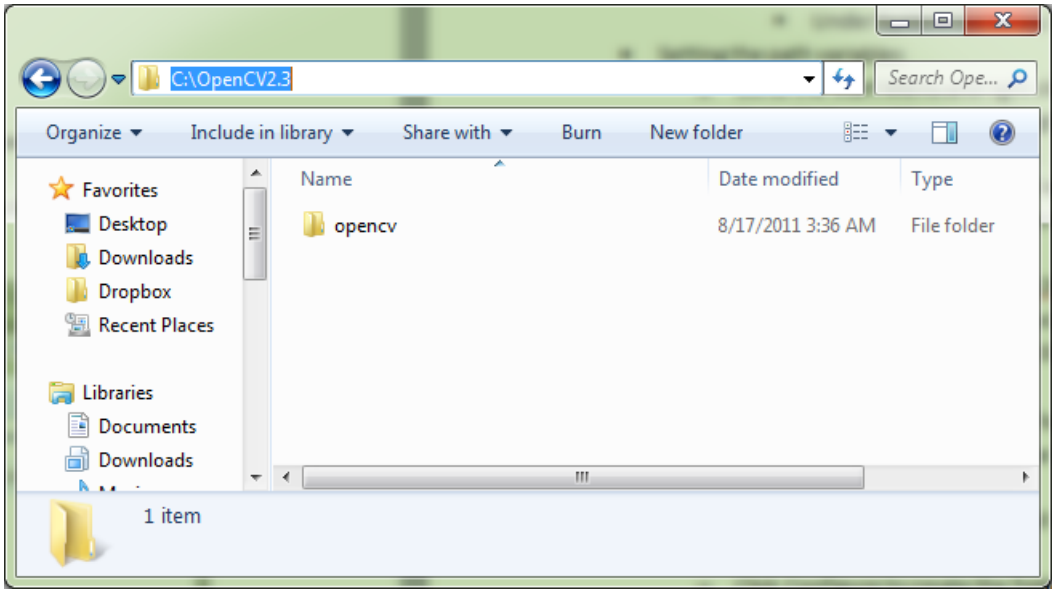
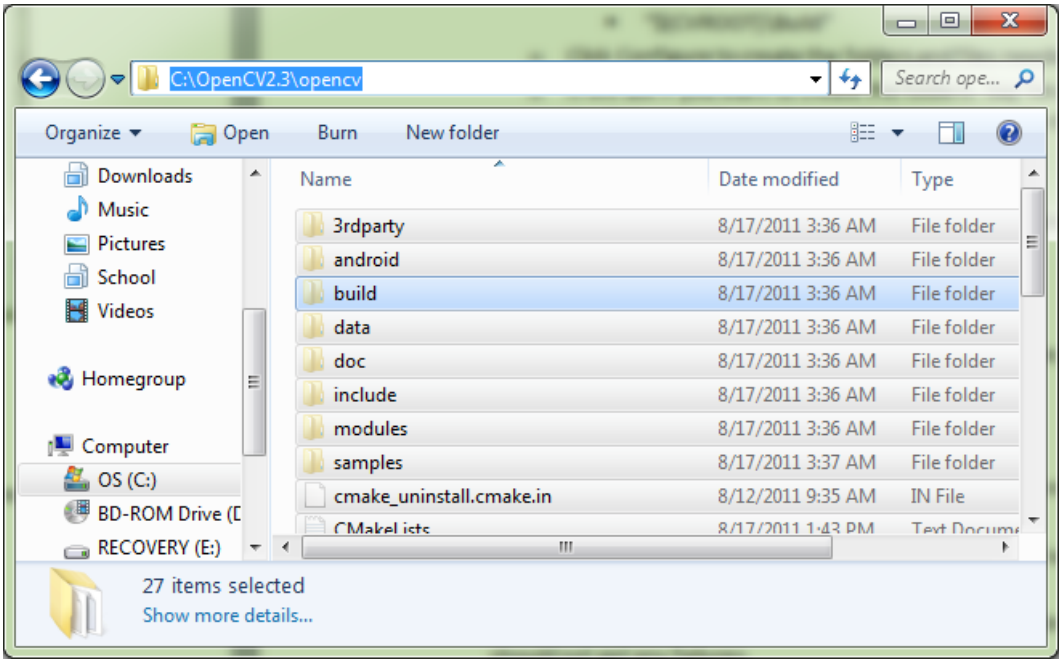
Installing and Using OpenCV

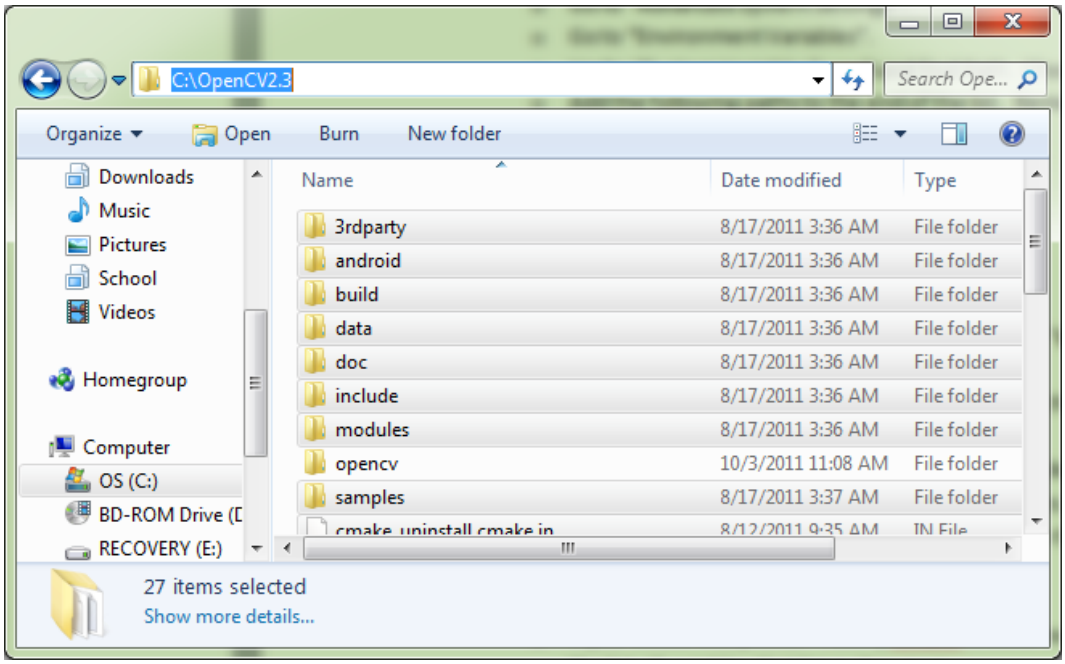
Made to work with the following programs:

1. **OpenCV 2.3.1**
2. **CMake 2.8**
3. **TBB 4.0 08-09-2011**
4. **Visual Studio 2010**

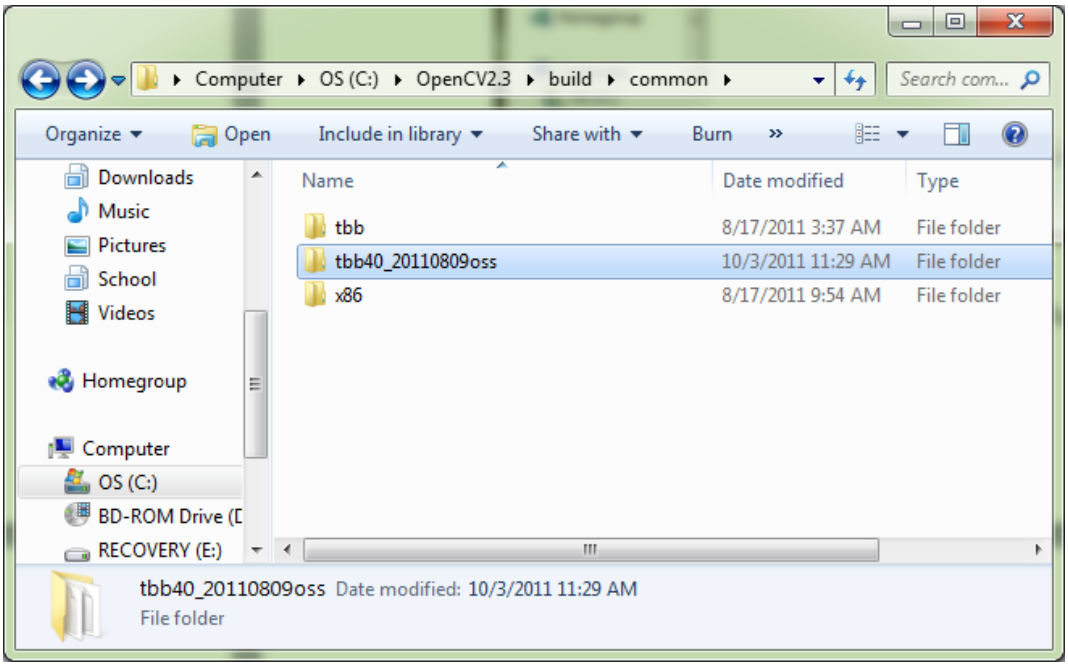
- **Install OpenCV**
  - Download OpenCV-2.3.1-win-superpack.exe.
    - http://sourceforge.net/projects/opencvlibrary/files/opencv-win/2.3.1/
  - Run the executable and install to “C:\OpenCV2.3”.
    - **NOTE:** From this point, the root directory for OpenCV will be called "$(CVROOT)”.
  - Open the new folder and the inside folder “opencv”. Cut all folders from inside “opencv” and move them back a folder to "$(CVROOT)”. You can remove the opencv folder.





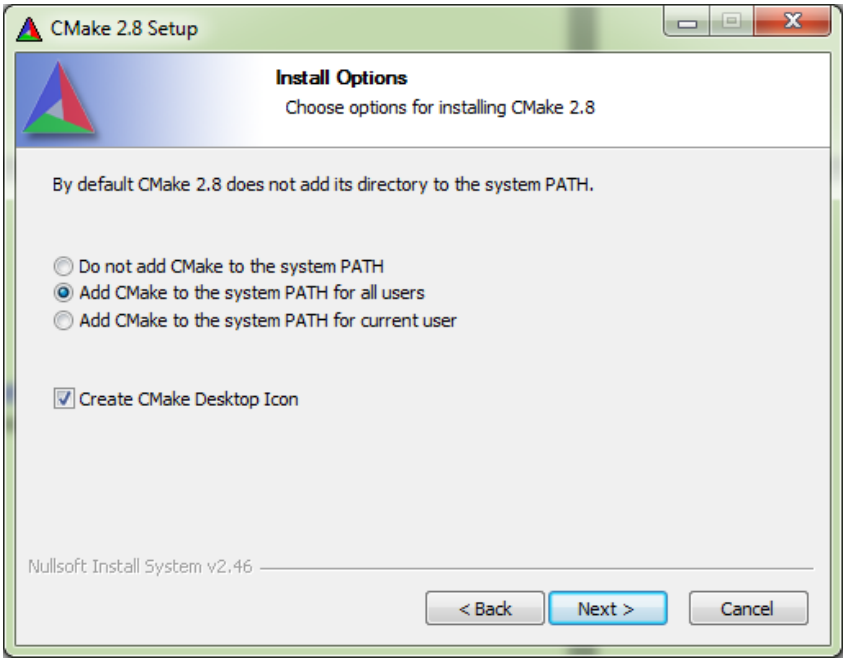


- **Install TBB**
  - Download TBB (Threading Building Blocks)
    - http://threadingbuildingblocks.org/ver.php?fid=175.
  - Unzip the downloaded "TBB" to the directory "$(CVROOT)\build\common".
  - Remove the "tbb" folder from "$(CVROOT)\build\common" folder.

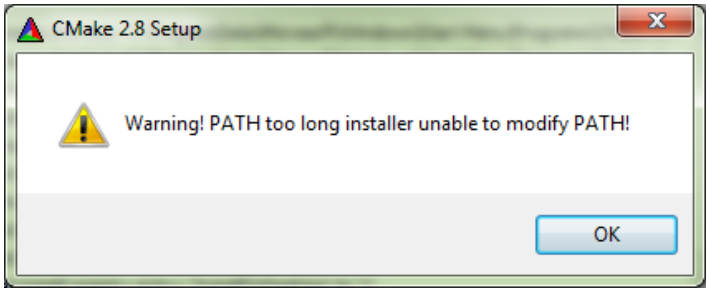


- Rename the unzipped folder tbb.
  - **NOTE:** From this point, "$(CVROOT)\build\common\tbb" will be called "$(TBBROOT)"

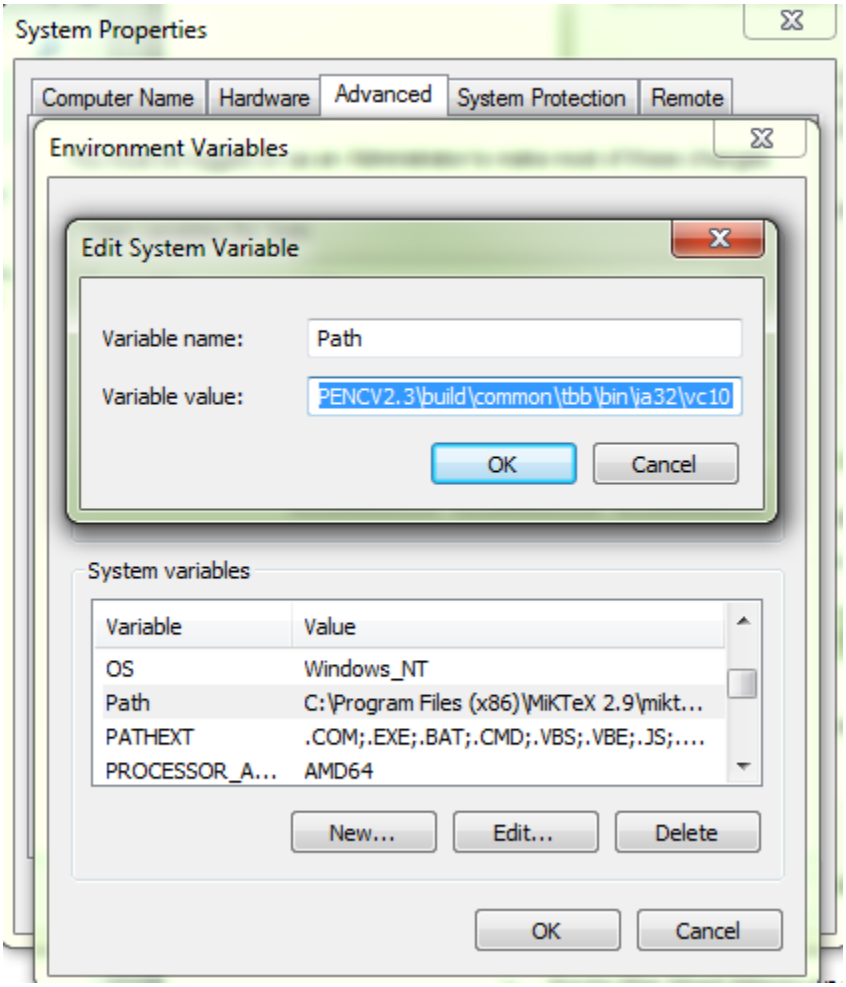
- **Install CMake**
  - Download CMake http://www.cmake.org/cmake/resources/software.html.
  - Choose the option, "Add Make to the system PATH for all users".



- If an error is returned, follow the special path addition under “Setting the path variables” section below.

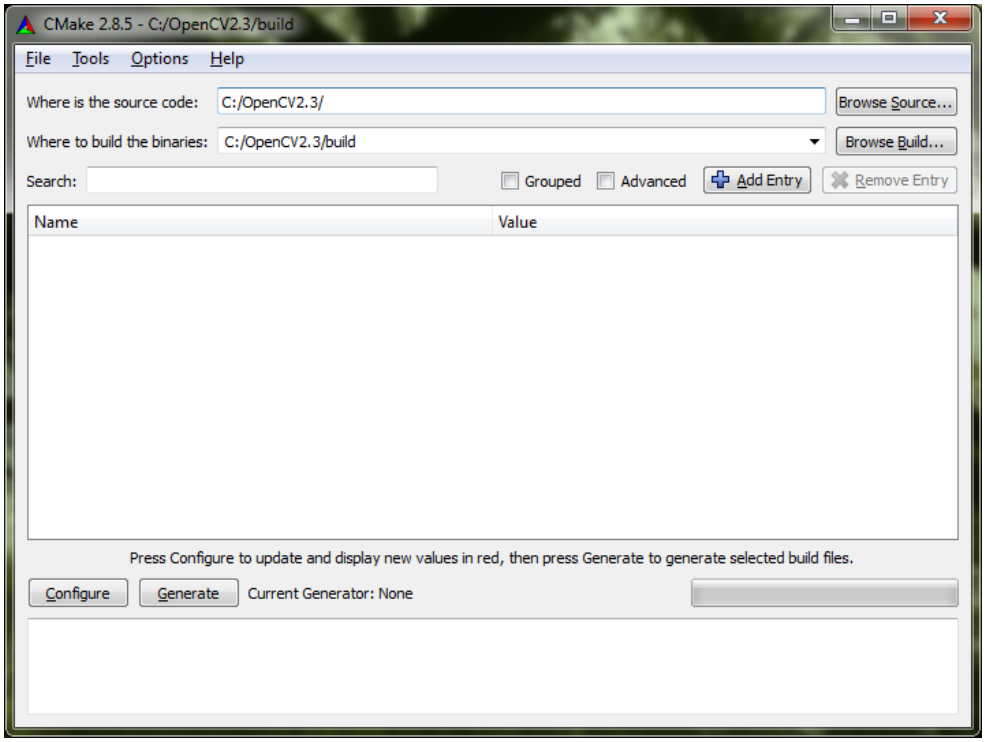


- **Setting the path variables**
  - **WARNING: Be careful when changing path variables. This can severely cripple your computer if you delete the paths that are already in the list.**
  - Go to the Start Menu and right click on “Computer”. Choose properties.
  - Go to “Advanced System Settings”.
  - Go to “Environment Variables”.
  - Under “System Variables” scroll and find Path. Choose Edit.

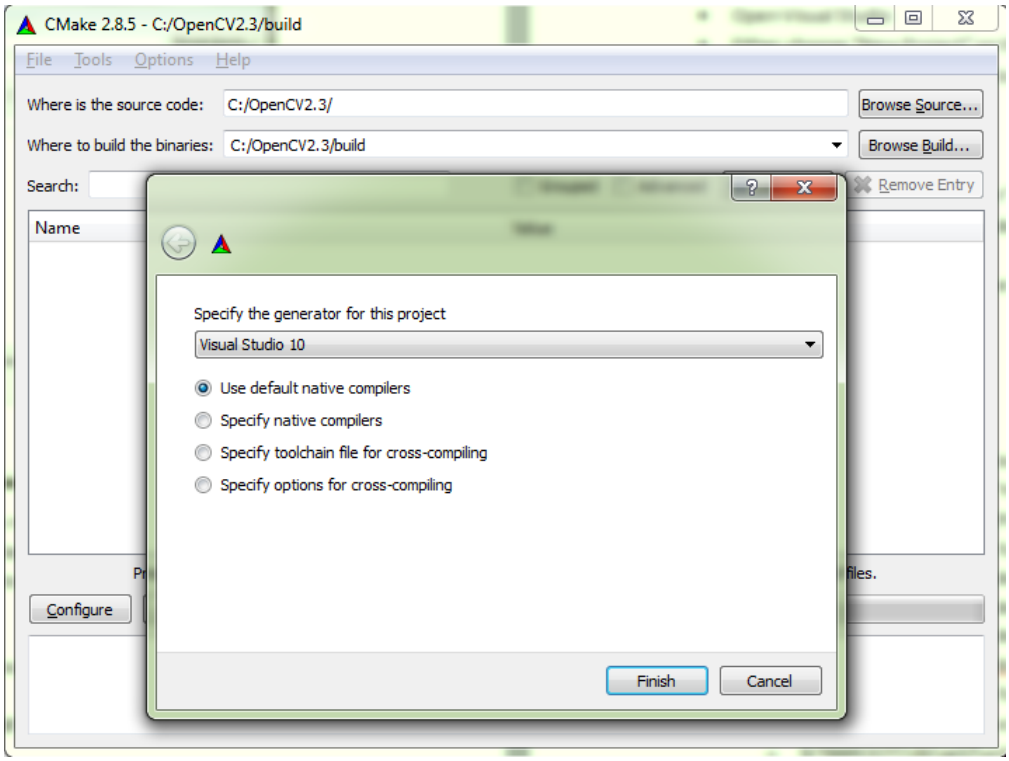


- Add the following paths to the end of the list. **Remember between each path there should be a semicolon.**
  - C:\Program Files (x86)\CMake 2.8\bin
  - $(CVROOT)\build\x86\vc10\bin
  - $(TBBROOT)bin\ia32\vc10
  - IF CMAKE HAD AN ERROR: C:\Program Files (x86)\CMake 2.8\bin

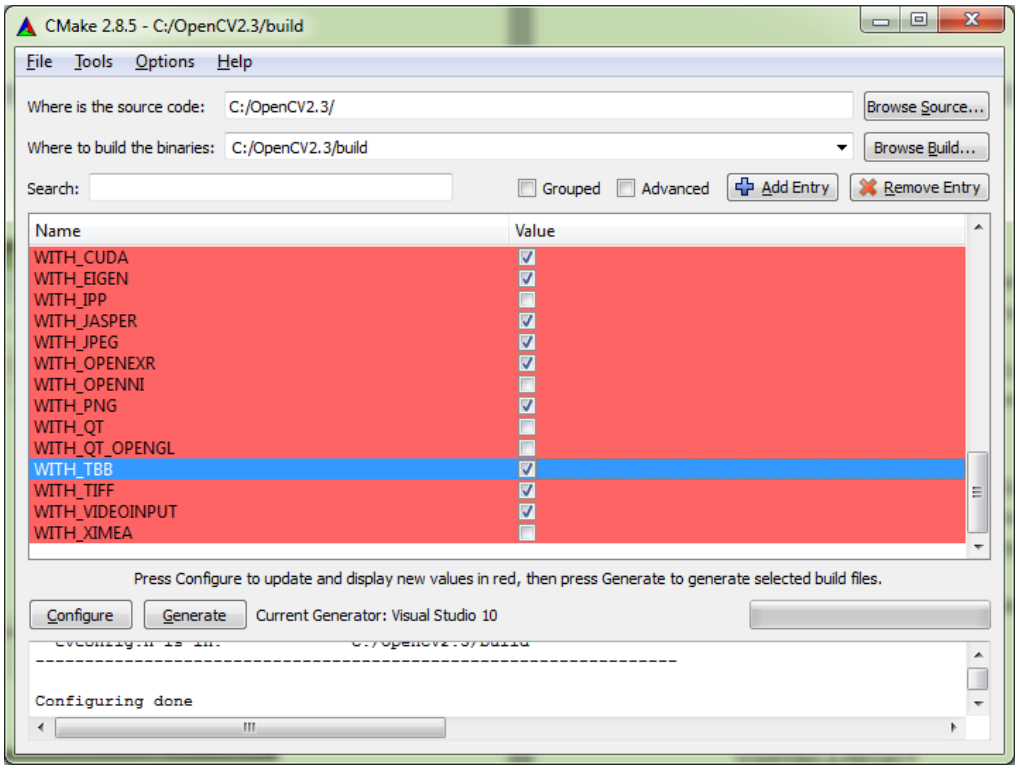
- **Run CMake.** This will create a library solution for OpenCV.
  - Locate the source code using the "Browse Source" Button. This is where you installed OpenCV or "$(CVROOT)"
  - Locate where you want to install the library using the "Browse Build" button. I used:
    - "$(CVROOT)\Build"



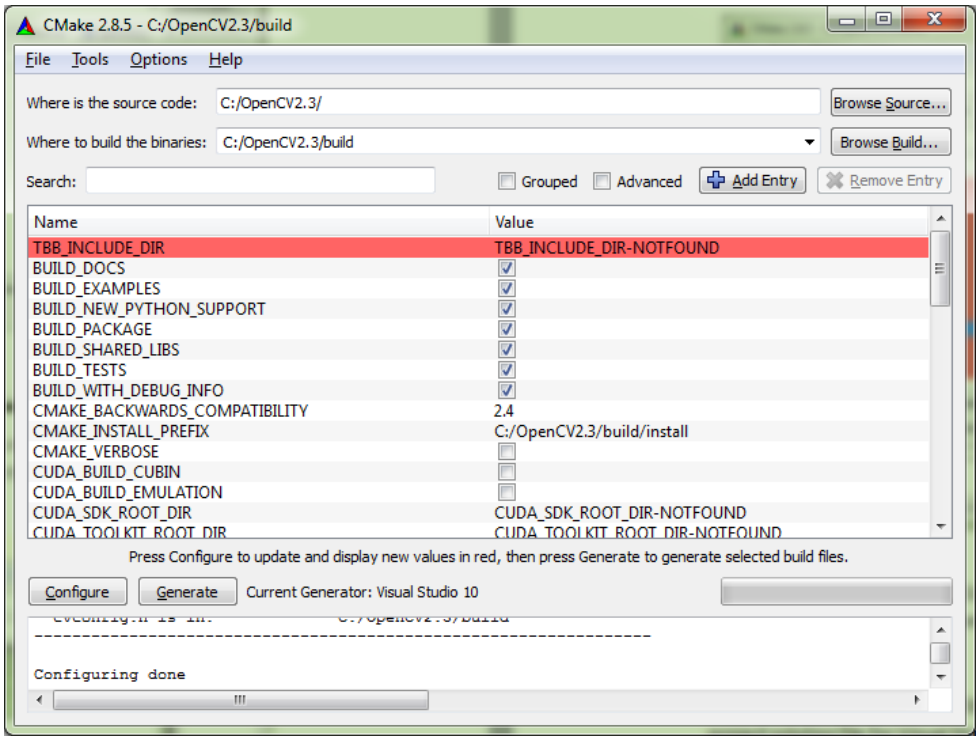
  - Click Configure to create the folders and files needed.
  - It will ask for you to specify the generator for the project. Choose the version of Visual Studio that you are using.



- Click Finish
- Check the “BUILD_EXAMPLES” option.
- Check the “WITH_TBB” option.

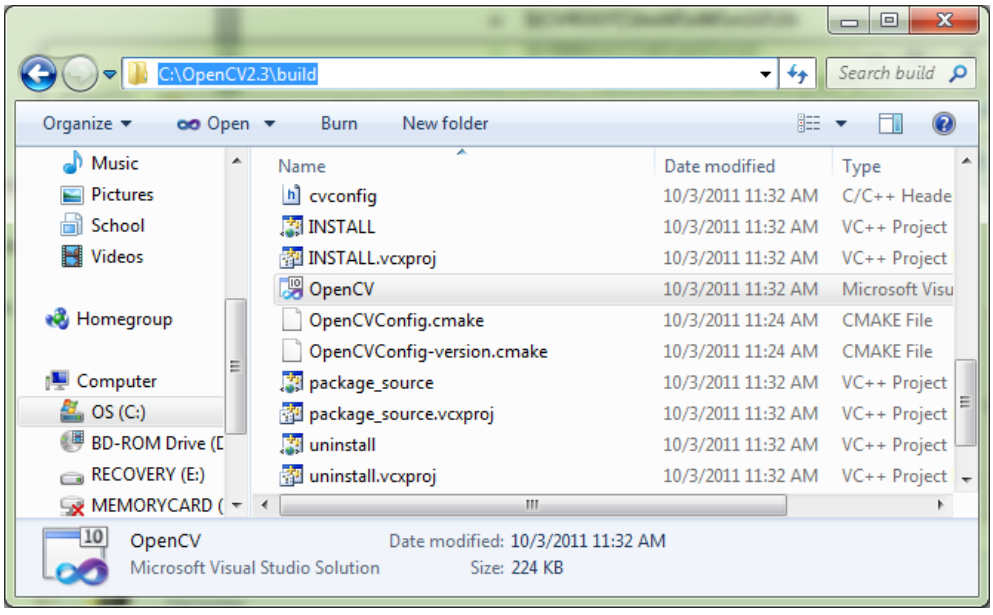


- Press Configure.
- Configure the “TBB_INCLUDE_DIR” option with the path to TBB, “$(CVROOT)/build/common/tbb/include”

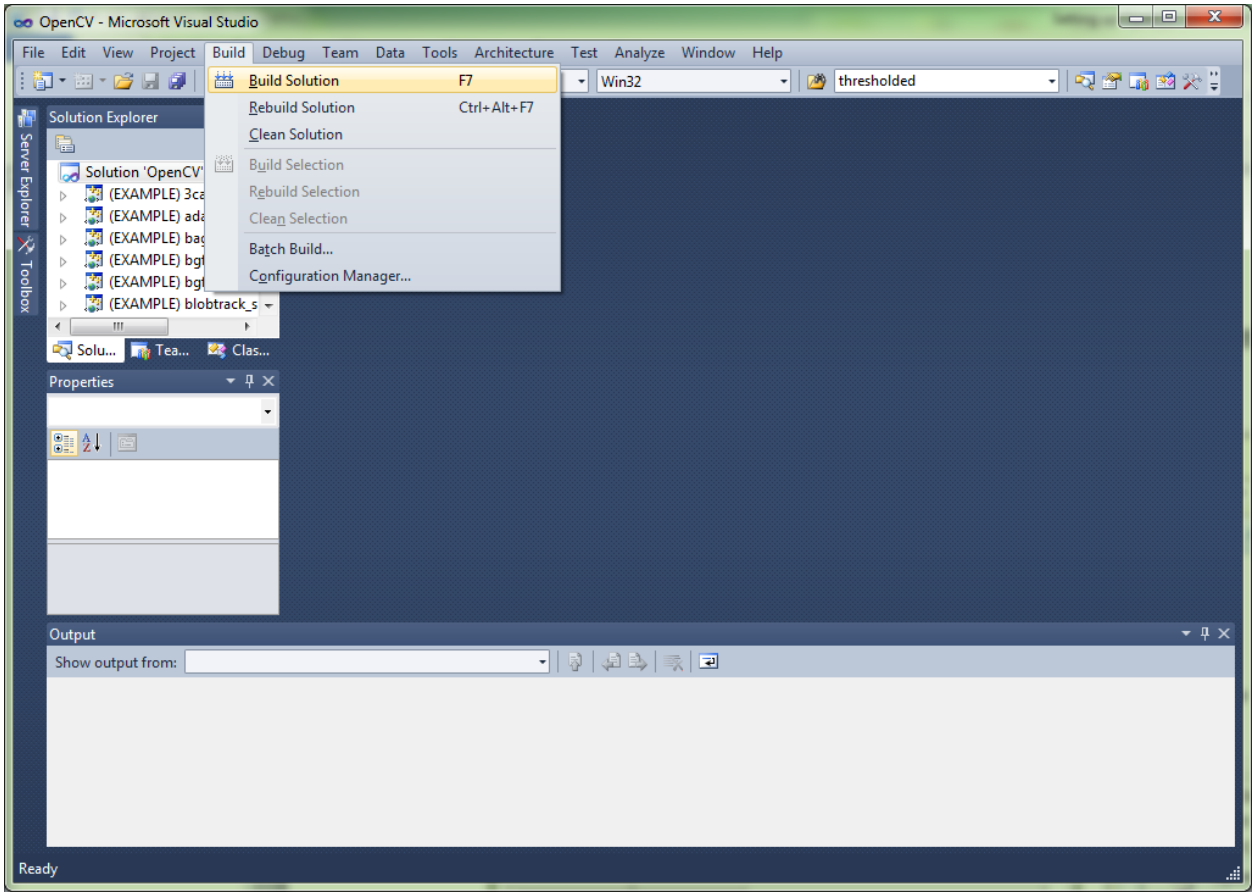


- Press Configure again.
- Press Generate.

- Navigate to the “C:\OpenCV2.3\build” directory. Move through the list and find the “OpenCV” project solution file for Visual Studio.

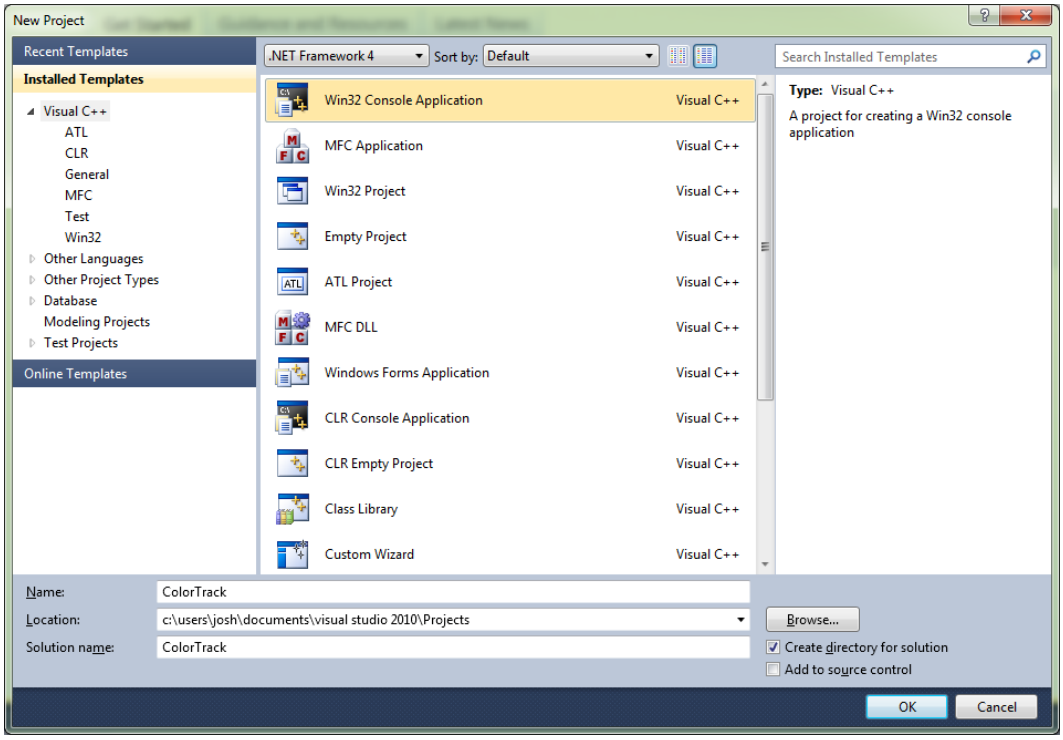


- Watch the bottom left side for messages. Wait to proceed until the messages stay a constant “Ready”.
- In Visual Studio, go to Build>Build Solution to create the library. This may take some time. You should not get any failures.

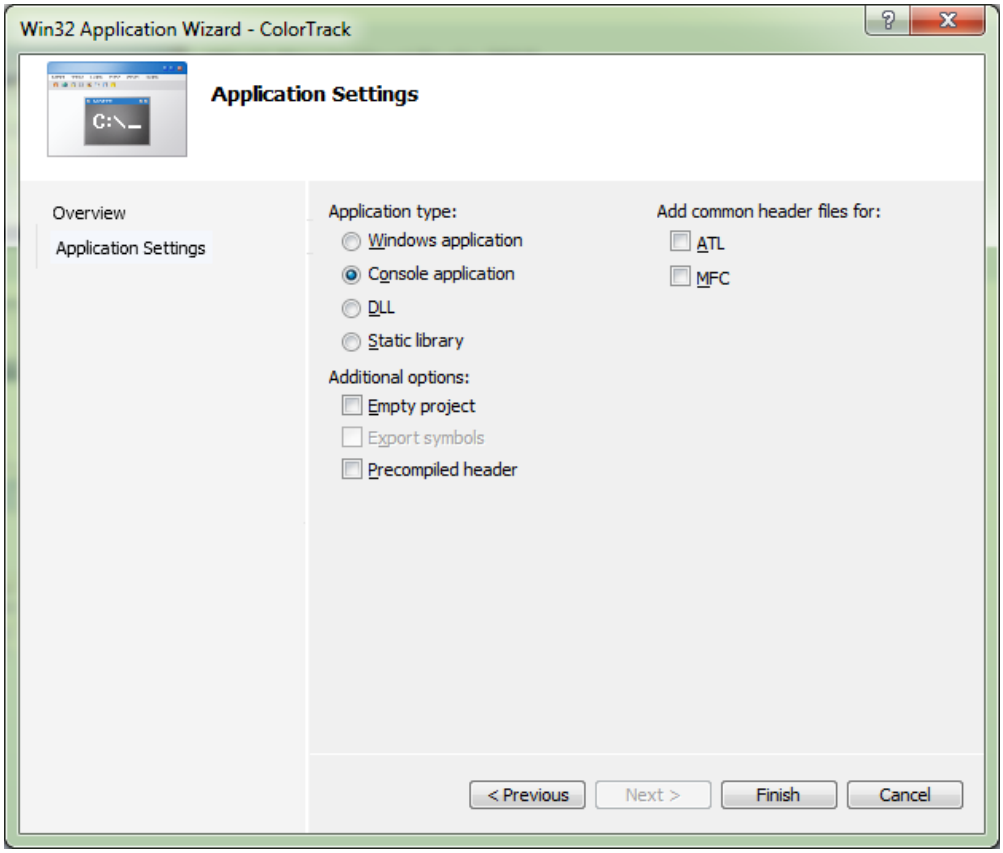


STARTING A PROJECT

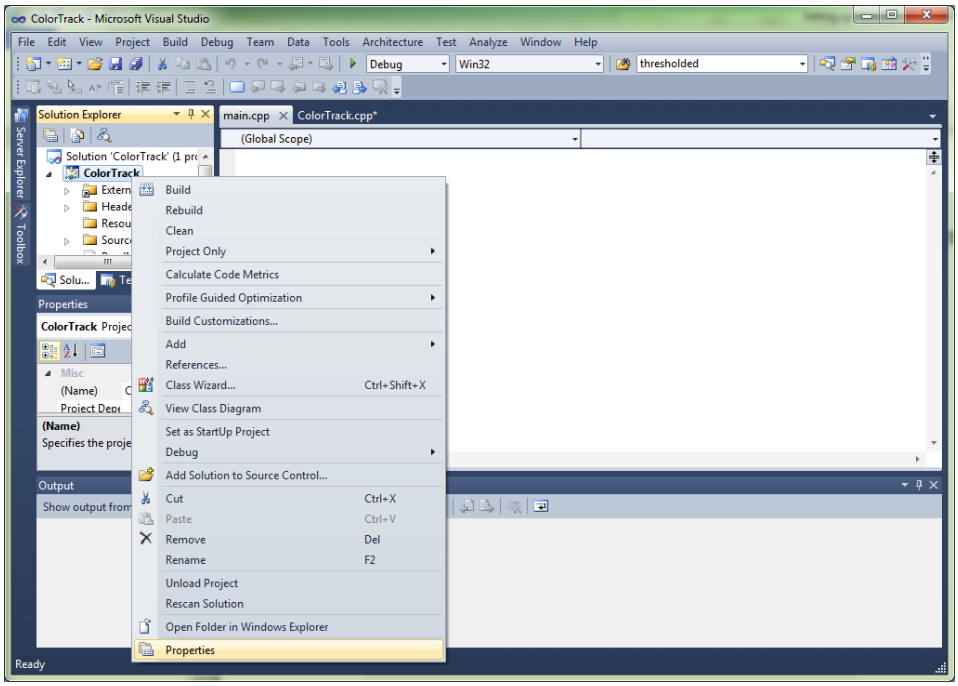
- Open Visual Studio
- Either choose “New Project” on the welcome page, or go to File > New > Project
- Choose Win32 Console Application
- Name the project.
- Click OK.
- Click Next.



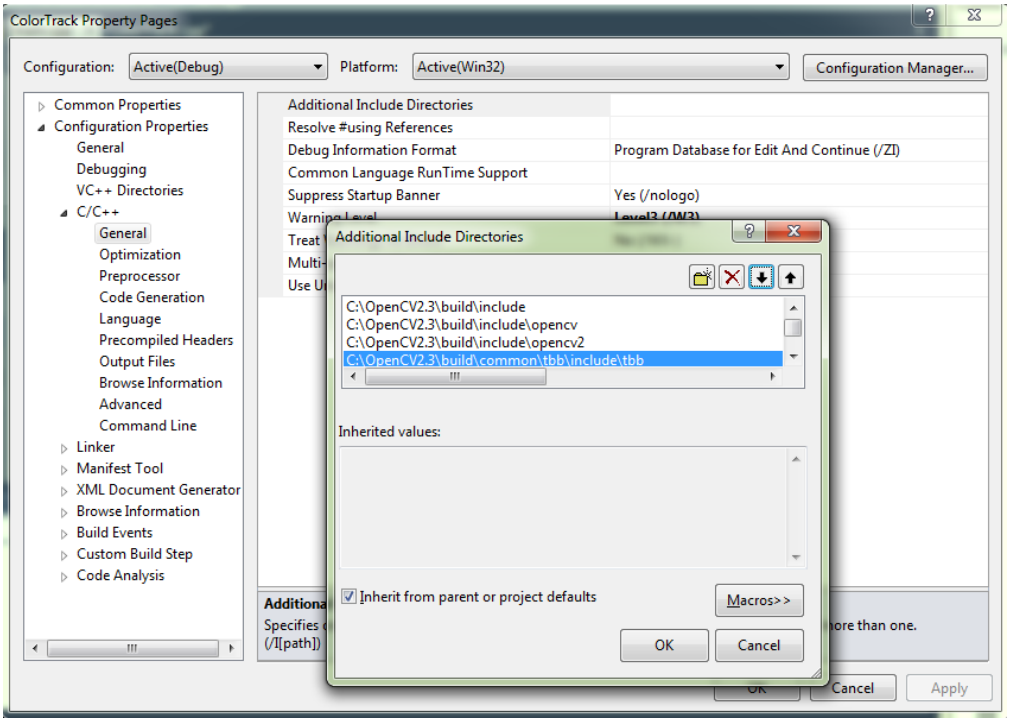
- Choose the “Console application”.
- Uncheck the “Precompiled Header” option.



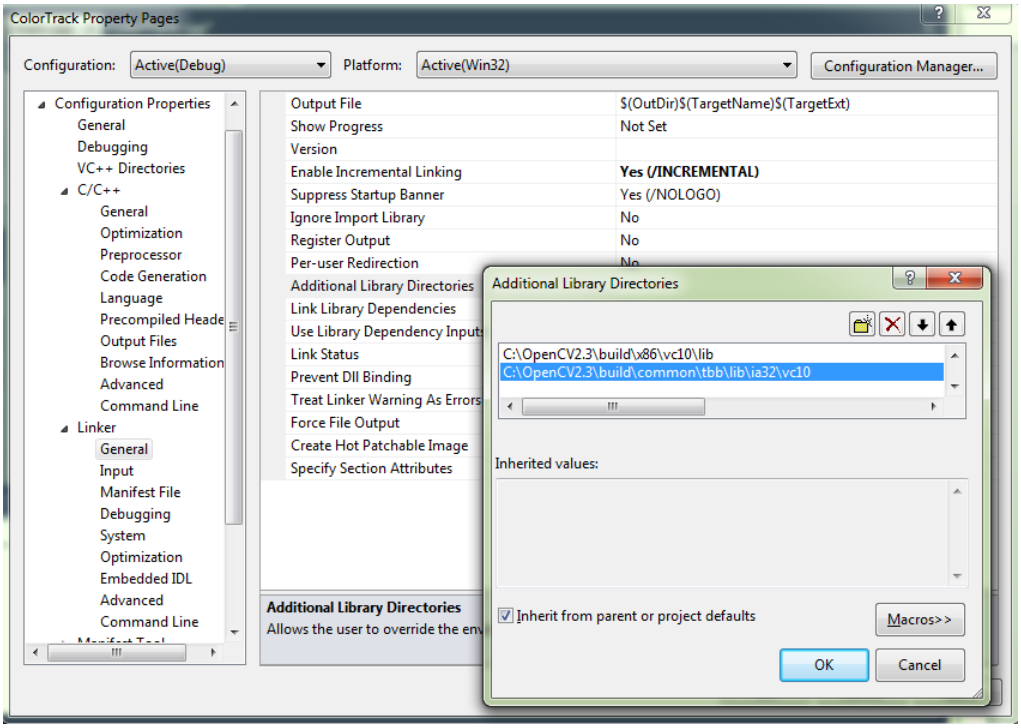
- Click Finish
- Under Solution Explorer, remove the following files (this step is not required):
    - stdafx.h
    - targetver.h
    - {name of project}.cpp
    - stdafx.cpp
    - ReadMe.txt
- Under the Solution Explorer > Source Files, right click and choose Add > New Item.
- Make a C++ file with the name “main.cpp”.
- Under the Solution Explorer, right click the name of the project and choose Properties.



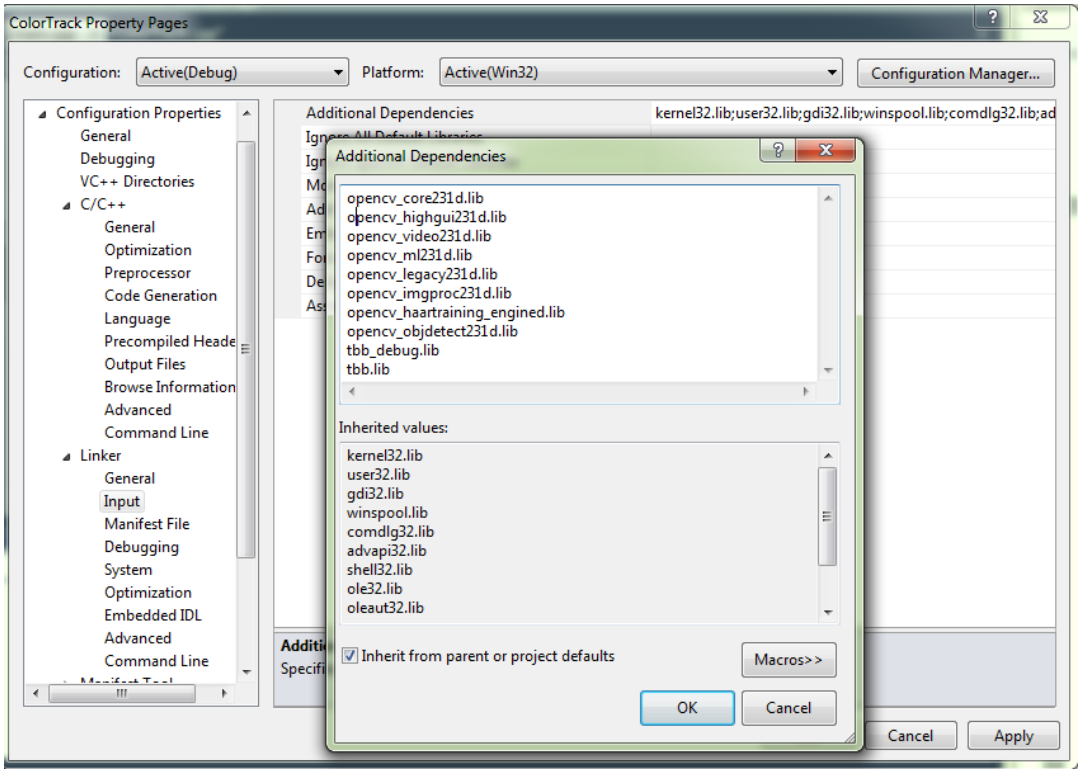
- Under C/C++ > General add the following to “Additional Include Directories”:
    - $(CVROOT)\build\include\opencv
    - $(CVROOT)\build\include\opencv2
    - $(CVROOT)\build\include
    - $(TBBROOT)\include\tbb



- Under Linker > General add the following to “Additional Library Directories”:
  - $(CVROOT)\build\x86\vc10\lib
  - $(TBBROOT)\lib\ia32\vc10



- Under Linker > Input add any required libraries for the program you are making to “Additional Dependencies”. If you do not know the name of the libraries, you can look in the $(CVROOT)\build\x86\v10\lib\” Folder. The TBB libraries must be added.
    - opencv_core231d.lib
    - opencv_highgui231d.lib
    - opencv_video231d.lib
    - opencv_ml231d.lib
    - opencv_legacy231d.lib
    - opencv_imgproc231d.lib
    - opencv_haartraining_engined.lib
    - opencv_objdetect231d.lib
    - tbb_debug.lib
    - tbb.lib



Setting up IP Webcam

- Install software for camera. This is useful for your own debugging purposes and connecting to the camera to see if it works. You can use the software to also find the IP address for the camera.
- Most cameras have a feed that you can watch in the following form.
    - "http://{Camera IP Address}/img/video.mjpeg"
- Use this address for file capturing in OpenCV. You can use the command
    - `capture = cvCreateFileCapture("http://192.168.1.102/img/video.mjpeg");`