

# OpenCV for Unity 2.0.5

iOS & Android support

WindowsStoreApps8.1 & WindowsPhone8.1 & Windows10 UWP(beta) support

Win & Mac & Linux Standalone support

Support for preview in the **Editor**

**Work with Unity Free & Pro**

## System Requirements

Build Win Standalone & Preview Editor : Windows7 or later

Build Mac Standalone & Preview Editor : OSX 10.8 or later

**OpenCV for Unity** is an Assets Plugin for using **OpenCV** from within **Unity**.

- Since this package is a **clone of OpenCV Java**, you are able to use the same API as OpenCV Java 3.1.0.
- You can image processing in **real-time** by using the **WebCamTexture** capabilities of Unity. (**real-time face detection works smoothly in iPhone 5**)
- Provides a method to interconversion of **Unity's Texture2D** and **OpenCV's Mat**.
- **IDisposable** is implemented in many classes. You can manage the resources with the “**using**” statement.

Please download [Demo Application](#) for Android and watch [Setup Tutorial Video](#).

## [API Reference OpenCV for Unity](#)

Please refer to [OpenCV official document](#) for the details of the argument of the method.

SampleCode using OpenCV for Unity is available.

- [MarkerBased AR Sample](#)
- [FaceTracker Sample](#)
- [Vuforia with OpenCV for Unity Sample](#)
- [Kinect with OpenCV for Unity Sample](#)

## Version changes

**2.0.5** [Common]Added HOGDescriptorSample.

**2.0.4** [Android]Added Support for Split Application Binary (.OBB) [Android]Removed opencvforunity.jar.

**2.0.3** [Common]Added SVMSSample. [Common]Fixed VideoCaptureSample and WebCamTextureAsyncDetectFaceSample. [UWP]Added OpenCVForUnityUWP\_Beta2.zip.

**2.0.2** [Common]Fixed CS0618 warnings: `UnityEngine.Application.LoadLevel(string)' is obsolete: `Use SceneManager.LoadScene'.

**2.0.1** [OSX]Fixed SIGILL Exception. [Common]Added Utils.setDebugMode() method. [Common]Added MatchTemplateSample, StereoBMSample, SeamlessCloneSample and WebCamTextureDetectCirclesSample. [Common]Added flipVertical flag, flapHorizontal flag and GetWebCamDevice() method to WebCamTextureToMatHelper.cs.

**2.0.0** [Common]Updated to OpenCV3.1.0. [Common]Included Old Version based on "OpenCV2.4.11". [Common] Included Beta Version of Windows10 UWP Support.( This is beta version based on OpenCV3.0.0. opencv\_contrib modules is not supported.)

**Beta16** [iOS]Fixed libopencvforunity.a Bitcode Setting.

**Beta15** [Common]Fixed WebCamTextureToMatHelper.cs.(Add didUpdateThisFrame () method)

**Beta14** [Common]Fixed WebCamTextureToMatHelper.cs.( Bug of rotation convertion from WebCamTexture to Mat in Win,Mac StandAlone Build)

**Beta13** [Common]Added fastTexture2DToMat() and fastMatToTexture2D(). [Common] Renewed the samples using WebCamTextureToMatHelper.(Supports all screen orientation.)

**Beta12** [iOS]Fixed malloc\_error that occurs in Unity5.3.1p2.

**Beta11** [iOS]Enabled Jpeg format.(Added mjpeg format support in VideoCapture class)

**Beta10** [iOS]Enabled Bitcode.

**Beta9** [UWP]Added support for Windows10 UWP.( This is a test version. opencv\_contrib modules is not supported.)

**Beta8** [Common]Fix FaceRecognizerSample. [Common] Delete the method using Default parameter specifiers. [Android] Compile the library using "armabi-v7a with NEON" option.

**Beta7** [Common]Add WrapPerspectiveSample, HandPoseEstimationSample.

**Beta6** [iOS]Fix WebCamTexture bug of SampleScene in Unity5.2.

**Beta5** [Linux]Add Linux Support. [WindowsStoreApp8.1]Support for methods using

Low-level Native Plugin Interface. [Common]Rewrite SampleScene.

**Beta4** [Common]Add Utils. getGraphicsDeviceType(). [Common]Add SampleScene Setup Tutorial Video for Unity5.

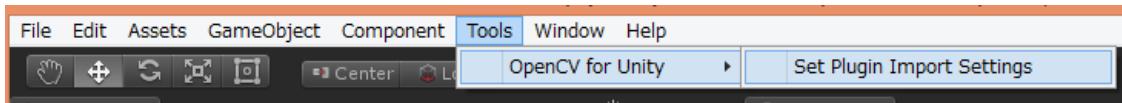
**Beta3** [Common]Add CamShiftSample.(Object Tracking) [Common]Add OpenCVForUnityMenuItem.cs.( This script set plugin import settings automatically from MenuItem.)

**Beta2** [iOS] Fix problem when working with Metaio(UnityAppController problem). [Common]Add [System.Serializable] to basic class. [Common] change folder name from “OpenCVForUnity/OpenCVForUnity\_Editor” to “OpenCVForUnity/Editor”. [iOS]Move “OpenCVForUnity/OpenCVForUnity\_Editor/opencv2.framework” to “OpenCVForUnity/Plugins/iOS”folder.

If you want to try Windows10 UWP Platform(Beta Version), Please unzip “OpenCVForUnityUWP\_Beta.zip”, delete “OpenCVForUnity”folder, import “uwp\_beta.unitypackage”.

#### Quick setup procedure to run the sample scene([Setup Tutorial Video](#))

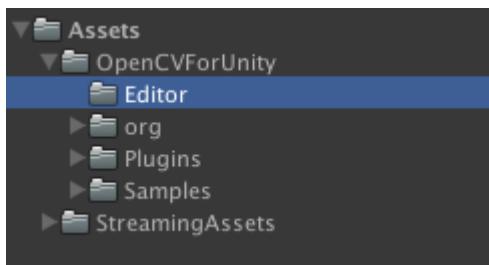
1. Select MenuItem[Tools/OpenCV for Unity/Set Plugin Import Settings].



2. Move “OpenCVForUnity/StreamingAssets/”folder to “Assets/”folder.
3. Please set [PlayerSettings]-[Resolution and Presentation]-[Orientation]-[Default Orientation : Landscape Left] when you build the sample scene.
4. Add all of the “\*\*\*.unity” in the “OpenCVForUnity” folder to [Build Settings] – [Scene In Build].

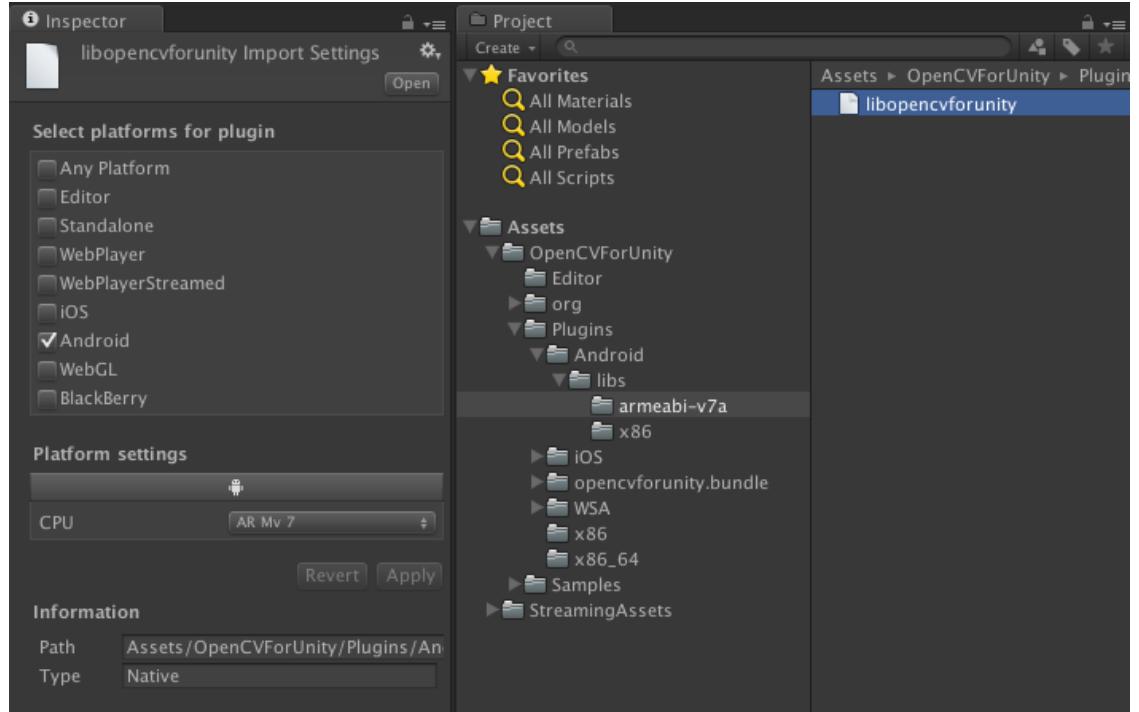
※Inspector Setting of “opencv2.framework” and “opencvforunity.bundle” might have been reset at the time of import. In that case, re-setup is required.

#### Screenshot after the setup

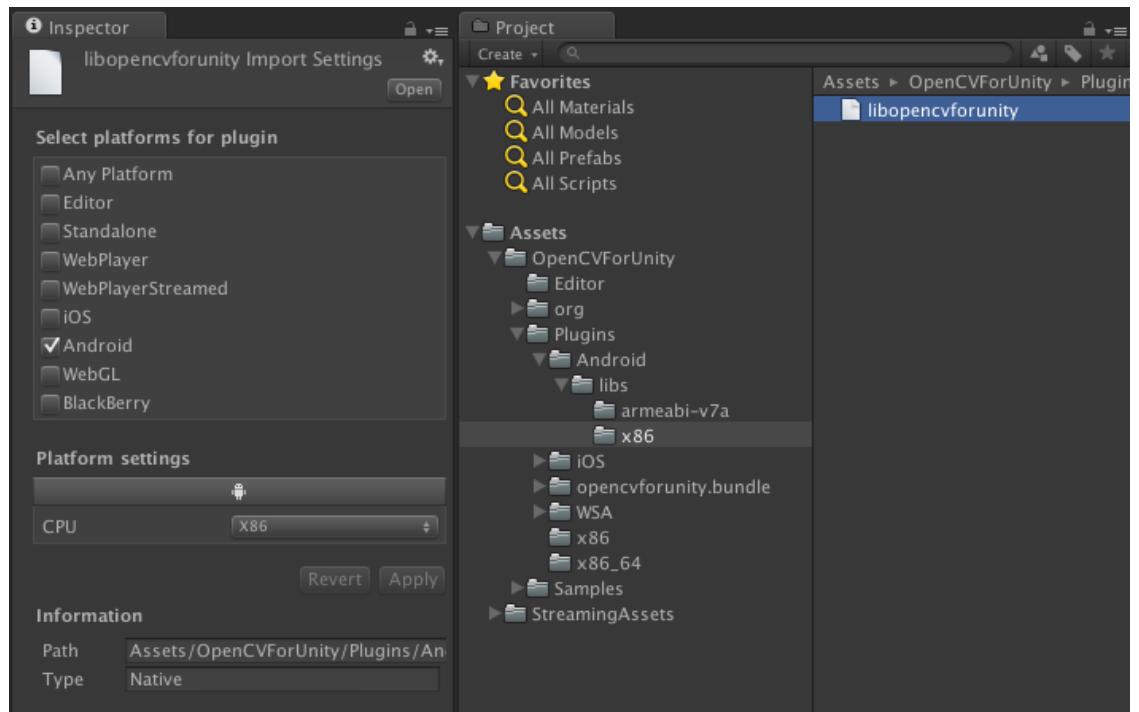


## Android Setup Procedure

- “OpenCVForUnity/Plugins/libs/armeabi-v7a/\*.so” – Select platform Android and CPU ARMv7 in Inspector.



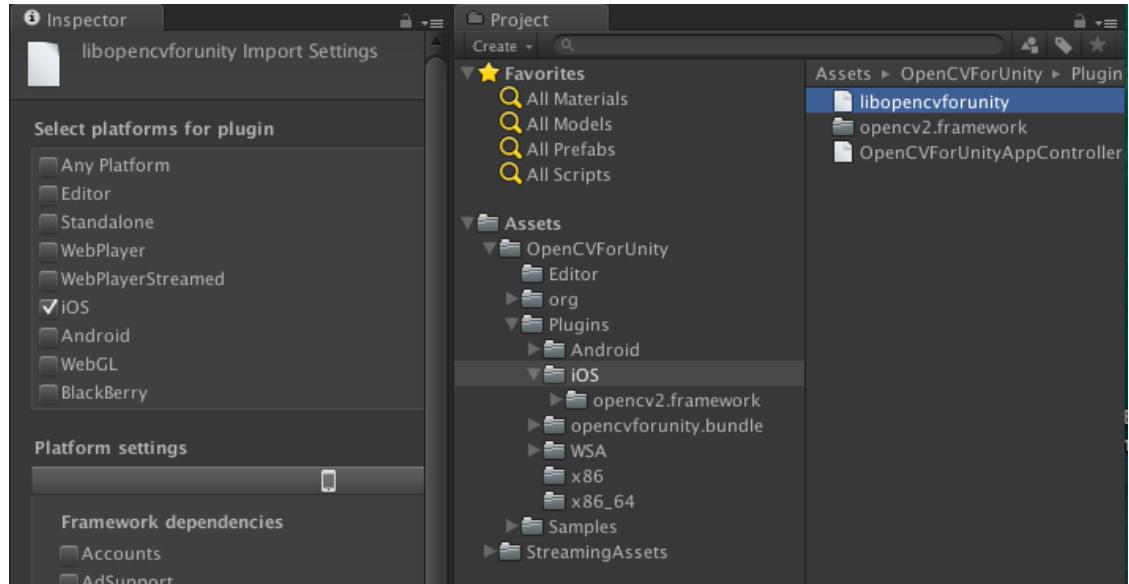
- “OpenCVForUnity/Plugins/libs/x86/\*.so” – Select platform Android and CPU x86 in Inspector.



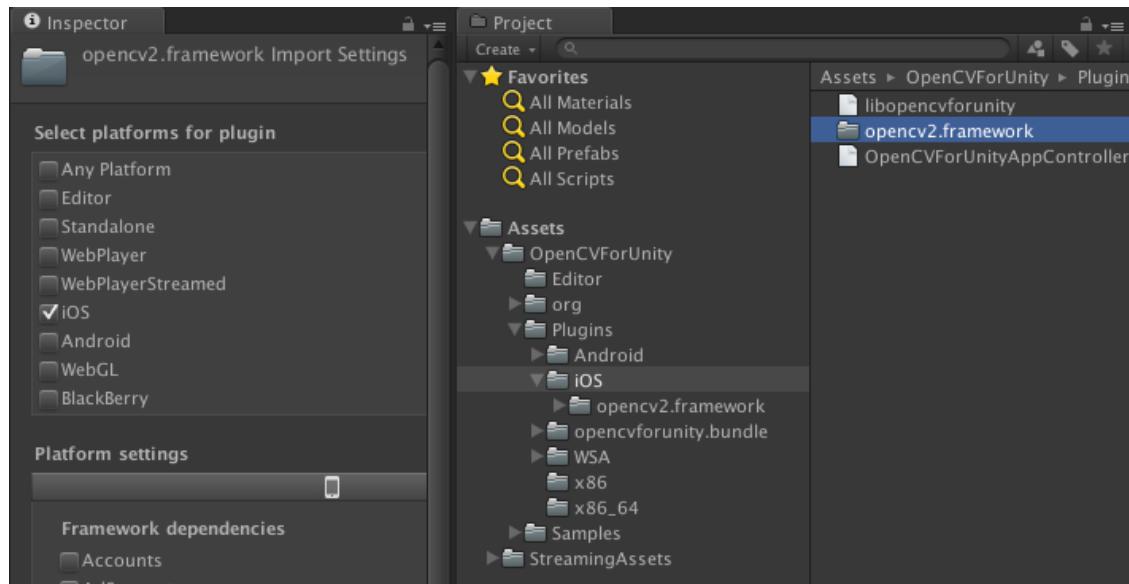
- Put the file that you want to use for Utils.getFilePath() in the “Assets/StreamingAssets/” folder. (haarcascade\_frontalface\_alt.xml etc is for OpenCVForUnitySample.scene. Please copy only when necessary.)

## iOS Setup Procedure

- “OpenCVForUnity/Plugins/iOS/libopencvforunity.a” – Select platform iOS in Inspector.



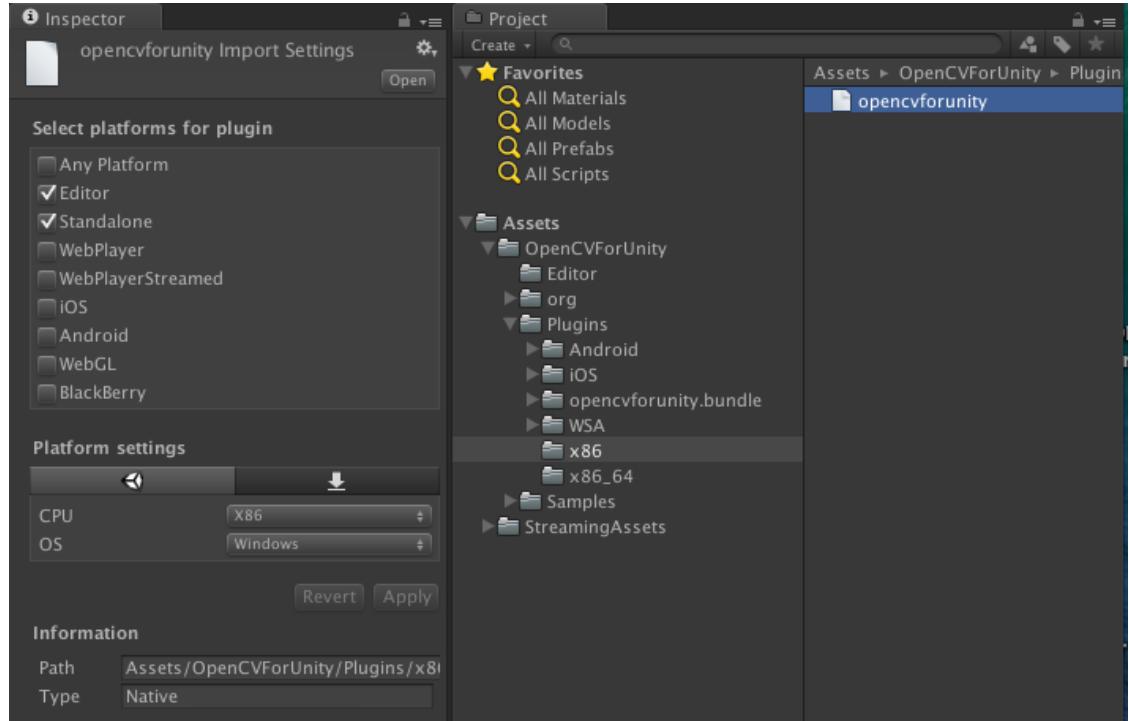
- “OpenCVForUnity/Plugins/iOS/opencv2.framework” – Select platform iOS in Inspector.



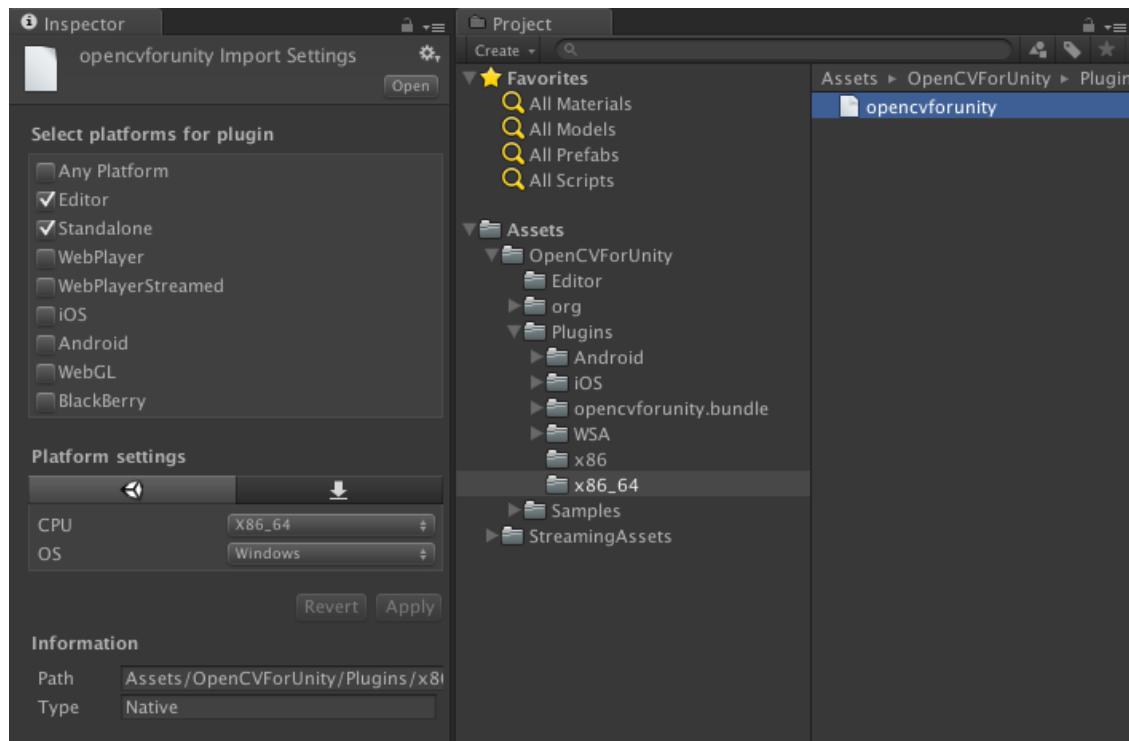
- Put the file that you want to use for `Utils.getFilePath()` in the “Assets/StreamingAssets/” folder. (haarcascade\_frontalface\_alt.xml etc is for OpenCVForUnitySample.scene. Please copy only when necessary.)

## Win Standalone Setup Procedure

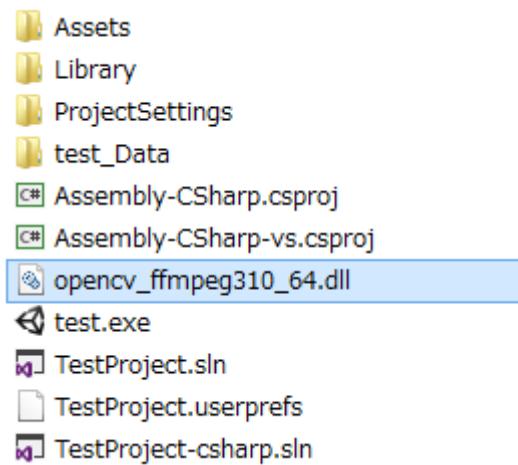
- “OpenCVForUnity/Plugins/x86/opencvforunity.dll” – Select platform Editor,Standalone and CPU x86 and OS Windows in Inspector.



- “OpenCVForUnity/Plugins/x86\_64/opencvforunity.dll” – Select platform Editor,Standalone and CPU x86\_64 and OS Windows in Inspector.

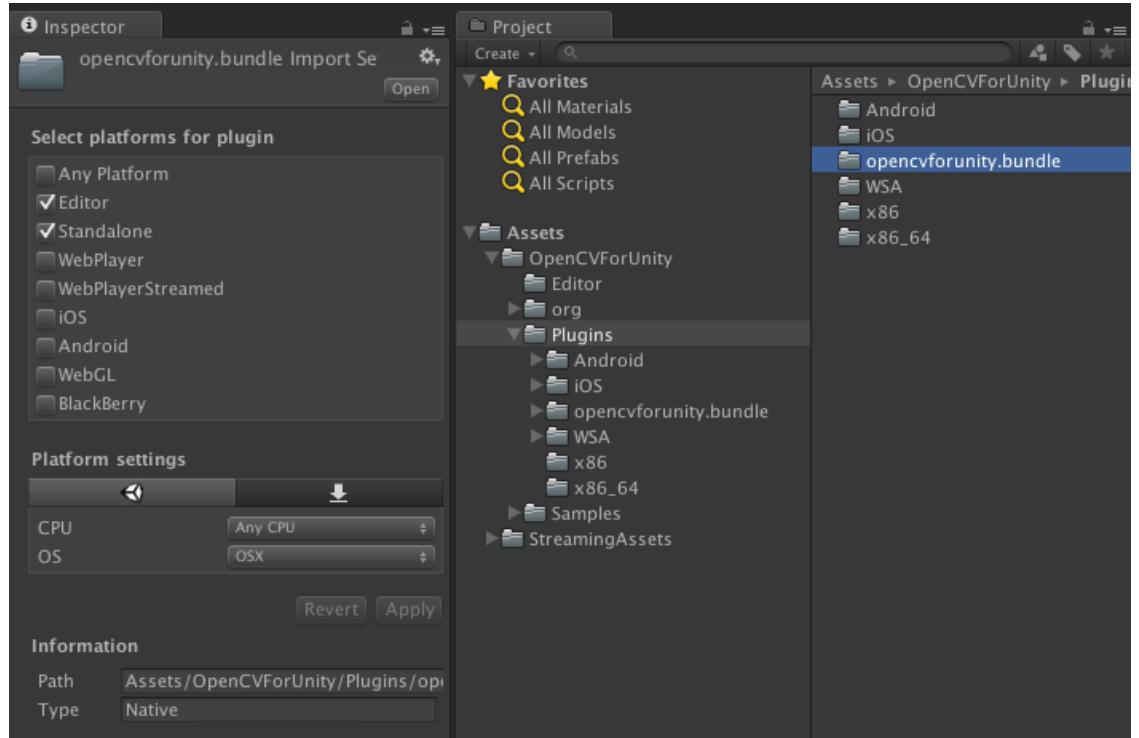


- Put the file that you want to use for `Utils.getFilePath()` in the “Assets/StreamingAssets/”. (haarcascade\_frontalface\_alt.xml etc is for `OpenCVForUnitySample.scene`. Please copy only when necessary.)
- If you use the “`VideoCapture(string filename)`”, require setup.
  - 1)Download "OpenCV" for Windows Version 3.1.0"(<http://opencv.org/downloads.html>).
  - 2)Set PATH variable to "opencv\_ffmpeg310.dll" or "opencv\_ffmpeg310\_64.dll".  
if 32bit, "¥path¥to¥opencv¥build¥x86¥vc12¥bin¥".  
if 64bit, "¥path¥to¥opencv¥build¥x64¥vc12¥bin¥".  
Or
  - 2)Copy to Project Folder.



## Mac Standalone Setup Procedure

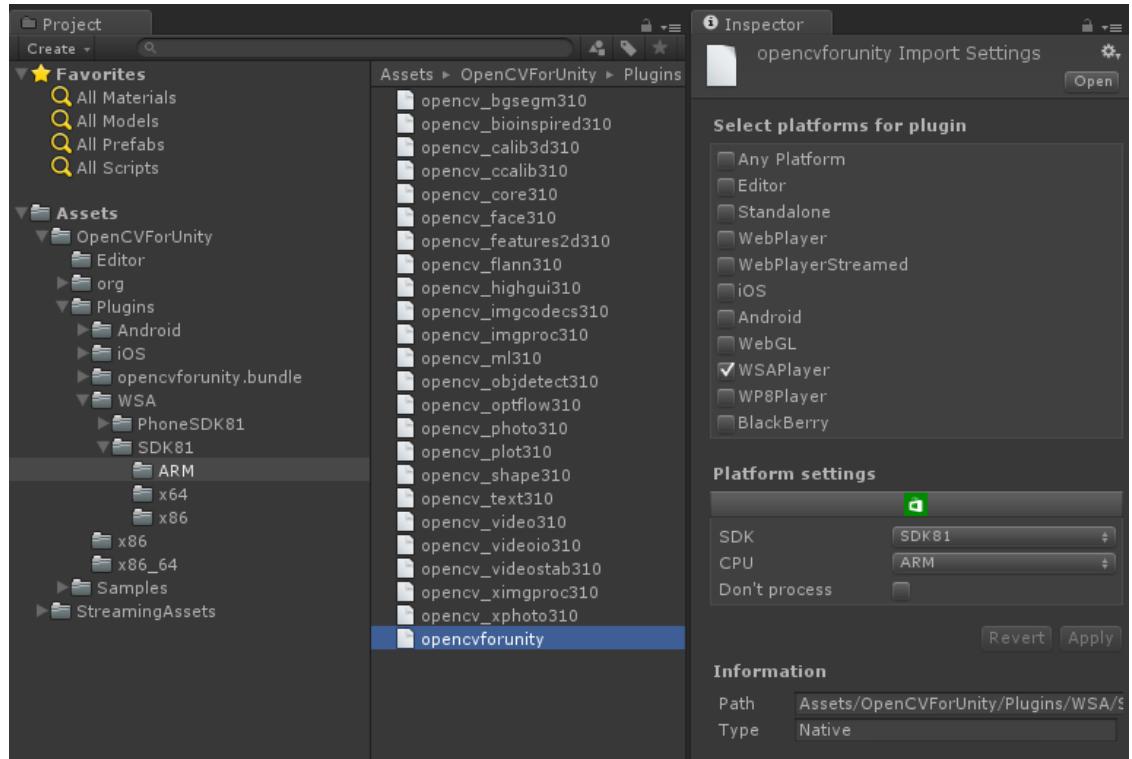
- “OpenCVForUnity/Plugins/opencvforunity.bundle” – Select platform Editor,Standalone and CPU x86\_64 and OS OSX in Inspector.



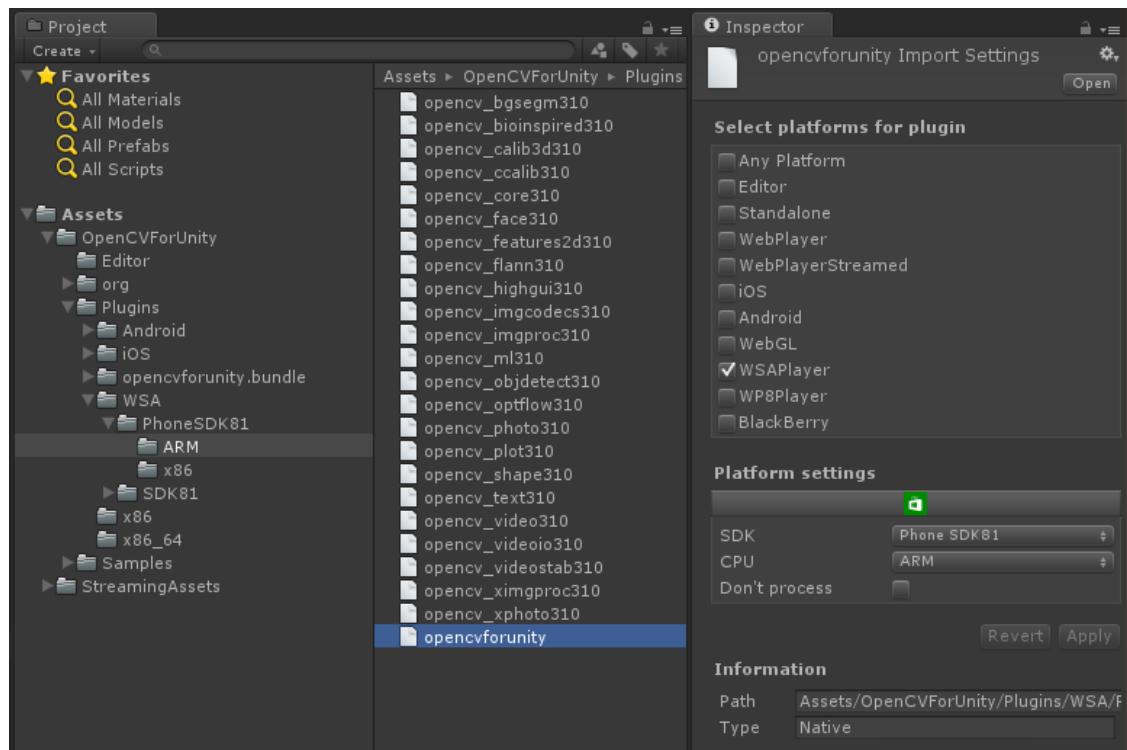
- Put the file that you want to use for `Utils.getFilePath()` in the “Assets/StreamingAssets/”. (haarcascade\_frontalface\_alt.xml etc is for OpenCVForUnitySample.scene. Please copy only when necessary.)

## WindowsStoreApps8.1 & WindowsPhone8.1 Setup Procedure

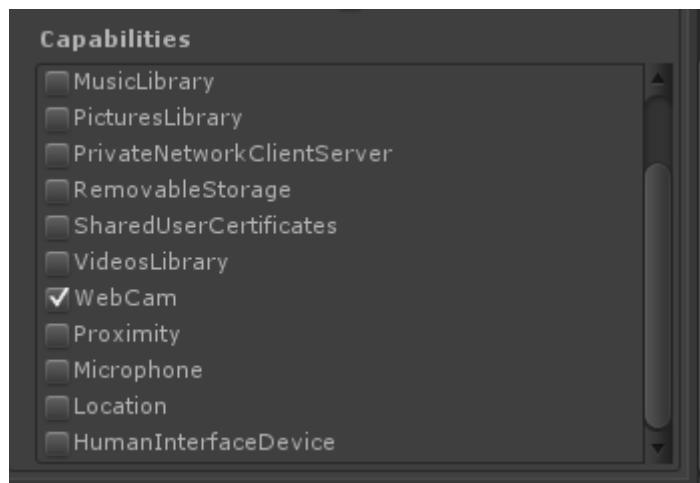
- “OpenCVForUnity/Plugins/WSA/SDK81/ARM/\*.dll” - Select platform WSAPlayer and SDK81 and CPU ARM in Inspector. Set “x86” and ”x64” in the same way as “ARM”.



- “OpenCVForUnity/Plugins/WSA/PhoneSDK81/ARM/\*.dll” - Select platform WSAPlayer and PhoneSDK81 and CPU ARM in Inspector. Set “x86” in the same way as “ARM”.



- Put the file that you want to use for `Utils.getFilePath()` in the “Assets/StreamingAssets/”. (haarcascade\_frontalface\_alt.xml etc is for `OpenCVForUnitySample.scene`. Please copy only when necessary.)
- If use `webCamTexture` class, Please choose “WebCam” in `[PlayerSettings]-[PublishingSettings]-[Capabilities]`.



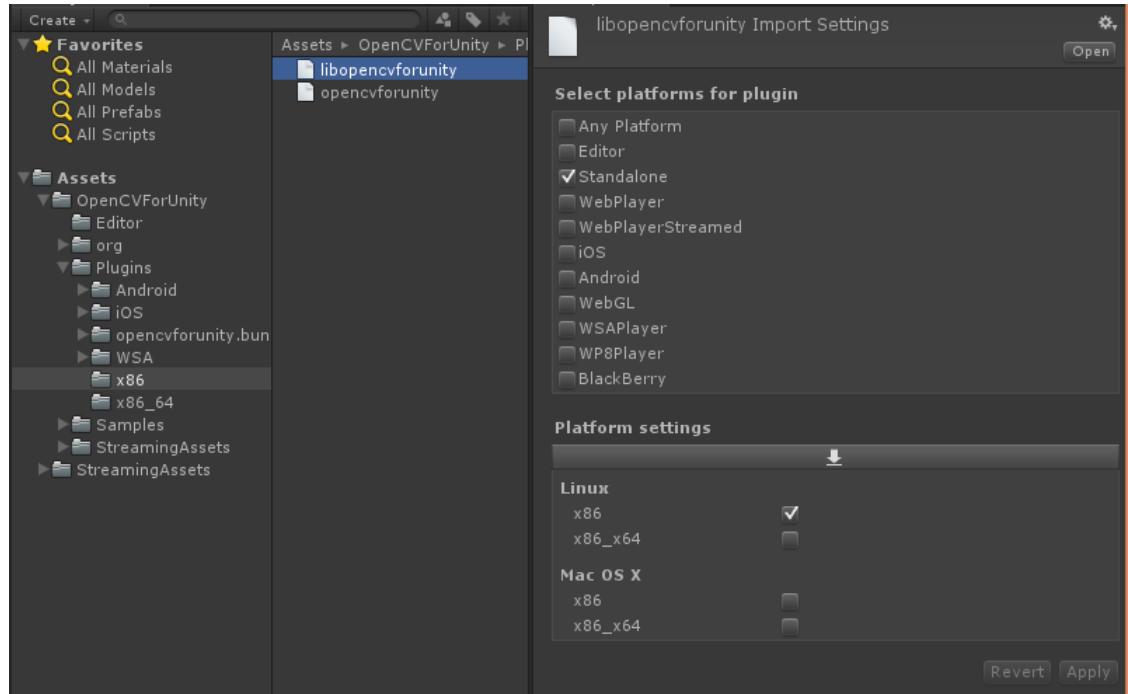
## Linux Setup Procedure

- Install OpenCV3.1.0 (require opencv-contrib module)

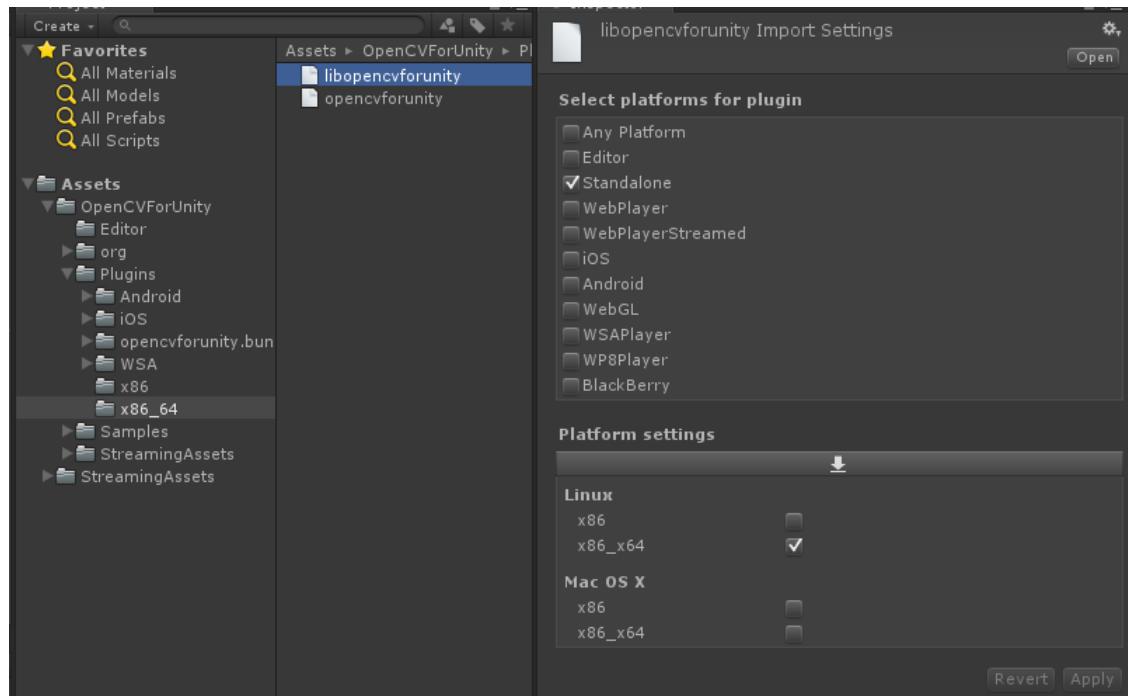
### Example of Install command

```
1. sudo apt-get -y install libopencv-dev build-essential cmake git libgtk2.0-dev pkg-config python-dev python-numpy libdc1394-22 libdc1394-22-dev libjpeg-dev libpng12-dev libtiff4-dev libjasper-dev libavcodec-dev libavformat-dev libswscale-dev libxine-dev libgstreamer0.10-dev libgstreamer-plugins-base0.10-dev libv4l-dev libtbb-dev libqt4-dev libfaac-dev libmp3lame-dev libopencv-amrnb-dev libopencv-amrwb-dev libtheora-dev libvorbis-dev libxvidcore-dev x264 v4l-utils unzip
2. mkdir opencv
3. cd opencv
4. wget https://github.com/Itseez/opencv/archive/3.1.0.zip -O opencv-3.1.0.zip
5. unzip opencv-3.1.0.zip
6. wget https://github.com/Itseez/opencv_contrib/archive/3.1.0.zip -O opencv_contrib-3.1.0.zip
7. unzip opencv_contrib-3.1.0.zip
8. cd opencv-3.1.0
9. mkdir build
10. cd build
11. cmake -D CMAKE_BUILD_TYPE=RELEASE -D CMAKE_INSTALL_PREFIX=/usr/local -D WITH_TBB=ON -D BUILD_NEW_PYTHON_SUPPORT=ON -D WITH_V4L=ON -D WITH_QT=ON -D WITH_OPENGL=ON -D OPENCV_EXTRA_MODULES_PATH=../../opencv_contrib-3.1.0/modules ..
12. make -j $(nproc)
13. sudo make install
14. sudo /bin/bash -c 'echo "/usr/local/lib" > /etc/ld.so.conf.d/opencv.conf'
15. sudo ldconfig
```

- “OpenCVForUnity/Plugins/x86/libopencvforunity.so” – Select platform Editor,Standalone and CPU x86 and OS Linux in Inspector.



- “OpenCVForUnity/Plugins/x86\_64/libopencvforunity.so” – Select platform Editor,Standalone and CPU x86\_64 and OS Linux in Inspector.



- Put the file that you want to use for Utils.getFilePath() in the “Aseets/StreamingAssets/”. (haarcascade\_frontalface\_alt.xml etc is for OpenCVForUnitySample.scene. Please copy only when necessary.)
- Additional Setting is required to run on the editor.  
<http://forum.unity3d.com/threads/native-plugin-in-editor-steam-specifically.384970/>

## Q & A

### Q1.

“DllNotFoundException: opencvforunity” is displayed on the console when run the sample scene.

### A1.

Plugin does not seem to be loaded correctly. Please check the setup procedure.

### Q2.

“ArgumentException: The output Mat object has to be of the same size” is displayed on the console when run the sample scene.

### A2.

After having set up Plugin, Plugin may work well when you reboot Unity.

### Q3.

“Level 'Texture2DtoMatSample' (-1) could not be loaded because it has not been added to the build settings.” is displayed on the console when run the sample scene.

### A3.

Please Add all of the “\*\*\*.unity” in the “OpenCVForUnity” folder to [Build Settings] – [Scene In Build].

Q4.

In DetectFaceSample or WebCamTextureDetectFaceSample, red rectangle is not displayed around face.

A4.

you might have failed to read the "haarcascade\_frontalface\_alt.xml".Please confirm whether there is "OpenCVForUnity/StreamingAssets"folder at the right position.

Q5.

Support Web platform?

A5.

Since the Unity Web Player does not support the native plugin, "OpenCV for Unity" does not support "WebPlayer Platform".

Q6.

Support Windows10 UWP ?

A6.

If you want to try Windows10 UWP Platform(Beta Version), Please unzip “OpenCVForUnityUWP\_Beta.zip”, delete “OpenCVForUnity”folder, import “uwp\_beta.unitypackage”.

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