1.1.7 Installation

The Mac minis in the Roberts 225 computer lab have all the software libraries installed that we will be using in this course. If you prefer to use the Eclipse IDE for programming, there is a PyDev plugin that provides syntax highlighting, code completion, and other development aids for Python programming. You'll need to install your own version of Eclipse in your user directory instead of using the version provided on the base install—follow the directions for Eclipse and PyDev below.

If you want to install these packages on your computer, the task is much easier on a Linux box than a Mac. On Linux, search your package manager for the appropriate packages, and just install them. Let the dependencies work for you—you'll get Qt, SIP, and PyQt4 by just installing PyQt4. If you don't have the most up-to-date versions available (e.g., OpenCV 2.2), you can download and compile from source.

For Mac OS X, the following is a suggested order of operations. Note that there are slightly different instructions for some tasks for OS X 10.5 (Leopard) and 10.6 (Snow Leopard). Before you begin, know that this can easily take the better part of a day to complete.

1. XCode Tools
   This is on the Mac OS X Install DVD that came with your computer.

2. Python 2.6.6 from python.org
   This install will modify your .bash_profile script, so you may want to check this after installation. You will want this version of Python to be the default, so if you type `python --version` in Terminal you see “Python 2.6.6”.

3. NumPy 1.5.1 from scipy.org

4. SciPy 0.8.0 from scipy.org

5. Matplotlib 1.0.1 from matplotlib.sourceforge.net

6. Qt SDK 4.7.0 from qt.nokia.com/products

7. SIP 4.12 from www.riverbankcomputing.co.uk

Note: SIP and PyQt4 are not required to get OpenCV working, so these two packages are optional. If you want to be able to add sophisticated graphical user interface (GUI) controls to your applications, however, you will need SIP and PyQt4. (OpenCV uses the C++ API of Qt.)

This is a Python library compiled from source. Extract the archive and in Terminal, `cd` to its directory. Then type the following set of commands—the first is all on one line with no spaces in the path to site-packages (the `-d` parameter is not needed if you have the proper python executable in your path, i.e. `which python` returns /Library/Frameworks/Python.framework/.../python.
on 10.5:
python configure.py –d /Library/Frameworks/
    Python.framework/Versions/2.6/lib/
    python2.6/site-packages
make
sudo make install

on 10.6:
python configure.py --arch=i386
make
sudo make install

8. PyQt4 4.8.2 from www.riverbankcomputing.co.uk
This is installed the same way as SIP, but it will take much longer. Note
the different flags passed to configure.py below; --confirm-license is
optional, but it avoids you having to type yes to accept a license.

on 10.5:
python configure.py --confirm-license
make
sudo make install

on 10.6:
python configure.py --confirm-license --use-arch=i386
    --no-designer-plugin
make
sudo make install

9. CMake 2.8.3 from www.cmake.org
This is a C library compiled from source, which is used to configure
OpenCV. The following sequence does this.

    ./configure
make
sudo make install

10. OpenCV 2.2 from opencv.willowgarage.com
After you extract the archive and cd to the directory, run ccmake . to
configure OpenCV. Press c to start the configuration—this will scan your
system to find the right parameters Press t to show advanced options, and
then modify the following options.
On 10.5:

- WITH_QT ON
- WITH_QT_OPENGL OFF
- WITH_QUICKTIME ON
- PYTHON_LIBRARY /Library/Frameworks/Python.framework
  /Versions/2.6/Python

On 10.6:

- CMAKE_C_FLAGS -m32
- CMAKE_CXX_FLAGS -m32
- CMAKE_OSX_ARCHITECTURES i386
- WITH_CARON ON
- WITH_QT ON
- WITH_QT_OPENGL OFF
- WITH_QUICKTIME ON
- PYTHON_LIBRARY /Library/Frameworks/Python.framework
  /Versions/2.6/Python

Press c to run the configuration and repeat until the g/generate option becomes available, then press g to generate the make files. Then run make and sudo make install, as above. This will take a while.

On my machine, the install script did not copy the Python library to the correct location, so when it’s done, run the following command—this is all one line with two complete paths specified to a cv.so file, with a single space between each path.

```
sudo ln -s
/usr/local/lib/python2.6/site-packages/cv.so
/Library/Frameworks/Python.framework/Versions/2.6/lib/python2.6/site-packages/cv.so
```


You probably want Eclipse IDE for Java Developers, Mac OS X 32-bit. Download, unzip, and move the eclipse folder to the directory where you want it installed (/Applications on your machine, /Users/username in the lab).

12. PyDev, from within Eclipse

Go to Help – Install New Software. Click the Add... button near the top of the Install dialog. On the Add Repository dialog, set Name to

Go to Eclipse → Preferences. Find the Pydev / Interpreter - Python options. Under Python Interpreters, click New...; for Name use MacPython, and for executable, browse to the Python executable in the framework path, as specified above (/Library/.../2.6/bin/python2.6). Press OK, then Apply on the Preferences dialog (this will take a while), then OK. When you set up a new Python project, make sure it’s configured to use this interpreter—it’s best to only configure one interpreter. You may have to reconfigure the interpreter if you change workspaces.