Hints on the installation of Python, Numpy, Scipy, Matplotlib, PIL

Note the SLAM code snippets use Python 2.7, not 3.x. Do not install Python 3.

Windows and Mac: Scientific Python distributions

There are Python distributions which include the required packages, see: http://www.scipy.org/install.html. For example, "Canopy Express" from: https://store.enthought.com/. This is the easiest way to install the packages on Windows and Mac.

Windows manual installation

If you choose to install the packages manually, here is an installation guide:

1. Install Python 2.7.9, 32bit:
   http://www.python.org/download/
   File: https://www.python.org/ftp/python/2.7.9/python-2.7.9.msi
   Installation for all users, to directory: C:\python27
   Check installation by starting IDLE.
   There is an alternate 64bit installer, but check if it is compatible with Numpy and Scipy.
2. Install Numpy and Scipy from http://numpy.scipy.org/
   Download official binary releases from Sourceforge (use versions for Python 2.7)
   Numpy: http://sourceforge.net/projects/numpy/files/NumPy/
   E.g. use http://sourceforge.net/projects/numpy/files/NumPy/1.9.2/numpy-1.9.2-win32-superpack-python2.7.exe/download
   Scipy: http://sourceforge.net/projects/scipy/files/scipy/
   E.g. use http://sourceforge.net/projects/scipy/files/scipy/0.15.1/scipy-0.15.1-win32-superpack-python2.7.exe/download
   Installation: First install Numpy, then Scipy. The installers should detect your installed Python automatically; else there is something wrong with your Python installation.
3. Install Matplotlib from http://matplotlib.org/
   Matplotlib 1.4.3 (again, use version for Python 2.7)
   E.g. use: http://sourceforge.net/projects/matplotlib/files/matplotlib/matplotlib-1.4.3/windows/matplotlib-1.4.3.win32-py2.7.exe/download
   Installation: Again, the installer should detect your Python.
4. For the interactive demos of the "Path Planning" Units (later in the course), you will also need PIL, the Python Imaging Library. For windows, you can get this from here: http://pythonware.com/products/pil/. After installation, `import Image` and `import ImageTK` should work.

Linux (Ubuntu)

All required packages can be installed using the package manager. Run the in the shell: sudo apt-get install python-numpy python-scipy python-matplotlib python-imaging python-imaging-tk

For other Linux distributions, see: http://www.scipy.org/install.html.

Check your installation (should work on all platforms)

You may want to quickly check your numpy/ matplotlib installation using the following lines, which will show a histogram of normal distributed random numbers:

```
from numpy.random import *
from matplotlib.pyplot import *
x = randn(10000)
y = hist(x, 100)
show(y)
```

To check PIL, run `import Image` and `import ImageTK` in the Python shell. Both should complete without error.