OpenCV Build Guide
Including contrib modules and nonfree components (e.g. for SIFT).
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CS262 Computer Vision
October 5, 2018
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Based on this guide, but updated for new steps:

https://putuyuwono.wordpress.com/2015/04/23/building-and-installing-opencv-3-0-on-windows-7-64-bit/

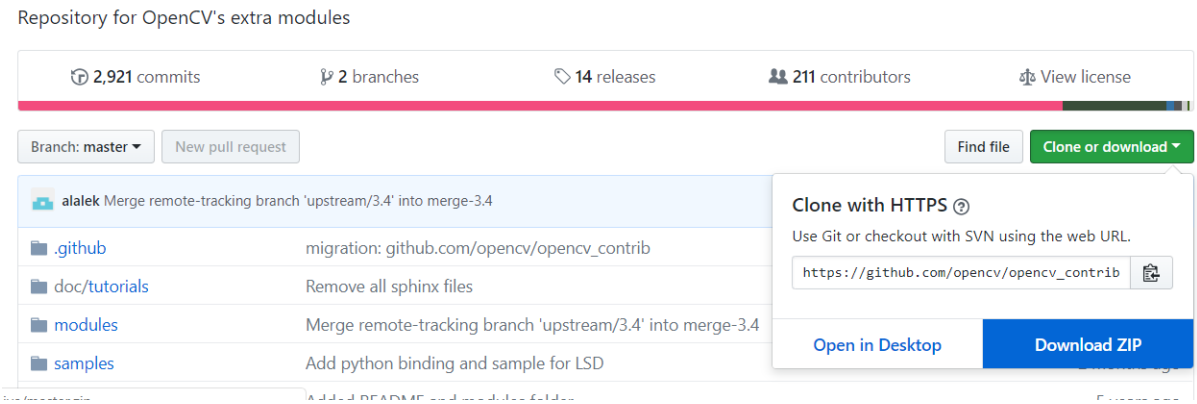
Clone or download both repositories:

https://github.com/opencv/opencv

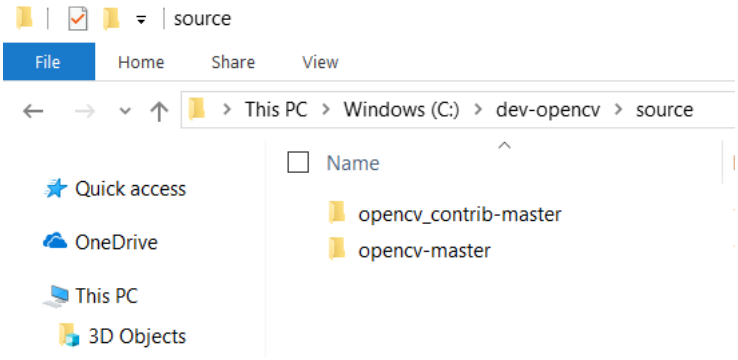
https://github.com/opencv/opencv_contrib

If you don't use git, just download the Zip files.

Clone or Download → Download Zip

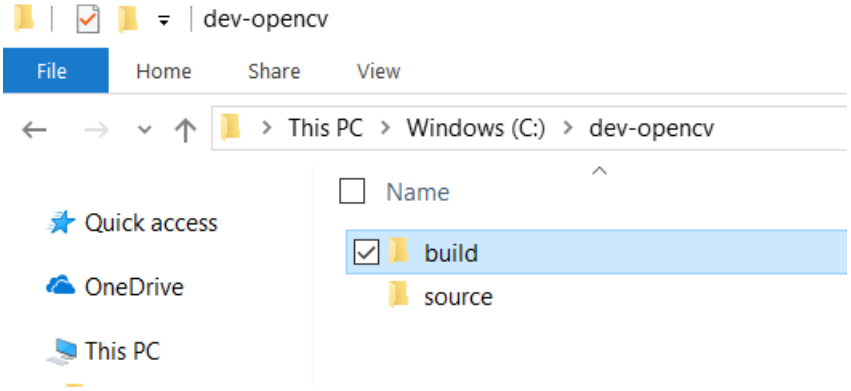


Ensure that there are cloned or extracted to parallel subdirectories. Here, I placed them in a new folder called c:\dev-opencv\source



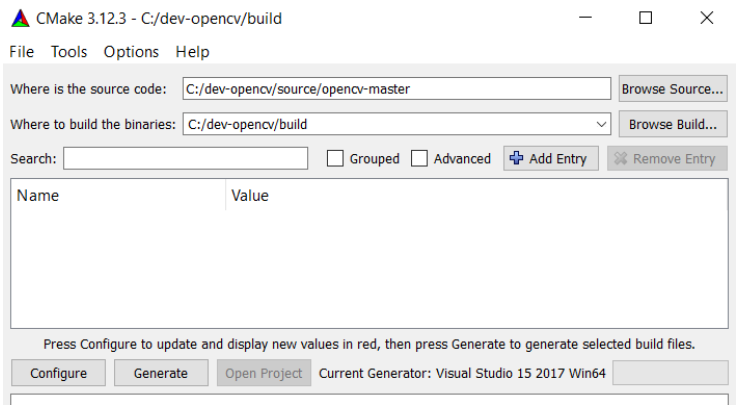
You will need CMake: https://cmake.org/download/
Download the “Windows win64-x64 Installer” or “Windows win64-x86 Installer”.

Create a new folder for the destination. Here it is c:\dev-opencv\build



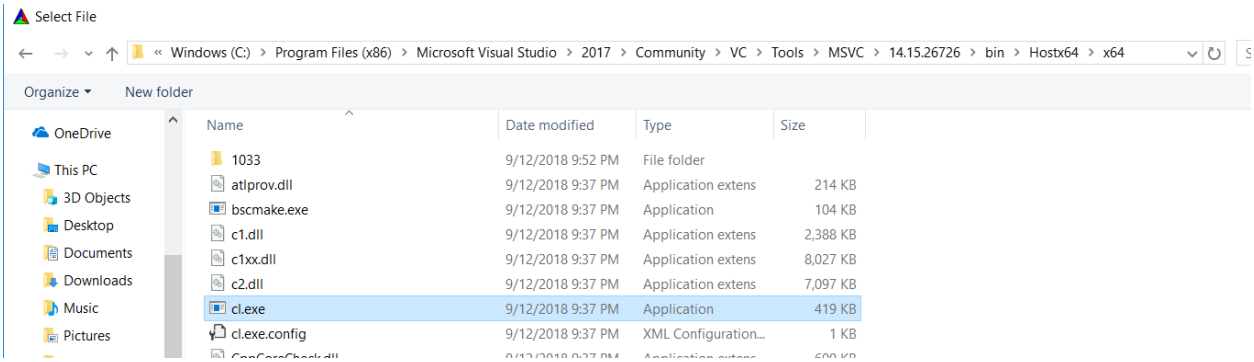
Note that if you missconfigure any step, you can start over by going to File → Delete Cache.

Set the Source and Build directories:



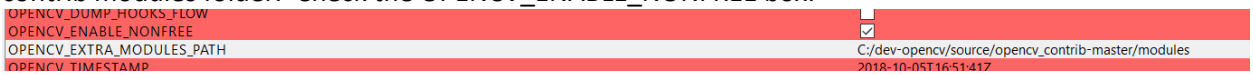
Then press the “Configure” button. Select “Visual Studio 15 2017 Win64” and Specify Native Compiler.

Set the compiler for C and C++ to the cl.exe file in your Visual Studio installation:



This will run and take several minutes.

Scroll down and find the OPENCV_EXTRA_MODULES_PATH attribute and enter the location of the contrib modules folder. Check the OPENCV_ENABLE_NONFREE box.

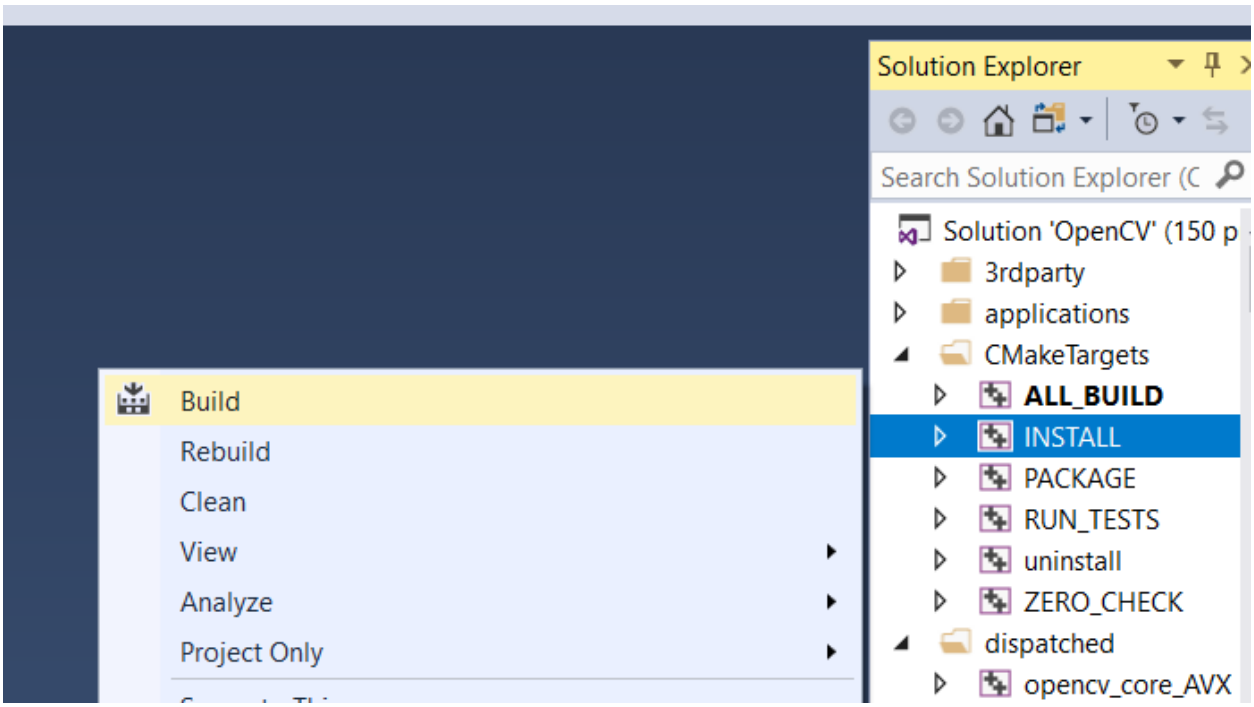


Press “Configure” again.
If this completes without errors, then press “Generate”.

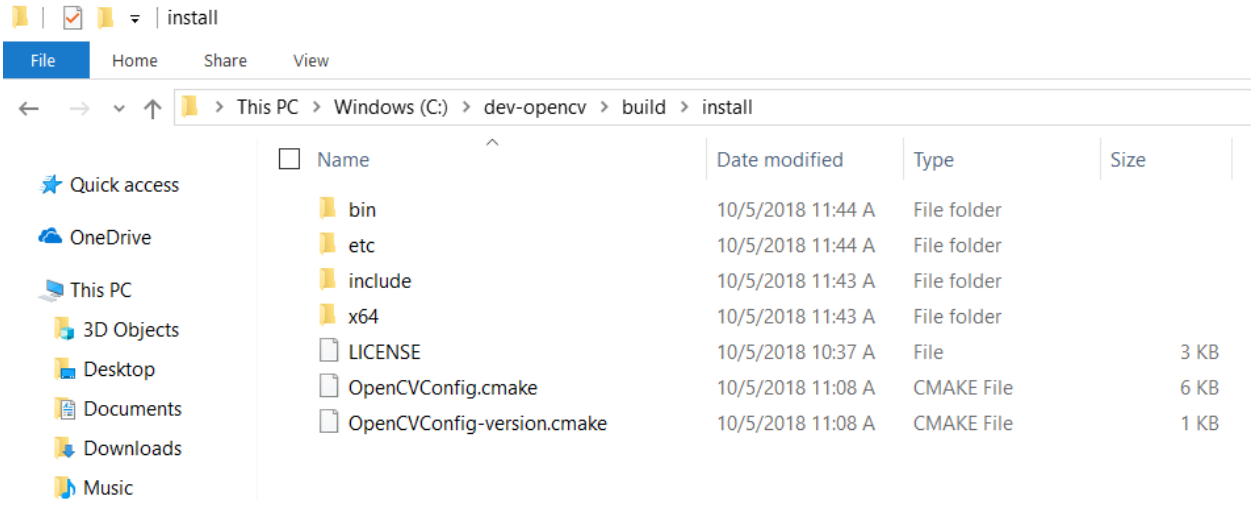
Close CMake.

Go to your build directory and find the OpenCV.sln visual studio project.

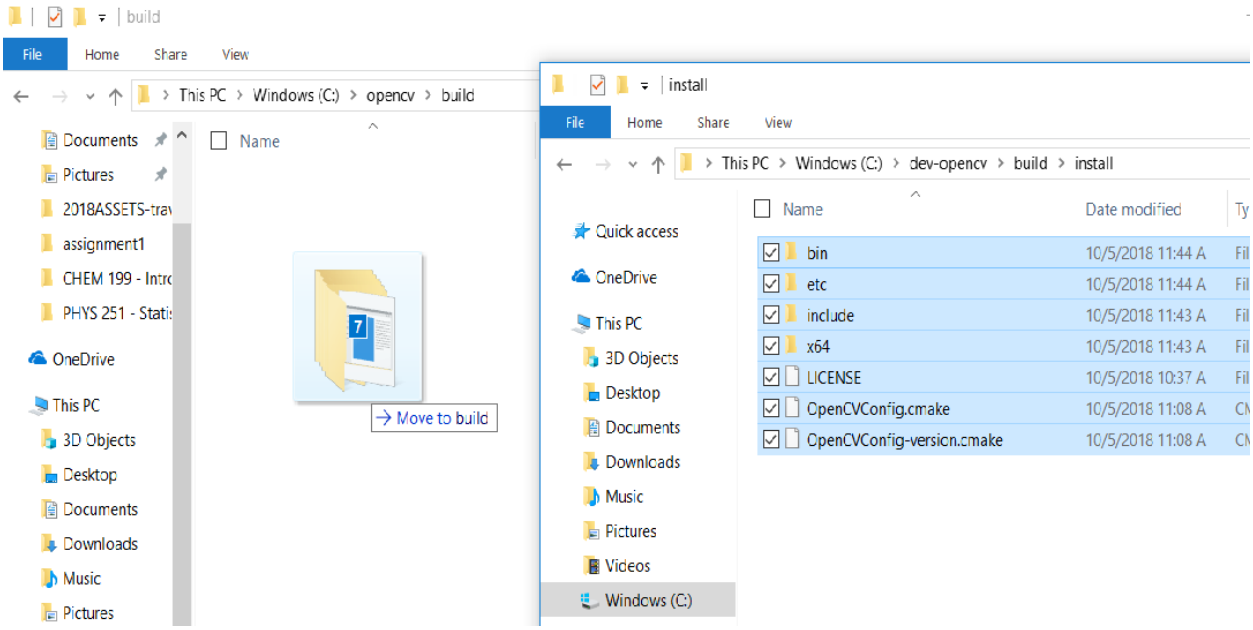
Find the CMakeTargets INTSTALL project. Built it.



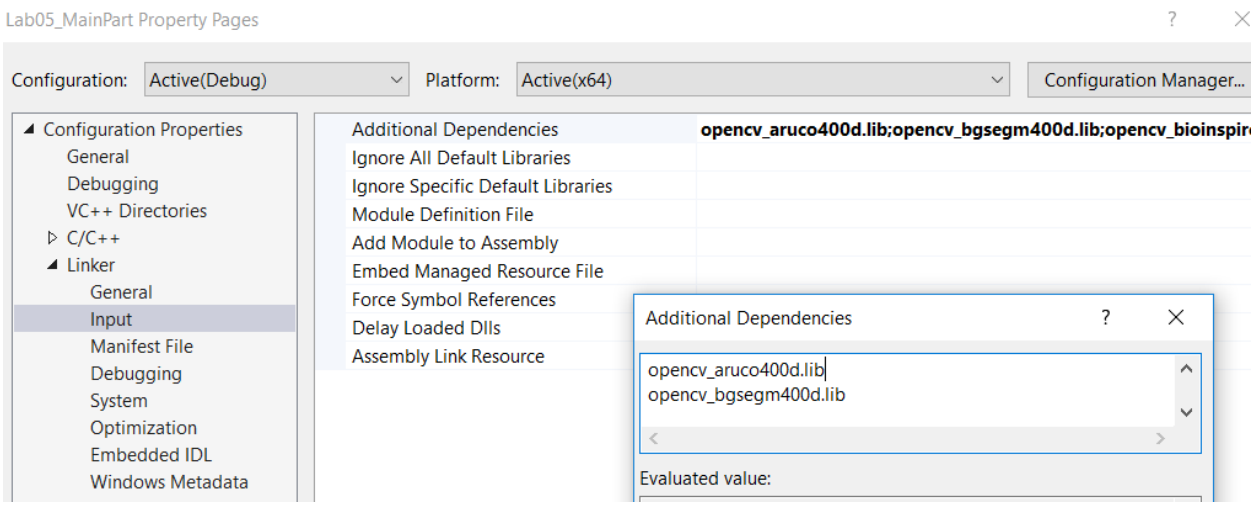
The output will be in the "install" directory:



I renamed my old opencv build directory, made a new one, and copied these files into it:
[This is because the new build is OpenCV 4!]



Modify the linker input settings to include all the new .lib files:



Full list:
opencv_aruco400d.lib
opencv_bgsegm400d.lib
opencv_bioinspired400d.lib
opencv_calib3d400d.lib
opencv_ccalib400d.lib
opencv_core400d.lib
opencv_datasets400d.lib
opencv_dnn400d.lib
opencv_dnn_objdetect400d.lib
opencv_dpm400d.lib
opencv_face400d.lib
opencv_features2d400d.lib
opencv_flann400d.lib
opencv_fuzzy400d.lib
opencv_gapi400d.lib
opencv_hfs400d.lib
opencv_highgui400d.lib
opencv_imgcodecs400d.lib
opencv_imgproc400d.lib
opencv_img_hash400d.lib
opencv_line_descriptor400d.lib
opencv_ml400d.lib
opencv_objdetect400d.lib
opencv_optflow400d.lib
opencv_phase_unwrapping400d.lib
opencv_photo400d.lib
opencv_plot400d.lib
opencv_reg400d.lib
opencv_rgbd400d.lib
opencv_saliency400d.lib
opencv_shape400d.lib
opencv_stereo400d.lib
opencv_stitching400d.lib
opencv_structured_light400d.lib
opencv_superres400d.lib
opencv_surface_matching400d.lib
opencv_text400d.lib
opencv_tracking400d.lib
opencv_video400d.lib
opencv_videoio400d.lib
opencv_videostab400d.lib
opencv_xfeatures2d400d.lib
opencv_ximgproc400d.lib
opencv_xobjdetect400d.lib
opencv_xphoto400d.lib