Python for Data Science Aug 2019

Saturday, August 3, 2019 07:54

Duration: 12 weeks / 4 hours per week

#	Schedule	Topic	Book	Website	Demo	Implementation
1	Aug 03	- Philosophy - What to expect / demand - Course outline & schedule - GIT - Jupyter Notebooks - Python: • Objects and their properties • Functions and modules • Scalers • Sequences - Where to look for more information - Notebooks • data model I • utils.py • data model II - Homework 1: Roll your own utils.py	Pro Git, Scott Chacon and Ben Straub (https://git-scm.com/book/en/v2)	Python 3 Documentation	Face recognition	
2	Aug 04	- Python: • Sequences • Understanding parameter passing • Lists v. tuples, and the operations on lists • Iterating over lists & tuples • Ranges, using ranges - Mo' GIT - Notebooks: • data model II • utils.py • type hierarchy • parameters to functions - Homework 2: Configure your GitHub account (with ssh access). Create a repository and add your notebooks to it	The Art of Computer Programming, D. E. Knuth	What the f*ck Python!	Matrix-vector multiplication (animated)	
3,4	Aug 11	- Jupyter, iPython, PyCharm, … - Python • Slices as views • Ternary expressions • List comprehensions • Ranges • Random numbers - Applications • Fibonacci • Sieve - Notebooks:	The Visual Display of Quantitative Information, Edward Tufte	Top500 Supercomputers	Moonshift	- Fibonacci - Sieve of Eratosthenes

		• ranges • Ternary expr and comprehensions - Jupyter notebook • Documentation • LaTeX - Homework: • Five ways to Fibonacci!! • Runtime measurement & optimization				
5,6	Aug 18	- Python • Pretty printing, formats • Random number generation • Generators • Decorators - Python: Bisection - Homework: • Solve the exercise functions using the Bisection method Bisection: • Run bisection for other methods • Calculate the number of iterations • Optimize your code! Random numbers: Calculate pi using • Area of circle/square • Buffon's needle Taylor series • Calculate sin, cos • Write testing routine • Optimize	Programming Pearls, Jon Bentley	Latency Numbers Every Programmer should know	sig.c	- Bisection Method - Taylor Series
7,8	Aug 25	- Ketchup! • Homework +/- • Git • Generators • Logging(?) - π^e v. e^π - Other ways of running • Jupyter • Spyder • Editor + Execute • iPython • PyCharm	Factfulness, Hans Rosling, Ola Rosling and Anna Rosling Ronnlund Also see: The Best Stats You've Ever Seen	https://learngitbranching.js.org/	sig.c	- Packaging!
9,10	Aug 31/ Sep 01	More Ketchup!!				
	Sep 08	Still more Ketchup!!!				
11, 12	Sep 15	Fixed Point Iterations Secant Method Newton's Method	Cartographies of Time: A History of the Timeline, Rosenberg and Grafton	Thirdsday 2019!! Especially see the endnotes, in the context of FPI	Matrix-Matrix multiplication	Fixed Point Iterations

13, 14	Sep 22	Optimizations Notebook - Shweta AI Search Algorithms: DFS & BFS Advent of Code #1 Python libraries: NumPy	Design Patterns: Elements of Reusable Object-Oriented Software, Gamma, Vlissides, Johnson and Helm "GoF"	https://adventofcode.com/		AoC 1
	Sep 29	No Class				
	Oct 06	No Class				
15, 16	Oct 13	Object Oriented Python AI Search Algorithms Python libraries: NumPy	Head First Design Patterns, Sierra and Freeman	The Moebius Strip (and other curves)	Matrix-Matrix multiplication - analysis!	AI Search
17, 18	Nov 03	Complete AI Search Complete Numpy (nearest neigh.)				AI Search Nearest Neighbors
19, 20	Nov 10	Python libraries: Matplotlib	The Big Book of Dashboards, Wexler, Shaffer and Cotgreave	10 Simple Rules for Better Figures		Top500 Analysis
21	Nov16	Python libraries: Pandas	The Ghost Map - The Story of London's Most Terrifying Epidemic and How it Changed Science, Cities and the Modern World, Steven Johnson	Python is cool		Top500 Analysis
22, 23	Nov 17	Misc. Items Interviews	Beautiful Code, Oram and Wilson			
24	Nov 17	PiZZa!	Your recommendation!	Your recommendation!	Your recommendation!	Your recommendation!