Introduction to Python

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Overview

- Introductions

- About Python

- Automation with Python

- Machine learning with scikit-learn

- Machine learning with TensorFlow

- License

The files used in this presentation are available at
https://github.com/bruce-webber/python-intro

About Python

- Created by Guido van Rossum in 1991
- Interpreted (and compiled)
- Low cost of entry
  - Readable
  - "Easy things should be easy, and hard things should be possible." – Larry Wall
- Powerful
  - Object-oriented
  - Many built-in modules ("batteries included")
  - Many third-party modules
- https://www.python.org/

Automation with Python

- *Automate the Boring Stuff with Python*

  – https://automatetheboringstuff.com/

- Easy to automate email, ftp, file processing, database queries

- Example: processing a fixed length file

- Example: parsing XML

Machine Learning with scikit-learn

- Built on SciPy (Scientific Python)
  - NumPy: Base n-dimensional array package
  - SciPy: Fundamental library for scientific computing
  - Matplotlib: Comprehensive 2D/3D plotting
  - IPython: Enhanced interactive console
  - Sympy: Symbolic mathematics
  - Pandas: Data structures and analysis

Machine Learning with scikit-learn

- Supervised learning
  - Training set and testing set
  - Classification and regression
- Unsupervised learning
  - No target values
  - Clustering and density estimation

scikit-learn Resources

- Scikit-learn home page (http://scikit-learn.org)
- A Gentle Introduction to Scikit-Learn https://machinelearningmastery.com/a-gentle-introduction-to-scikit-learn-a-python-machine-learning-library/
- scikit-learn: machine learning in Python http://www.scipy-lectures.org/packages/scikit-learn/

Machine Learning with TensorFlow

- TensorFlow home page

    - https://www.tensorflow.org

    - Multi-dimensional data arrays

- Machine intelligence

- Neural networks

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