OpenCV

Windows Installation Manual

e-con Systems

Your Product Development Partner

Version 1.2

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Contents

Introduction to OpenCV

Open Source Computer Vision Library (OpenCV) is an open source computer vision and machine learning software library. OpenCV libraries are used to communicate with Cameras. APIs introduced in the OpenCV can be supported with all e-con Systems cameras.

This document helps you to install OpenCV in Windows and build a sample code to access the camera with OpenCV.

Prerequisites

The prerequisites are as follows:

- Click here(https://cmake.org/download/) to download CMake.
- Download OpenCV from here(https://github.com/opencv/opencv).
- Click clone or download option and copy the URL

```
$ git clone <OpenCV_URL>
$ cd opencv
$ git checkout <opencv_version(3.3.1 or 3.4.1)>
```

- Create a source directory in the opencv folder and move all the files to the source folder
- Create a build directory in the opencv/
- Build OpenCV in your PC using Visual Studio

Description

The following steps have been tested on Windows 10. OpenCV must work on any other relatively modern version of Windows OS.

Building OpenCV

OpenCV is a sample command line application used to demonstrate some of the features of the e-con Systems cameras with OpenCV APIs.

Step 1 – Launching CMake Window

In CMake window, select the OpenCV sources as source folder and OpenCV/build as build folder and click **Configure** button.

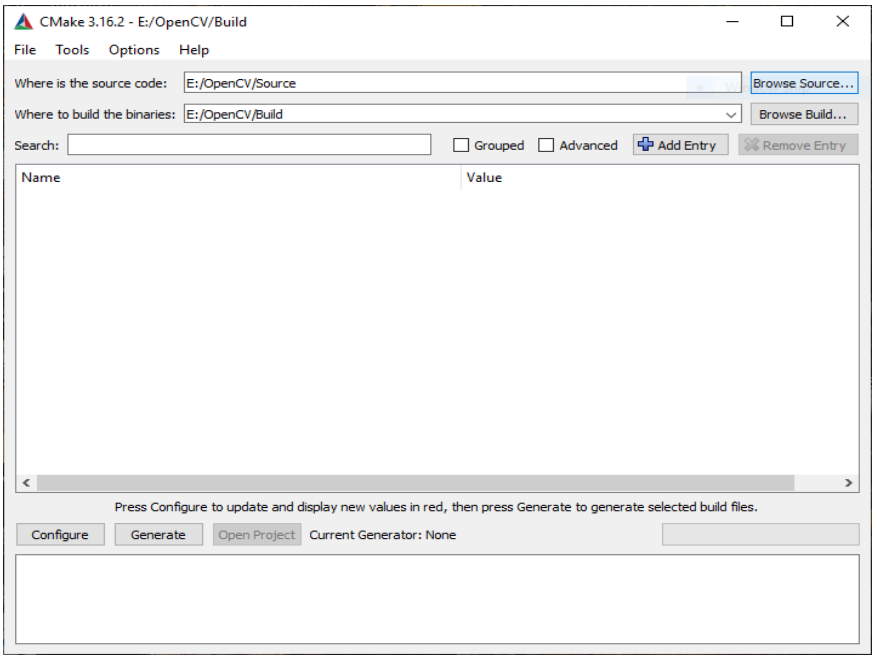


Figure 1: CMake Source and Build Directory Specification Window

Step 2 – Visual Studio Version Selection

Select Visual Studio 15 2017 for “Specify the generator for this project” and Win32 or x64 options for the “Optional Platform”.

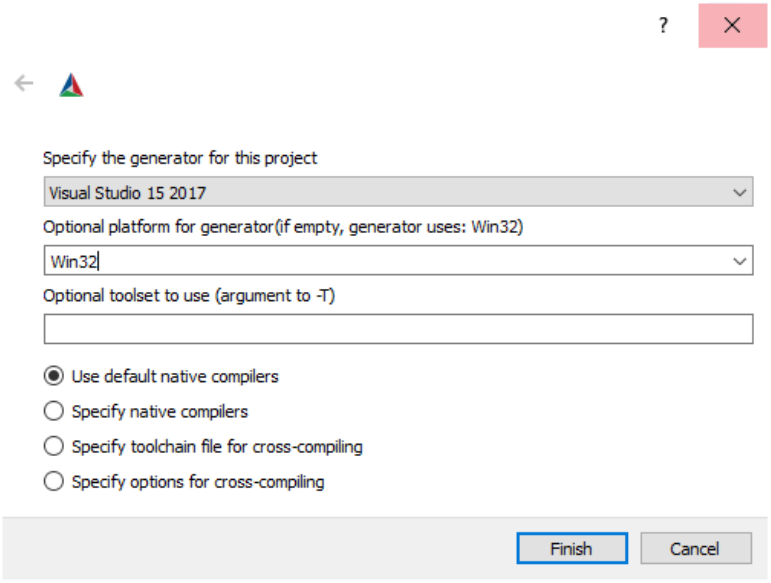
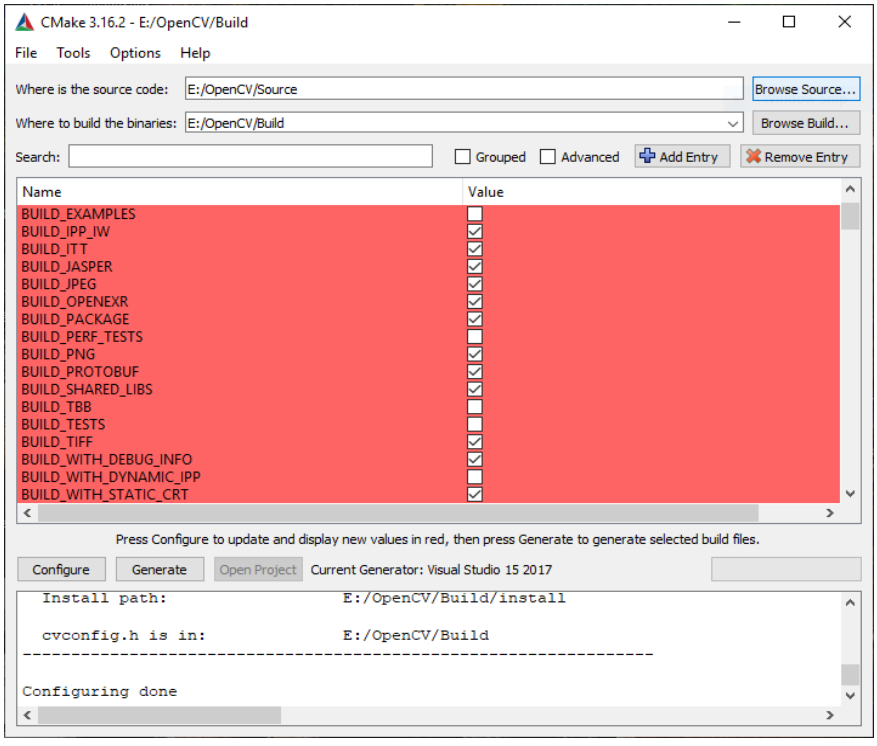


Figure 2: Visual Studio Version selection in CMake

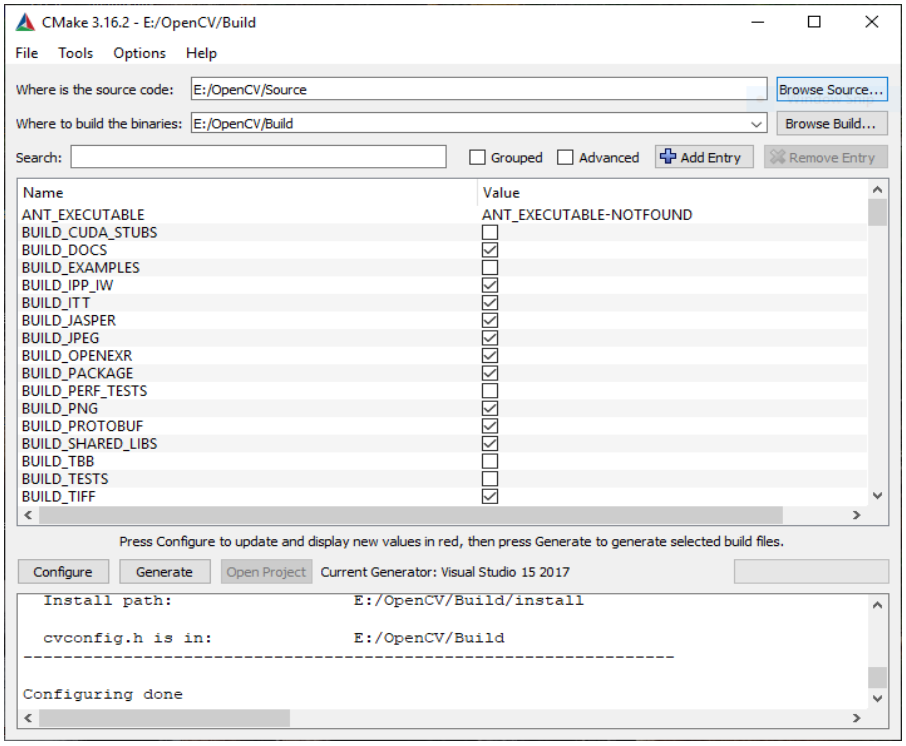
Step 3 – Configure and Generate CMake

The steps to configure and generate CMake are as follows:

1. Click **Configure** after selecting the Visual Studio.



2. Uncheck BUILD_PERF_TESTS and BUILD_TESTS.
3. Click **Configure** till all red flag goes off.



4. Click **Generate** to create Visual Studio solution file in the OpenCV build directory.

Step 4 – Videoio File Replace

Replace the **videoio** folder with the folder downloaded from the [e-con's github(https://github.com/econsystems/opencv/tree/master/sources)](https://github.com/econsystems/opencv/tree/master/sources) with **OpenCV/Sources/modules/** location.

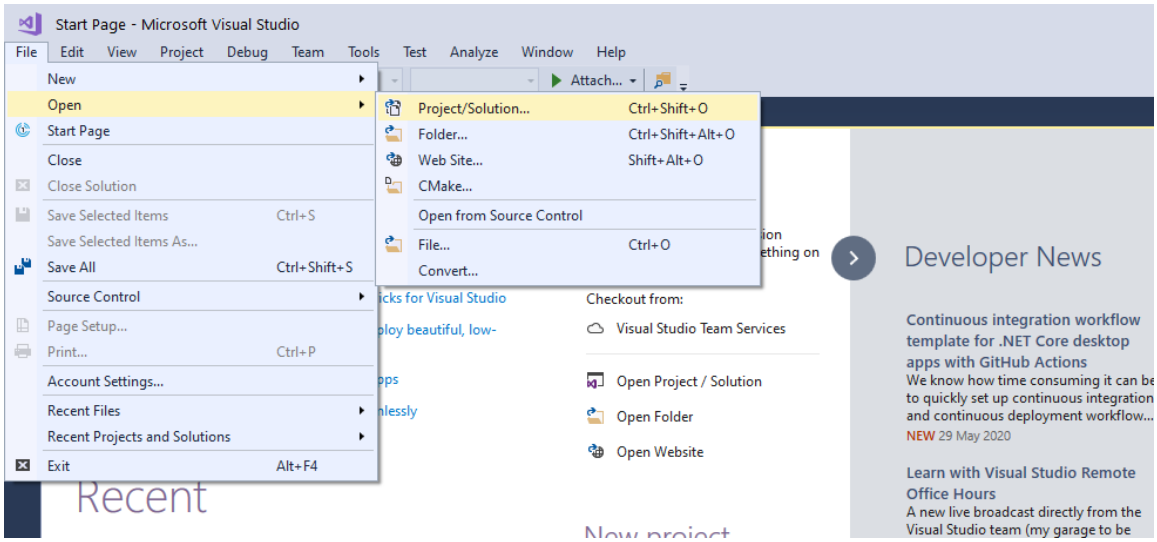
Step 5 – Building Base Class Libraries

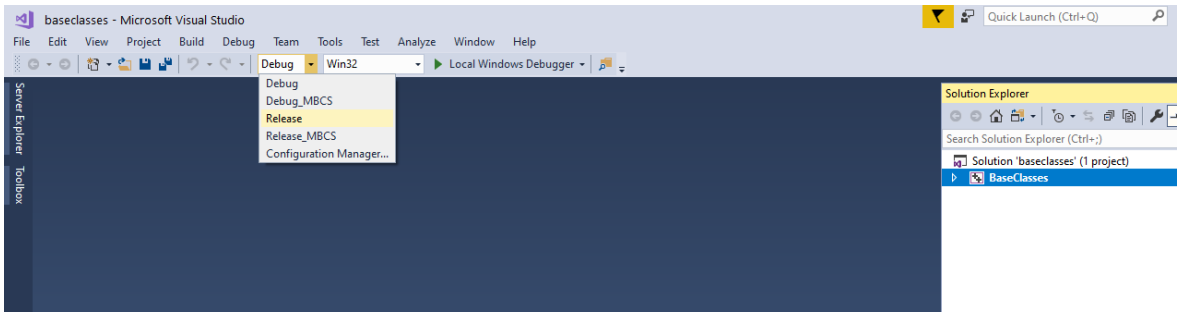
Note: Download the "**Windows Software Development Kit (SDK) for Windows Server 2008 and .NET Framework 3.5**" and follow the steps to build the base class libraries.

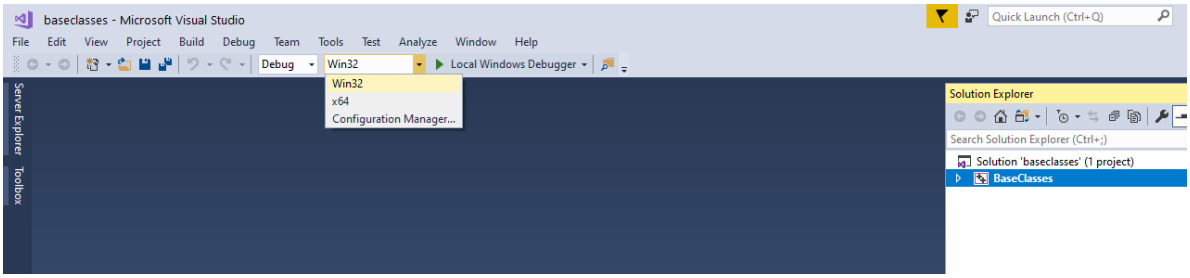
1. Open and Configuring the **Baseclasses** project:
    - Open the new instance of visual studio 2017.
    - Click **File-> Open -> Project/Solution**
    - Browse the Baseclasses project in Microsoft SDK path (**C:\Program Files\Microsoft SDKs\Windows\v6.1\Samples\Multimedia\DirectShow\BaseClasses**) and select **baseclasses.sln**.

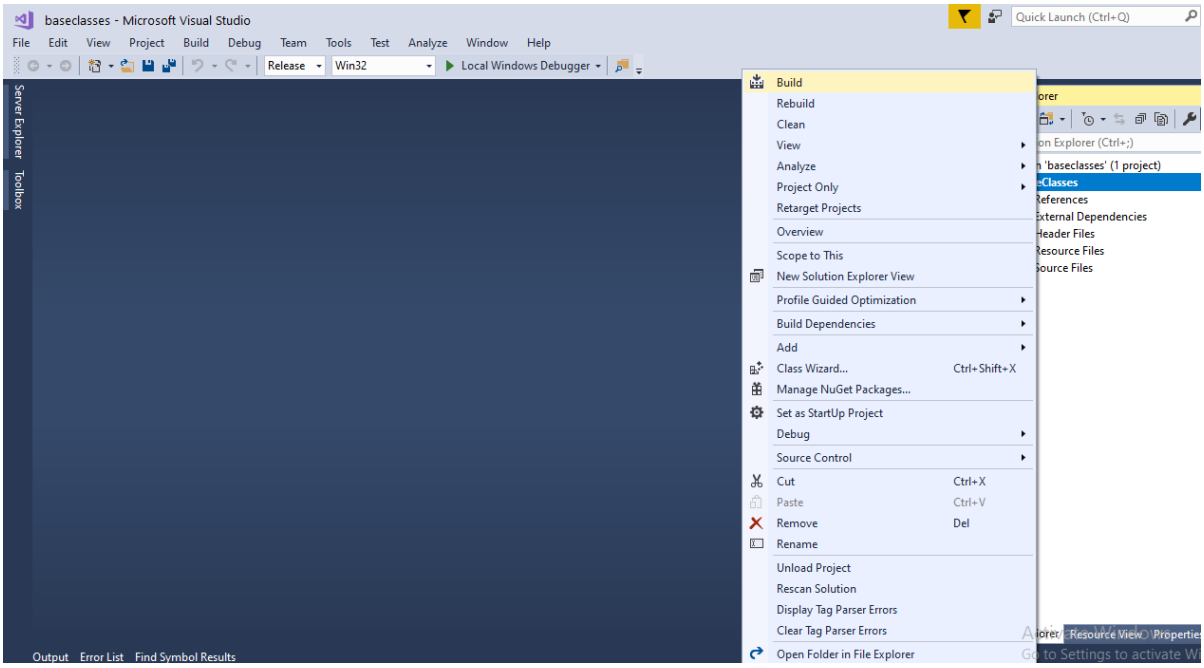
- Choose Solution configuration (Debug / Release) and Solution Platform (Win32 or x64) (based on your requirement).

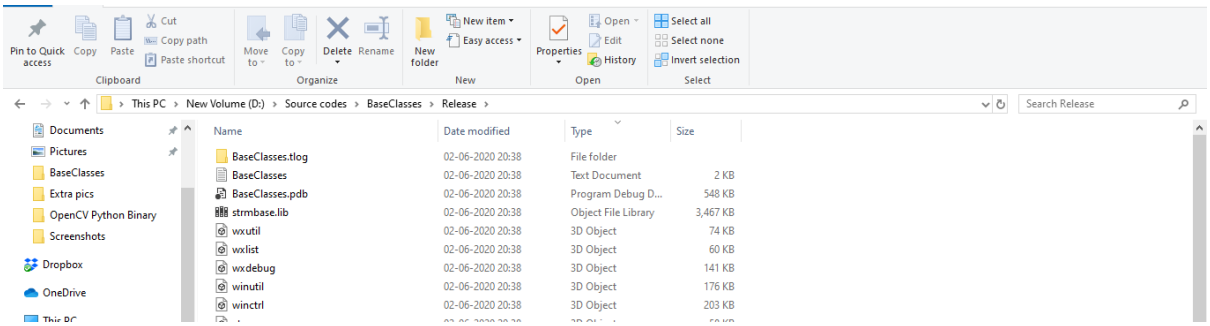
2. Build the Baseclasses project:
   - Give right click on Baseclasses solution and select Build Solution (or Rebuild Solution).
   - The output libraries are generates as **strmbase.lib** for release, **strmbasd.lib** for debug, which has to be linked in the OpenCV Project.

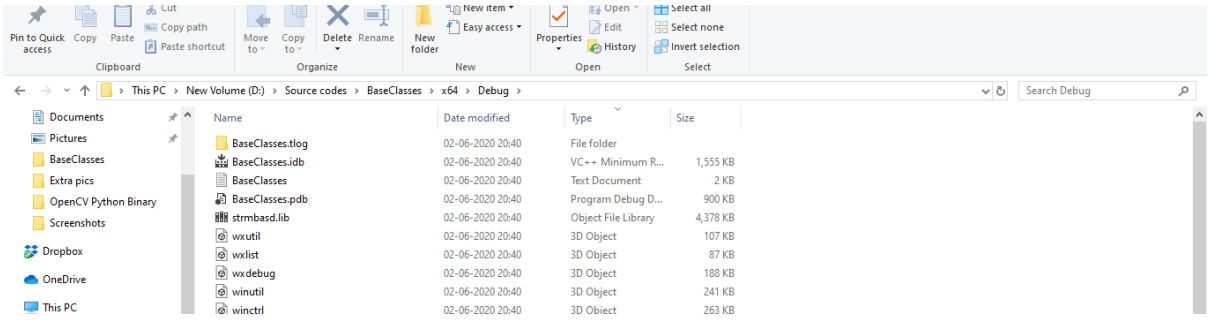












Step 6 – Build OpenCV in Visual Studio

The steps to build OpenCV in Visual Studio are as follows:

1. Run the **OpenCV.sln** found in the build directory of OpenCV using Visual Studio.

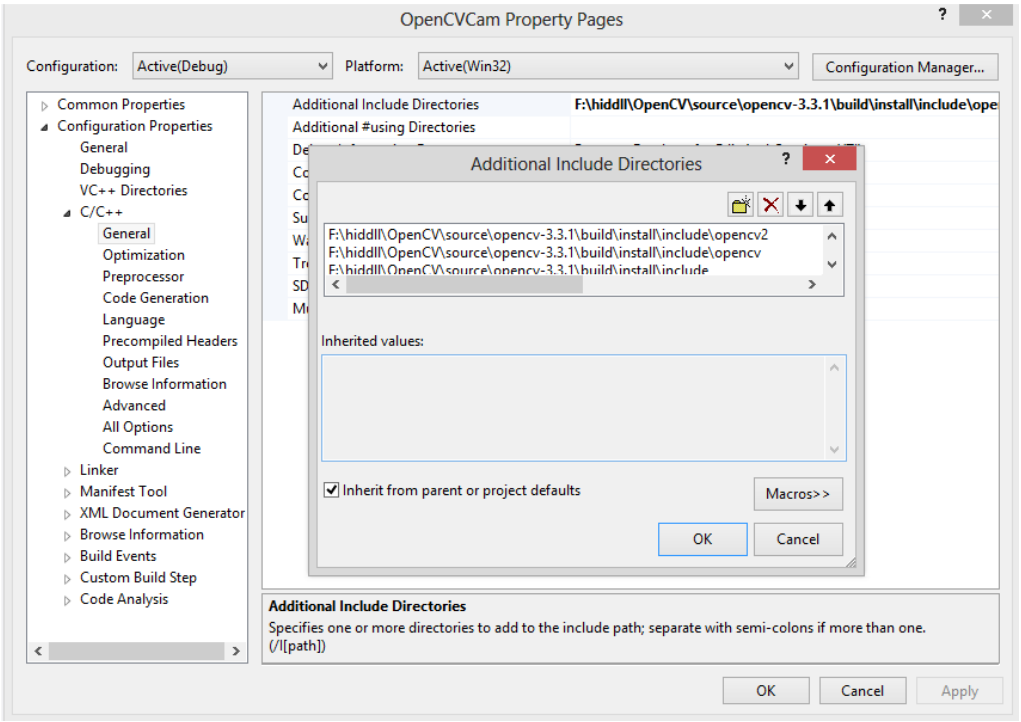
2. Add **setupapi.lib** in modules/opencv_videoio properties tab under Linker > Input> Additional Dependencies.
3. Add **strmbase.lib** for **release** mode and **strmbasd.lib** for **debug** mode from the Microsoft SDKs from **c:\Program Files**\..(related to DirectShow) in modules/opencv_videoio properties tab under **Linker->General->Additional Library directories** and mention the lib name in **Linker->Input->Additional dependencies**.
4. Build **CMakeTargets/All Build** and **CMakeTargets/Install** separately in both the Debug/Release Configuration of the Visual Studio.

Building Sample Code

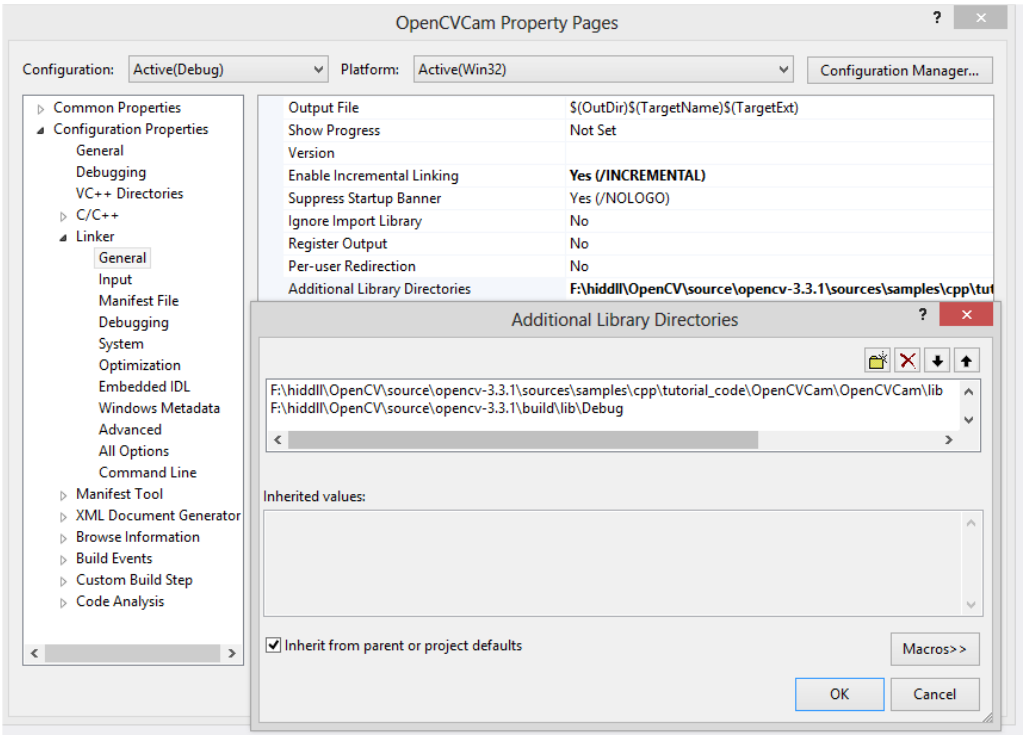
This section describes about how to build the sample code.

The steps to build the sample code are as follows:

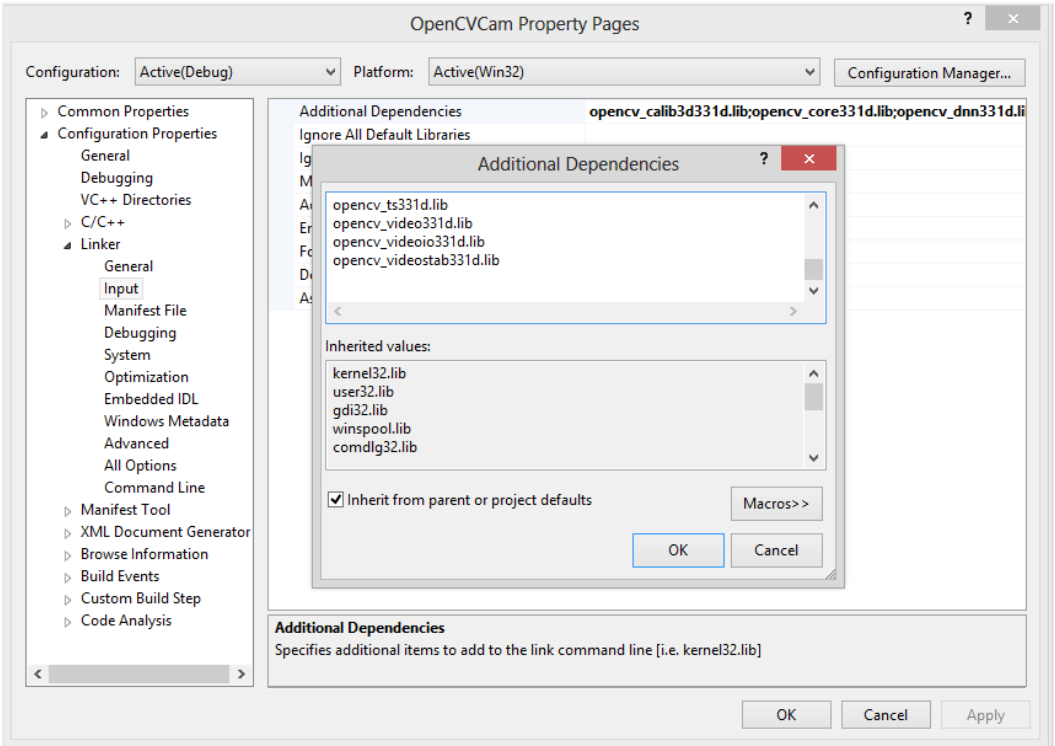
1. Create a new console application in Visual Studio. Add the ***.cpp** file of the application to be built from the blog (https://github.com/econsystems/opencv/tree/master/sources/OpenCVCam).
2. Change **Application -> Configuration Properties -> General -> project Defaults -> Character Set -> Use Unicode Character Set**
3. Link the OpenCV header under **C/C++ -> General -> Additional Include Directories files** with the following:
   - OpenCV/build/install/include
   - OpenCV/build/install/include/opencv
   - OpenCV/build/install/include/opencv2



4. Link the library files of OpenCV from the **OpenCV/build/lib/Release** for configuration type release under **Linker > General > Additional Library Directories**.



5. List all the library names linked to the project under **Linker > Input > Additional Dependencies** in the Visual Studio Project Property page.



6. Add runtime libraries in the sample application **root** folder from the **OpenCV/build/bin/Debug** or **OpenCV/build/bin/Release** based on the configuration of the sample application.

The runtime libraries for **OpenCV release version 3.3.1** are:

- opencv_core331.dll
- opencv_highgui331.dll
- opencv_imgcodecs331.dll
- opencv_imgproc331.dll
- opencv_videoio331.dll
- eCAMFwSw.dll

and the runtime libraries for **OpenCV Debug version 3.3.1** are:

- opencv_core331d.dll
- opencv_highgui331d.dll
- opencv_imgcodecs331d.dll
- opencv_imgproc331d.dll
- opencv_videoio331d.dll
- eCAMFwSw.dll

The runtime libraries for **OpenCV release version 3.4.1** are:

- opencv_core341.dll
- opencv_highgui341.dll
- opencv_imgcodecs341.dll
- opencv_imgproc341.dll
- opencv_videoio341.dll
- eCAMFwSw.dll

and the runtime libraries for **OpenCV Debug version 3.4.1** are:

- opencv_core341d.dll
- opencv_highgui341d.dll
- opencv_imgcodecs341d.dll
- opencv_imgproc341d.dll
- opencv_videoio341d.dll
- eCAMFwSw.dll

- Run the OpenCVCam.exe application using **Administrator** Mode.

Troubleshooting

In this section, you can view the list of commonly occurring issues and their troubleshooting steps.

Linker issues relating to setupdi* while building.

Add **setupapi.lib** in the modules/opencv_videoio properties tab under **Linker> Input > Additional dependencies**.

There is no install folder present in the opencv<version>/build/

Build the CMakeTargets or **install project** in both Debug and Release configurations.

HID settings are not shown in the command line application.

Change Use Unicode Character set in the Application-> configuration properties -> General -> Project defaults -> character set

In Opencv version 3.4.1, Opencv_test_namespace related errors while building.

Unload the tests accuracy and tests performance projects from the opencv and start the building process again.

IAMVIDEOCONTROL related error while building Opencv.

Copy the **strmbase.lib,** if using release mode or strmbasd.lib, if using debug mode from the c:\Program Files\...(related to directshow) and paste it in the **build/lib/release (or) debug** directory of the OpenCV. Also based on the x86 or x64 architecture, the libs should be copied and pasted. If the strmbase.lib or strmbasd.lib is not present. Then build the **baseclasses.sln** using visual studio which will be present in the **c:\ProgramFiles\Microsoft SDKs\.....** If baseclasses.sln file is not present, Install Microsoft SDK properly in the system.

Support

Contact Us

If you need any support on See3CAM_130 product, please contact us using the Live Chat option available on our website - https://www.e-consystems.com/

Creating a Ticket

If you need to create a ticket for any type of issue, please visit the ticketing page on our website - https://www.e-consystems.com/create-ticket.asp

RMA

To know about our Return Material Authorization (RMA) policy, please visit the RMA Policy page on our website - https://www.e-consystems.com/RMA-Policy.asp

General Product Warranty Terms

To know about our General Product Warranty Terms, please visit the General Warranty Terms page on our website - https://www.e-consystems.com/warranty.asp

Revision History

Rev	Date	Description	Author
1.0	06-April-2018	Initial Draft	Chandra Sekhar. V
1.1	27-July-2018	Added support for the FPS variant in OpenCV for windows	Chandra Sekhar. V
1.2	02-Jun-2020	Added steps to build and generate base class libraries.	Murali Mohan. M