



Python: The why and a small example

Teal Pershing

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Python: why use it?

- High level programming language
 - Larger abstraction from what's going on in the computer
 - Feels more like a “black box”, but good for getting to a task quick
- Easy language to get into and learn
 - Memory for variables is automatically managed
 - Variable types do not need to be defined explicitly
 - Less punctuation/parentheses than some other languages
 - write/read scripts quickly
- Large amounts of libraries and support
 - The power of google is strong with this one
 - For math/physics: numpy, scipy, pyROOT, etc.



Python: the challenges

- Sometimes harder to tell what's going on in a code
 - Lack of explicit variable types
 - The higher abstraction can hide details of what's happening behind the scenes
- Can be slower for larger computations
 - Since python is dynamically typed, an the python interpreter takes more time to figure out what every object in the code is
 - Memory access can be less efficient when done behind the scenes
- Multithreading in Python is slow & not great
 - Multithreading: Ability for a core processing unit to run multiple processes/threads at the same time
 - For details, look up Python's Global Interpreter Lock and see why it slows down multithreading in python

A Very Introductory Example

- These slides and the code: <https://github.com/pershint/PyTooter>
- Dependencies: numpy, scipy, matplotlib
 - All can be installed from the command line using:
 - `sudo apt-get install python-numpy` (and then the others)
- Basic input and output: <https://docs.python.org/2/tutorial/inputoutput.html>
- Matplotlib library (AKA how to make your plots fancy):
http://matplotlib.org/api/pyplot_api.html
- Documentation on SciPy curve_fit: http://docs.scipy.org/doc/scipy-0.17.0/reference/generated/scipy.optimize.curve_fit.html
- Some useful linux software I would suggest: terminator, ipython
- Don't have a linux machine? No problem! Get VirtualBox:
<https://www.virtualbox.org/>, and a linux distribution (I like Ubuntu:
<http://www.ubuntu.com/download/desktop>
 - It's all freeeeeeeee :3