioned on page 92 where the author says: "reduce helps when we want to apply a function to all elements of a list object that returns a single value only." Reduce is not available in Python 3 because it is now deprecated. I went on StackOverflow to learn more about reduce and the top rated answers said that you should not use reduce anymore, and that in 99% of cases it is better to write out a loop for this functionality instead. I found the author to recommend the non-Pythonic way in a number of different places. In chapter 13 on object orientated programming the author briefly describes how you can make variables private in Python by adding an underscore. He says (p.385): "It might be helpful to have (class/object) private attributes". I thought this was a poorly worded description that does not describe the Pythonic way at all. Some sections use repetitive wording often. For example, in the first couple chapters the author uses the expression "On one hand... On the other hand" at least 5 times. I think the author needed to tell a better story overall and work on sentence structure. The financial code sections seemed like they could be really useful to someone in the industry. I do have enough previous experience with the options models to say how accurate these parts are. The book does cover both the European and American options models. Sections about Monte Carlo simulations were helpful. Overall, this book could be really useful to someone in finance that has not programmed much in Python. I think this book would have

worked a lot better to have assumed that the reader is familiar with Python, and then go more in depth on practical applications.

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