**OpenCV Section Handout**

**Setup for C++ Environment, IDEs:**

Windows:

• Microsoft Visual Studio Download

<https://visualstudio.microsoft.com/zh-hans/vs/features/cplusplus/>

• Eclipse Download

https://www.eclipse.org/downloads/packages/release/neon/3/eclipse-ide-cc-developers

\*\*If you decide to use eclipse on windows, you need to also install MinGW GCC or Cygwin GCC. Check tutorial here: https://www.tutorialspoint.com/How-do-I-set-up-C-Cplusplus-on-Eclipse-in-Windows

Mac:

• Eclipse Download

https://www.eclipse.org/downloads/packages/release/neon/3/eclipse-ide-cc-developers

• Xcode Download

Download from AppStore

• Xcode command line tool

– Open terminal, type xcode-select –install

– Follow instructions and install

\*\*Xcode command line tool is required on Mac, no matter you use Xcode or not.

\*\*Note: Xcode (20GB+) is way bigger than the command line tool.

Linux:

• Eclipse Download

https://www.eclipse.org/downloads/packages/release/neon/3/eclipse-ide-cc-developers

Setting Eclipse development environment

– Open **Preference**, right click and click: Property -> C/C++ Build -> Environment

– Set Environment:

 PATH

 LANG en\_US

 LC\_ALL en\_US

**Way to setup OpenCV:**

**Mac:**

**Build OpenCV library with Homebrew (recommend):**

1. download Xcode command line tool if system don’t have

 – to check, type in terminal:

 – need to download no matter use Xcode or not

2. type in terminal to install homebrew

 ruby -e "$(curl -fsSL https://raw.githubusercontent.com/Homebrew/install/master/install)"

 – might report version warning, neglect

 – need to type in password

 – no need to change any settings

 (try type in “brew” in terminal to see if install successfully)

3. type to update homebrew

 brew update

4. use homebrew to install pkg-config

 brew install pkg-config

 – after the installation, do brew link pkg-config

\*\*If link is prohibited, open permission for brew link: sudo chown -R `whoami`:admin /usr/local/bin

5. install opencv

 brew install opencv

 – will take a long time, do at home

 – look through the errors thrown out, follow the instruction

 – after the installation, do brew link opencv

6. use pig-config to check if installation success

 pkg-config --cflags --libs opencv

 – output should list out -I and -L address of library path and installed library under opencv

7. If everything works fine, should ready to go

**Setting up Eclipse to write OpenCV code:**

1. Make sure Eclipse has CDT (c++ developing tool) with it. If not,

– help -> install new software

– pull work with, choose available site (ex: Mars - http://download.eclipse.org/releases/mars), need wait a while for loading

 – find “programming language”, open and select “C/C++ Development Tool”, click next util finish install

 – If installation success, should be able to create C++ project in “File -> New”

2. Create new C++ project for OpenCV

 – File -> New -> C++ project, name your project

3. Setting compiler linkers

– open the project in **Project Explorer**, right click and click: Property -> C/C++ Build

– C/C++ Build -> Setting

 • MacOS X C++ Linker -> Libraries, fill in -L library path and -l library names:

 -I library would use: opencv\_face, opencv\_core, opencv\_imgproc, opencv\_ml, opencv\_highgui, opencv\_imgcodecs, opencv\_videoio, opencv\_objdetect

 (use pkg-config --cflags --libs opencv in terminal for list of library path)

 • GCC C++ Compiler -> includes -> include paths, fill in installation address of OpenCV

 (like /usr/local/Cellar/opencv/3.4.3\_2/include/opencv and

 /usr/local/Cellar/opencv/3.4.3\_2/include, use terminal to check the actual address)

Reference:

https://docs.opencv.org/2.4/doc/tutorials/introduction/linux\_eclipse/linux\_eclipse.html

**Windows:**

With Eclipse:

<https://www.lesliesikos.com/install-opencv-3-2-with-eclipse-neon-on-windows-10/>

With Visual Studio:

<https://www.deciphertechnic.com/install-opencv-with-visual-studio/>

**Linux:**

**Build OpenCV Library from source:**

1. Install dependent libraries/components

 1 sudo apt-get install build-essential

 2 sudo apt-get install cmake git libgtk2.0-dev pkg-config libavcodec-dev libavformat-dev libswscale-dev

 3 sudo apt-get install python-dev python-numpy libtbb2 libtbb-dev libjpeg-dev libpng-dev libtiff-dev libjasper-dev libdc1394-22-dev

1. Download OpenCV source code from official website

 – https://opencv.org/releases.html

3. Compile OpenCV library

1 cd ~/opencv-3.2.0 (Get into the OpenCV source code directory)

2 mkdir release

3 cd release

4 cmake -D CMAKE\_BUILD\_TYPE=RELEASE -D CMAKE\_INSTALL\_PREFIX=/usr/local ..

5 make

(This step will take a long time, be patient)

6 sudo make install

**Setting up Eclipse to write OpenCV code: (Same as procedure in Mac)**

Reference:

https://docs.opencv.org/2.4/doc/tutorials/introduction/linux\_eclipse/linux\_eclipse.html