Python Setup

MATH1900: Machine Learning

Location: https://people.sc.fsu.edu/~jburkardt/classes/ml_2019/python_setup/python_setup.pdf

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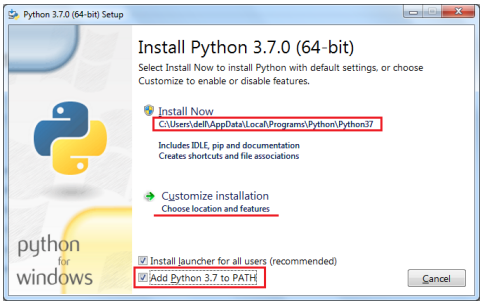

A screen you may see when setting up Python

Python Setup

- *getting a terminal window*
- *check whether Python is already available on your machine;*
- *install Python on your machine;*
- *check the version of Python;*
- *check that Python is working;*
- *create Python scripts, run them, and save them;*

1 Getting a terminal window

We will want to use the Python language inside a terminal window, that is, a window into which we can type text commands, and see the responses. Getting a terminal window depends on your operating system:

- on Linux, you may click your mouse in a blank area of the screen, to see a menu that includes the words **Open Terminal**;
- On MacOS, there is a **Terminal** application, which may hidden in the Utilities folder of your Application directory. Clicking on the icon will start the program;
- On Windows, the latest version includes **Windows Terminal**;

2 Is Python3 already installed?

To see if you have any version of Python installed on your computer, issue the following command in your terminal window:

```
1  which python
```

If the response is a blank line, you have no version installed at all. Otherwise, you will be given the location of a program. On my system, the response is

```
1  /usr/bin/python
```

Now that I know `python` is a legal command, I can ask for the version:

```
python -V
```

When I run this, I see

```
Python 2.7.15+
```

which means that my computer has at least one version of Python, and that if I type `python` without specifying a version number, I will get a version of Python2. To guarantee that I get version 3, I will want to use the command `python3`. So I can use the command `which python3` to check if it's there, and if so, the command `python3 -V` to get the complete version information.

Exercise:

1. Is the `python` command available on your computer?
2. If so, what version of Python does it use?
3. If `python` gets version 2, then is the `python3` command also available?

3 Installing Python3 if you don't already have it

The website https://realpython.com/ has numerous tutorials on Python. In particular a useful step-by-step guide, *Installing Python on Windows, macOS, and Linux*, is available at https://realpython.com/installing-python/

Briefly, to download Python3, go to https://www.python.org/downloads/ and look for the latest release, which will be Python 3.7.4 or later.

Note that, when you download Python3, you automatically have access to **idle**, a handy editor for creating, correcting, and running Python scripts. From the command line, you can type **idle**, or to create or modify a specific Python file, **idle myprog.py**.

The **pip** program can be used to install and update Python packages. On Windows and macOS, this will be available automatically as part of your Python3 installation. On a Linux machine, you may need to install this program yourself - note that on Linux the program name is **pip3**. The necessary command on Ubuntu Linux is:

```
sudo apt-get install python3-pip
```

Along with Python3, you will need the following additional packages now:

- **numpy**, a numerical library;
- **scipy**, a scientific programming library;
- **matplotlib**, a graphics library;

Eventually, we will also want:

- **tensorflow**, needed for the keras package;
- **keras**, a neural network package we will need eventually, at `https://keras.io`;
- **cvxopt**, an optimization package at `https://cvxopt.org/`;

4 Try a tutorial

If you are unfamiliar with Python, find a book or online resource, and learn enough so that you think you understand how to create and run a simple Python script.

For example, you can go to `www.python.org` and look at the *Get Started* item. Under the section called "Learning" is a pointer to many online tutorials.

Whatever resource you choose, concentrate on finding the simple "Hello, world!" example, and an example of a `for` loop that runs from 1 to 10. Read enough so that you think you, too, could write and run such an example.

5 Computing assignment #0

Now see if you have learned enough to write and run a Python script which you should store in a file called *hw0.py*. Your script should

1. Print *Hello, world!* ;
2. Print the numbers 1 through 10;

Email a copy of your script to Dr Schneier at **mhs64@pitt.edu** before Friday 6 September.