Useful Python Libraries

This guide shows steps to install some useful 3rd party libraries for Computer Vision and Machine Learning applications on macOS.

Dlib

This handy library was created in C++ by Davis King and contains many useful functions like Face Detector, Object Detector, Sequence Segmentor etc. More details on this library can be found on the official website.

We can install this in python.
Initial requirements:

```
$ brew install cmake
$ brew install boost
$ brew install boost-python --with-python3
```

This will take some time, once thats done check if boost installed correctly by:

```
$ brew list | grep 'boost'
boost
boost-python
```

As you can see from my terminal output, both Boost and Boost. Python have been successfully installed.

Then install XQuartz. Just download the `.dmg` file and install.

With `pip`:

```
$ pip install dlib
```

With `conda`:

```
$ conda install -c menpo dlib
```

From source (recommended):
Install cmake and boost using brew as mentioned before and download the source from the Dlib website.

Navigate to the extracted folder and execute:

```
$ sudo python setup.py install --yes USE_AVX_INSTRUCTIONS --yes USE_SSE2_INSTRUCTIONS --yes USE_SSE4_INSTRUCTIONS
```

You can also compile the source and install it using cmake.

Scikit-image, Scikit-learn, Scipy, Numpy

Handy mathematics libraries for python.
Websites: SciPy, Scikit-image, Scikit-learn

With `pip`:

```
$ pip install numpy
$ pip install scipy
$ pip install scikit-image
$ pip install scikit-learn
```

With `conda`:

```
$ conda install scipy
$ conda install scikit-image
$ conda install numpy
$ conda install scikit-learn
```

Imutils

Handy image processing functions developed by Adrian Rosebrock. Official blog.

```
$ pip install --upgrade imutils
```

Tensorflow

A great machine learning library. Website link. (Compiling from source is recommended)

```
pip install tensorflow
```

Keras

The simplest package to use for machine learning. Official Website.

Install `Tensorflow` first if you need that as the backend. (recommended)

It's ideal to have these packages before installing keras:

```
$ pip install numpy scipy
$ pip install scikit-learn
$ pip install pillow
$ pip install h5py
```

Then:

```
$ pip install keras
```

To verify its using `Tensorflow` as backend navigate to `~/.keras/keras.json` and open the file in text editor.

It would show:

```
{
    "floatx": "float32",
    "epsilon": 1e-07,
    "backend": "tensorflow",
    "image_data_format": "channels_last"
}
```

Make changes to this file to set the required backend.

Tesseract OCR

A light weight text recognition engine open sourced by Google. GitHub source.

Wrapper:

```
$ pip install pytesseract
```

Play Sound

Light weight package to play sounds from files.

```
$ pip install playsound
$ pip install pyobjc
```

Updating All Packages

For `pip` install:

```
$ pip install pipdated
```

Then everytime update all pip packages using:

```
$ sudo -H pipdate
```

For `brew` :

```
$ brew upgrade
```

For `conda` :

```
$ conda update --all
```

Intel MKL

(Currently not supported on windows and mac)

```
$ conda install mkl -c intel --no-update-deps
```

```
$ conda install numpy -c intel --no-update-deps
```

Jupyter

Anaconda comes with jupyter enabled, however due to some mix ups during installation it may not work properly. It can be fixed using:

```
$ pip install --upgrade --force-reinstall jupyter
```