Week 1: An Overview of Python

Kevin Lee

Department of Statistics
Western Michigan University

Outline

1 Overview of Python

2 Python Basics

Python as a Programming Language

- Python is created by Guido van Rossum and first released in 1991.
- Python is an interpreted, high-level, general-purpose programming language.
  - Web development
  - Scientific computing
  - Data analytics
  - Etc.

Python as a Data Analytics Tool

- The Python environment makes it a perfect-fit for data analytics.
  - Simple and easy to learn
  - Has a lot of extensions and active community support
  - Open access to an extensive set of libraries (or packages)

R vs. Python

- R came from the statistics community as a programming language for statistical computing and visualization.
- Python came from the computer science community as a general-purpose programming language.
- Both released in the early 1990s.

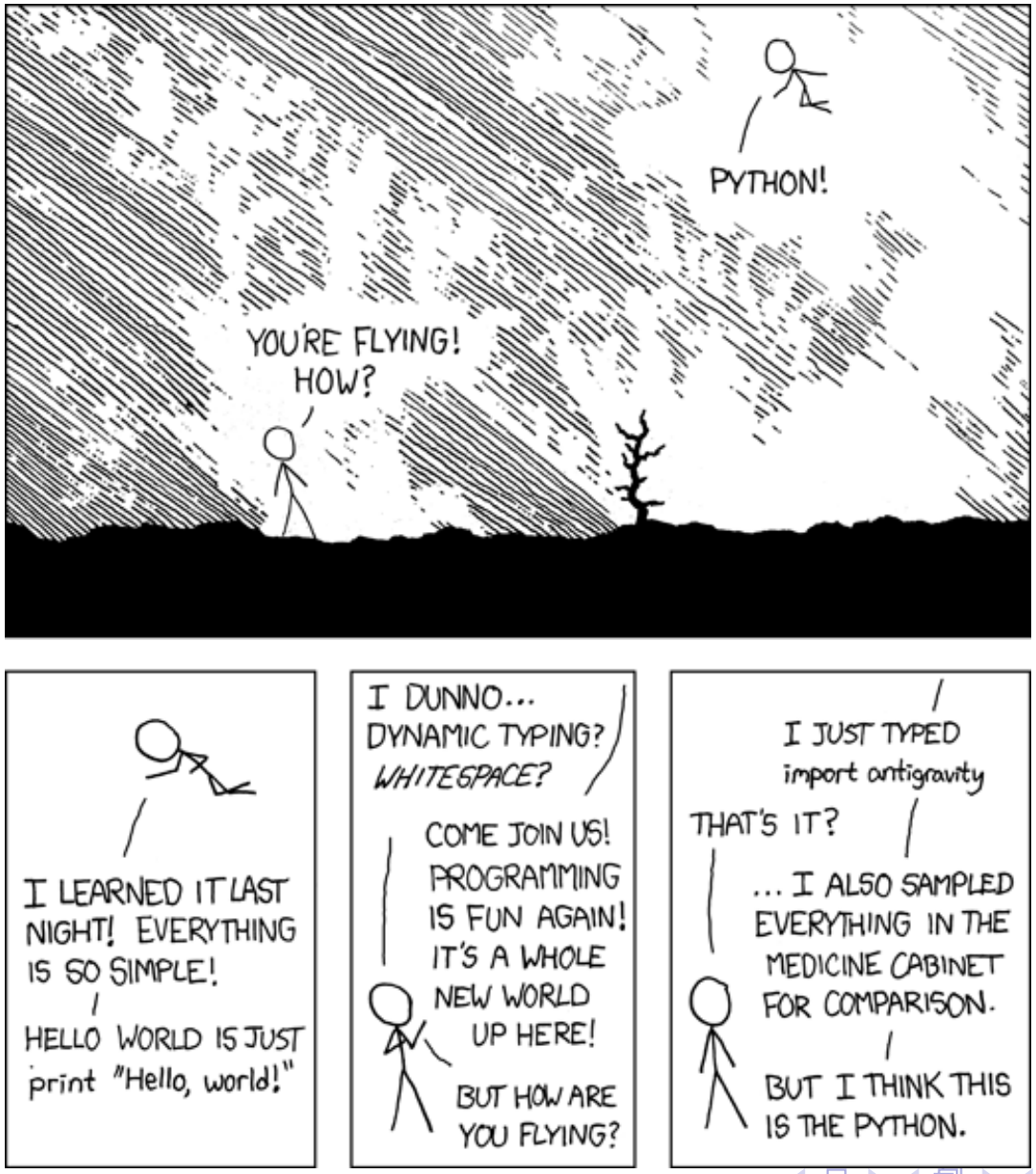
R vs. Python

- When it comes to statistical analysis (modeling) and solving inference problem, R may be the better option.
- When it comes to machine learning and solving prediction problem, Python may be the better option.
- Choose the one that best fits your needs!

Popular Python Data Analytics Libraries

- Numerical & scientific computing: NumPy, SciPy
- Data manipulation & aggregation: Pandas
- Visualization: Matplotlib, Seaborn
- Machine learning: SciKit-Learn
- Deep learning: Keras, TensorFlow, Theano
- Text mining: NLTK, Gensim

Python


PYTHON!
YOU'RE FLYING! HOW?
I LEARNED IT LAST NIGHT! EVERYTHING IS SO SIMPLE!
HELLO WORLD IS JUST print "Hello, world!"
I DUNNO... DYNAMIC TYPING? WHITESPACE?
COME JOIN US! PROGRAMMING IS FUN AGAIN! IT'S A WHOLE NEW WORLD UP HERE!
BUT HOW ARE YOU FLYING?
I JUST TYPED import antigravity
THAT'S IT?
... I ALSO SAMPLED EVERYTHING IN THE MEDICINE CABINET FOR COMPARISON.
BUT I THINK THIS IS THE PYTHON.

How to Install Python?

- In this course, we will use Spyder which is a free integrated development environment (IDE) that is included in Anaconda.
- Anaconda can be downloaded from `https://www.anaconda.com/download`.
- Download "Python Demo.py" file from Elearning and open the file after launching Spyder.

Outline

1 Overview of Python

2 Python Basics