**Installation Cheat Sheet 1 - OpenCV 3 and C++**

**Using Windows 10 + Visual Studio 2015 (Community Edition) + precompiled binaries**

[Click here to go to the YouTube video for this Cheat Sheet](https://www.youtube.com/watch?v=MI2c09wQ5Oo)

[GitHub page with all Cheat Sheets and code](https://github.com/MicrocontrollersAndMore/OpenCV_2.4.11_Windows_Installation_Guide)

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**1)** Download and install Visual Studio 2015 Community Edition (yes, it’s free, choosing all default options will work fine)

**2)** Download the latest version of OpenCV, ex. OpenCV 3.0.1

**3)** Make a folder "C:\OpenCV-X.X.X" for your version of OpenCV, ex. "C:\OpenCV-3.0.1" and extract OpenCV to there

**4a)** Add the **bin** directory for your version of OpenCV and Visual Studio 2015, which will appear as "vc14" in the OpenCV directories, to the operating system PATH. For example if you are using OpenCV 3.0.1 add the following to your PATH:

C:\OpenCV-3.0.1\opencv\build\x86\vc14\bin

**4b)** Pull up a Command Prompt and verify the bin directory is now in PATH, then reboot

**5)** From my [MicrocontrollersAndMore GitHub](https://github.com/MicrocontrollersAndMore/OpenCV_2.4.11_Windows_Installation_Guide) page decide which example you are going to use:

CannyStill.cpp (uses a still image)

CannyWebcam.cpp (uses a webcam)

RedBallTracker.cpp (tracks a red ball, uses a webcam)

If you are going through this for the first time I suggest CannyStill.cpp

**6a)** Start Visual Studio 2015, make a new project

**6b)** Choose Visual C++, Win32 Console Application, name as you prefer, ex "CannyStill1", set preferred location, uncheck "Create directory for solution" and "Add to source control", choose OK

**6c)** On the **“Welcome to the Win32 Application Wizard”** screen choose Next

**6d)** On the **"Application Settings"** screen, uncheck "Precompiled Header" and "Security Development", check "Empty Project", and verify "Console application" radio button is checked, then choose Finish

**7a)** Right click in Solution Explorer, choose Add -> New Item

**7b)** Choose "C++ File", name the C++ file as preferred, ex. "CannyStill1.cpp", choose "Add"

**7c)** Copy/paste the entire code from your chosen example into the .cpp file

(At this point Visual Studio will underline many of the lines of code with red because we have not yet informed Visual Studio as to the location of OpenCV, subsequent steps will resolve this)

**8)** If you are using an example with a still image (i.e. CannyStill.cpp), copy any JPEG image into the project directory and rename it "image.jpg". You can use the "image.jpg" from my [MicrocontrollersAndMore GitHub](https://github.com/MicrocontrollersAndMore/OpenCV_2.4.11_Windows_Installation_Guide) page if you would like to see the same results as in the video (if you are using a webcam example then this step does not apply).

**9)** In VS go to:

Project -> Properties -> Configuration Properties -> VC++ Directories -> Include Directories

add the **include** directory for your version of OpenCV, ex "C:\OpenCV-3.0.1\opencv\build\include"

**10)** In VS go to:

Project -> Properties -> Configuration Properties -> VC++ Directories -> Library Directories:

add the **library** directory for your version of OpenCV, ex "C:\OpenCV-3.0.1\opencv\build\x86\vc14\lib"

**11)** If you currently *do not* have Windows 10 configured to allow viewing / editing of file extensions, go to:

right-click on Start -> Control Panel -> View by: Large icons -> File Explorer Options -> View tab -> uncheck "Hide extensions for known file types" (if you already have viewing file extensions enabled then skip this step).

**12a)** In File Explorer (not within Visual Studio), navigate to the **lib** directory, ex

C:\OpenCV-3.0.1\opencv\build\x86\vc14\lib

In the lib directory you will find the debug libs (ending with a 'd'), for example if you are using OpenCV 3.0.1 the debug libs are the following:

opencv\_calib3d2411d.lib

opencv\_contrib2411d.lib

opencv\_core2411d.lib

opencv\_features2d2411d.lib

opencv\_flann2411d.lib

opencv\_gpu2411d.lib

opencv\_highgui2411d.lib

opencv\_imgproc2411d.lib

opencv\_legacy2411d.lib

opencv\_ml2411d.lib

opencv\_nonfree2411d.lib

opencv\_objdetect2411d.lib

opencv\_ocl2411d.lib

opencv\_photo2411d.lib

opencv\_stitching2411d.lib

opencv\_superres2411d.lib

opencv\_ts2411d.lib

opencv\_video2411d.lib

opencv\_videostab2411d.lib

Copy/paste each of these names into the following location in Visual Studio:

Project -> Properties -> Configuration Properties -> Linker -> Input -> Additional Dependencies

**13)** In the Visual Studio toolbar, verify that "Solution Configurations" and "Solution Platforms" are set to "Debug" and "Win32", respectively

**14)** Run the program, either without debugging (choose Debug, then the hollow green arrow, or press Ctrl+F5) or with debugging (solid green arrow or press F5)