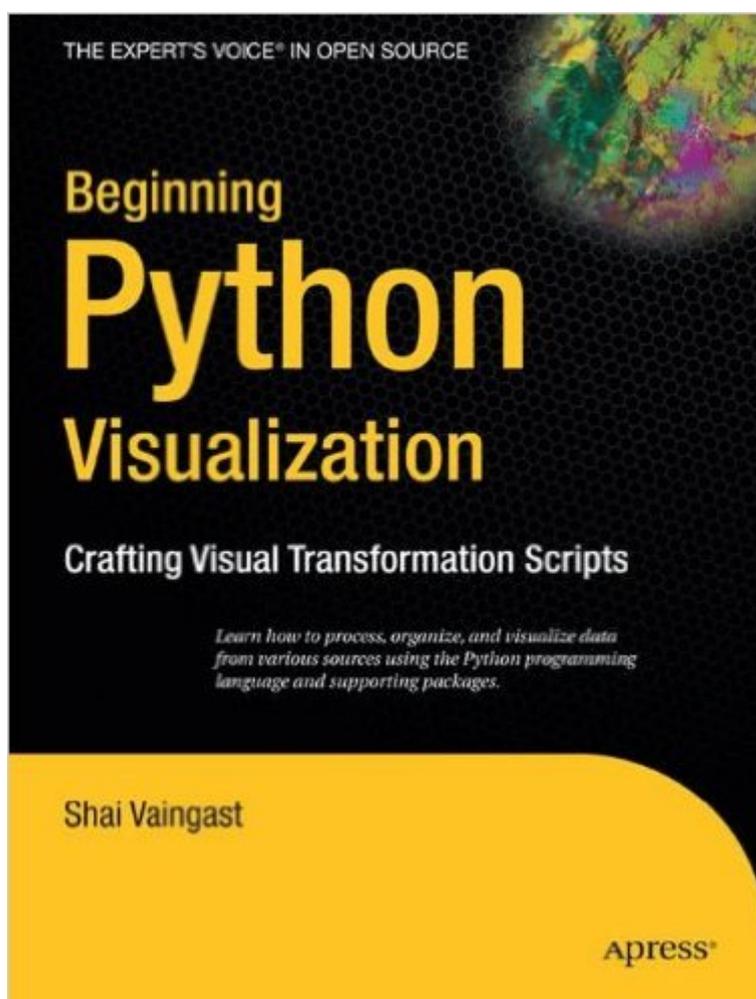# Beginning Python Visualization: Crafting Visual Transformation Scripts (Books For Professionals By Professionals)

THE EXPERT'S VOICE® IN OPEN SOURCE

Beginning

Python

Visualization

Crafting Visual Transformation Scripts

Learn how to process, organize, and visualize data from various sources using the Python programming language and supporting packages.

Shai Vaingast

Apress®

Synopsis

We are visual animals. But before we can see the world in its true splendor, our brains, just like our computers, have to sort and organize raw data, and then transform that data to produce new images of the world. Beginning Python Visualization: Crafting Visual Transformation Scripts discusses turning many types of small data sources into useful visual data. And, you will learn Python as part of the bargain. What you’ll learn Write ten lines of code and present visual information instead of data soup. Set up an open source environment ready for data visualization. Forget Excel: use Python. Learn numerical and textual processing. Draw graphs and plots based on textual and numerical data. Learn how to deal with images.   Who this book is for IT personnel, programmers, engineers, and hobbyists interested in acquiring and displaying data from the Web, sensors, economic trends, and even astronomical sources.

Book Information

Series: Books for Professionals by Professionals

Paperback: 384 pages

Publisher: Apress; 1st ed. edition (February 22, 2009)

Language: English

ISBN-10: 1430218436

ISBN-13: 978-1430218432

Product Dimensions: 7 x 0.9 x 9.2 inches

Shipping Weight: 1.7 pounds (View shipping rates and policies)

Average Customer Review: 3.9 out of 5 starsÂ Â See all reviewsÂ (18 customer reviews)

Best Sellers Rank: #579,496 in Books (See Top 100 in Books)   #125 inÂ Books > Computers & Technology > Programming > Software Design, Testing & Engineering > Tools   #131 inÂ Books > Computers & Technology > Computer Science > Computer Simulation   #178 inÂ Books > Computers & Technology > Computer Science > Information Theory

Customer Reviews

Sometimes a picture is worth a thousand words. "Beginning Python Visualization: Creating Visual Transformation Scripts", published in February 2009 by Apress, shows how Python and its related tools can be used to easily and effectively turn raw data into visual representations that communicate effectively. The author is Shai Vaingast, a professional engineer and engineering manager who needed to train scientists and engineers to do this kind of programming work. He was looking for a tutorial and reference work, and unable to find a suitable text, wound up writing his first

book. He wrote in the easy and clear style of someone comfortable and engaged with the subject matter.The book uses several very specific examples that illustrate general principles.The first example is using GPS data. By using Python one can extract data from GPS receivers and enter it into the computer and manipulate it to do what one wants including creating graphs and charts. In this section he shows how to use CSV, comma separated values, as a most useful file format. He shows show to extract data from real world GPS devices and import it via serial ports and the PySerial module. It would be easy for the reader to duplicate and extend this project.The heart of the book is coverage of useful examples utilizing MatPlotLib, NumPy and SciPy. These related tools are easy to use and fully integrated with Python. MatPlotLib is for plotting data and graphs, including interactive graphs and image files. NumPy is a powerful math library comparable to commercial tools like MatLab, and SciPy extends NumPy to for the sciences. Examples are numerous and include signal analysis using Fourier transforms.There is also a section on Image Processing using PIL, the Python Imaging Library. This is used for relatively simple image cropping and sizing and also for bit by bit image processing. Interpolation and curve fitting are also well covered. For anyone wanting an introduction to graphical analysis of statistical data, this would be an excellent resource.The author is obviously a professional in this field. He has a knack for good organizational style and a pragmatic approach to the work. In the book he says "Most of the time, research is organized chaos. The emphasis, however, should be on organized, not chaos." A real value I got from the book is a better understanding of data files, format, and organization as well as methods and guidelines for selecting file formats and storing and organizing data to enable fast and efficient data processing. It is obvious that this book was written by a practicing engineer.The theme of the book is that Python can be an all purpose environment for data manipulation and visualization, using nothing but free and open source tools that are easily integrated and scriptable without using multiple programming languages. The book should be an invaluable tool for scientists and engineers but it is also easily accessible to anyone interested in math and data analysis. There is no need for an advanced math background. While, as a matter of full disclosure, I have undergraduate degrees in Math and Physics, I feel the book should be easily accessible to anyone with a solid high school math background who is seriously interested in the subject. The book contains a short introductory tutorial on the basics of Python so anyone familiar with programming in any language should be fine.The book is an easy read from front to back, and I am sure it will also be a good reference resource for the future. The writing style is very clear and unforced and I found surprisingly few errors. While the Python world has a surplus of introductory and general books, books covering this kind of specific domain are especially welcome, and we could use more on

other topics by competent authors.At 363 pages the book is a surprisingly fast read. Its methodology is to use specific, short code examples to make all the key points. Most of the code samples are well selected, short and written in clear, concise Python. This is not the kind of book that overwhelms you with massive amounts of code. Either the book was well edited or else it was written by an exceptionally lucid thinker, or both.So, if you want to learn how to process, organize, and visualize data from various sources using the Python language, I recommend this book to you.I also have posted a podcast of an interview I did with the author at[...]

After spending many years coding with a variety of languages/tools (C#/VB.Net,VBA, Matlab, various numerical libraries), I picked-up Python and am blown away with its versatility. Clean and minimal syntax, no bloated API, and an amazing array of open-source modules. Libraries such as Numpy,Scipy, Matplotlib, Pylab, Python(x,y) means I can ditch Matlab and keep all the functionality I need.This book is a great introduction to Python for anyone who needs to handle and process data, and to the best open-source tools available to work with Python. It covers graphical display of data, but I wouldn't say it focuses on visualization per se.This is one of five Python books I would recommend: the other four being the Python Essential Reference (Beazley), Rapid GUI Programming with Python and QT (Summerfield), Learning Python (Lutz), and Programming Collective Intelligence (Segaran).Wish this had been around just a year ago!

I was the technical reviewer for this book, and I very much enjoyed the experience. The book is an excellent hands-on introduction to producing all sorts of useful graphs. It also discusses how to organize data files, write scripts properly, and do all sorts of things that scientists and presentation-oriented programmers will need to do sooner or later.Technically, the book relies on scipy and matplotlib especially. These are very functional and well-known toolkits, so you won't be wasting your time on weird unsupported packages when reading this book.

I share some of the experience of the author that has driven him to write this book, needing frequently to count on awk, perl, c (with numerical recipes), c++, matlab and excel to perform tasks involving data analysis - and I am thrilled to find a book that suggests a complete methodology to address these issues, in a unified and simple way.This book is not a manual to phyton (although you learn it while reading), but a tutorial on how to perform the tasks at hand easily.If you encounter these day-to-day issues of automating your tasks (not as a part of an enterprise software project, but have things done today, which can easily be re-done later) - this is the book to read.

I'm not sure you'll know that much about visualization when you're done reading this book, but you'll have lots of fun and probably know enough Python to be dangerous. This reminds me of the fun books that came out about ten years ago written by authors that taught various languages - C, C++, Haskell, Java - by programming multimedia. You don't see very many of those around anymore, even though that's a great way to teach someone a new programming language - by letting them feel like they've accomplished something when they actually "see" the results of their code. That's what this book does. You're not really learning that much about the theory of visualization. You're learning how to graph filter plots, display images, and put up some interesting but basic graphics with Python and its libraries.Note that to use this book you have to use some open source Python libraries such as scipy - Scientific Python - for example. If you want to learn visualization I recommend the books of Edward Tufte. If you are the no-nonsense type who wants to go from journeyman to expert Python programmer I suggestÂ Learning Python. However, if you are just someone who needs to get something simple in the way of an interface going, and you'd like to try out Python as a language and tool, this might be the way to go.

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