# OpenCV for Unity 2.3.1

WebGL support

iOS & Android support

Windows10 UWP 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 10.9 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 3.4.2(git: opency.opency-contrib).
- You can image processing in **real-time** by using the **WebCamTexture** capabilities of Unity. (**real-time face detection works smoothly on 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.
- PlayMakerActions for OpenCVforUnity is available.

Official Site | ExampleCode | Android Demo WebGL Demo | Tutorial & Demo Video |
Forum | API Reference | Support Modules

Please refer to OpenCV official document for the details of the argument of the method.

OpenCV for Unity uses OpenCV under 3-clause BSD License; see Third-Party Notices.txt file in package for details

Example code using OpenCV for Unity is available.

- MarkerBased AR Example
- MarkerLess AR Example
- <u>FaceTracker Example</u>
- <u>FaceSwapper Example</u>
- FaceMask Example
- RealTime FaceRecognition Example
- GoogleVRWithOpenCVForUnityExample
- Voforia with OpenCV for Unity Example
- Kinect with OpenCV for Unity Example
- AVPro with OpenCV for Unity Example
- HoloLens with OpenCV for Unity Example

#### Version changes

- **2.3.1** [Common]Updated to OpenCV3.4.2. [Android,UWP]Fixed Utils.setDebugMode() method on the IL2CPP backend. [Common]Added DnnObjectDetectionExample and DnnObjectDetectionWebCamTextureExample.
- **2.3.0** [iOS]Added a function to automatically remove the simulator architecture(i386,x86\_64) at build time. [Common] Improved OpenCVForUnityMenuItem.setPluginImportSettings() method.
- **2.2.9** [Linux]Simplified the Linux platform setup procedure. [Common]Added support for Utils. setDebugMode() method on all platforms. [Common]Updated to WebCamTextureToMatHelper.cs v1.0.9. [Common]Added MatToTextureInRenderThreadExample and AlphaBlendingExample.
- 2.2.8 [Common]Updated to WebCamTextureToMatHelper.cs v1.0.7. [Common]Added MatBasicProcessingExample. [Common]Fixed WebCamTextureToMatExample, WebCamTextureToMatHelperExample, ArUcoExample. [Common]Added flip flag to Utils.fastMatToTexture2D() method and Utils.fastTexture2DToMat() method. [Common]Added throwException flag to Utils.setDebugMode() method.
- 2.2.7 [Common]Updated to OpenCV3.4.1. [Common]Added OpenPoseExample(The model file is included this asset.), KalmanFilterExample, not in ArUcoCameraCalibrationExample. [Common]Fixed VideoWriterExample, VideoCaptureExample, ImwriteScreenCaptureExample, CamShiftExample,

- TrackingExample, HandPoseEstimationExample, ArUcoCreateMarkerExample, ArUcoExample, ArUcoWebCamTextureExample. [Common] Updated to WebCamTextureToMatHelper.cs v1.0.6.
- **2.2.6** [Android]Added arm64-v8a Architecture. [Common]Added ImwriteScreenCaptureExample.
- **2.2.5** [Common] Updated to WebCamTextureToMatHelper.cs v1.0.4. [Common] Fixed MobileNetSSDExample and MobileNetSSDWebCamTextureExample.
- **2.2.4** [Common]Updated to OpenCV3.3.1. [Common]Added ResnetSSDFaceDetectionExample, YoloObjectDetectionExample, YoloObjectDetectionWebCamTextureExample.
- **2.2.3** [Common]Updated to WebCamTextureToMatHelper.cs v1.0.3. [iOS] opencv2.framework is changed from static framework to embedded framework. (Target minimum iOS Version must be set to 8.0 or higher.)
- 2.2.2 [Common]Added TextRecognitionExample.
- [Common]Added 2.2.1 [Common]Updated OpenCV3.3.0. to dnn module.(win.mac.ios.android platform) [Common]Added img hash, reg, text module.(all platform) [Common]Added MobileNetSSDExample, MobileNetSSDWebCamTextureExample, TensorFlowWebCamTextureExample, TextDetectionExample, ThinPlateSplineShapeTransformerExample, VideoWriterExample. [Common]WindowsStoreApp8.1 & WindowsPhone8.1 support have been deprecated.
- **2.2.0** [Common]Updated WebCamTextureToMatHelper.cs v1.0.2 [Common]Improved Utils.getFilePathAsync().
- 2.1.9 [WebGL]Fixed Utils.getFilePathAsync() method.
- 2.1.8 [Common]Added PCAExample. [Common]Updated WebCamTextureToMatHelper.cs and
- $Optimization Web Cam Texture To Mat Helper.cs (Changed\ several\ method\ names.).$
- **2.1.7** [Common]Improved Utils.getFilePath() and Utils.getFilePathAsync(). [Common]Improved WebCamTextureAsyncDetectFaceExample.cs. [Common] Fixed the const value of Calib3d class.
- **2.1.6** [Common] Fixed fastMatToTexture2D() method.
- **2.1.5** [Common]Updated to OpenCV3.2.0. [Common]Added fuzzy, phase\_unwrapping, saliency, shape, tracking module. [Common]Added TrackingSample. [iOS]Added ios\_exclude\_contrib.zip for build size reduction. [Android]Added android\_exclude\_contrib.zip for build size reduction.
- 2.1.4 [Common] Changed the scene name. ("Sample" to "Example") [Common] Fixed

- ArUcoTexture2DExample and ArUcoWebCamTextureExample. [Common]Added ConnectedComponentsExample. [Common]Added GreenScreenExample.
- 2.1.3 [UWP]Added OpenCVForUnityUWP\_Beta3.zip.
- **2.1.2** [Common] Fixed WebCamTextureToMatHelper.cs.(flipVertical and flipHorizontal flag)
- **2.1.1** [Common]Fixed OpenCVForUnityMenuItem.cs.(No valid name for platform: 11 Error) [Common]Added Utils.textureToTexture2D() method. [Common]Added Mat class operators. [Common]Added PolygonFilterSample.
- **2.1.0** [Common]Fixed WebCamTextureToMatHelper class. [Common]Added Utils.getVersion(). [Common]Fixed Utils.getFilePathAsync().
- 2.0.9 [WebGL]Added WebGL(beta) support.(Unity5.3 or later)
- 2.0.8 [Common] Improved WebCamTextureHelper class. [Common] Fixed ArUcoSample.
- **2.0.7** [Common]Added aruco, structured\_light, xfeatures2d module. [Common]Added ArUcoSample, GrabCutSample, InpaintSample, MatchShapesSample, MSERSample.
- **2.0.6** [WSA] Fixed an issue where Windows App Certification Kit fails.
- 2.0.5 [Common]Added HOGDescriptorSample.
- **2.0.4** [Android]Added Support for Split Application Binary (.OBB) [Android]Removed opencyforunity.jar.
- 2.0.3 [Common]Added SVMSample. [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. opency\_contrib modules is not supported.)
- Beta16 [iOS] Fixed libopencyforunity.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.

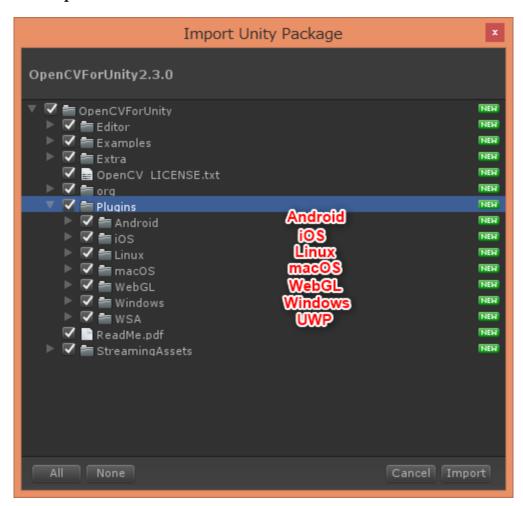
**Beta4** [Common]Add Utils. getGraphicsDeviceType(). [Common]Add SampleScene Setup Tutorial Video for Unity5.

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

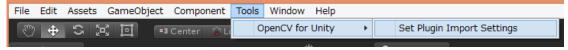
Beta2 [iOS] Fix problem when working with Metaio(UnityAppController problem). [Common]Add [System.Serializable] to basic class. [Common] change folder name from "OpenCVForUnity/OpenCVForUnity\_Editor/" to "OpenCVForUnity/Editor/". [iOS]Move "OpenCVForUnity/OpenCVForUnity\_Editor/opencv2.framework" to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

## Quick setup procedure to run the example scenes (Setup Tutorial Video)

1. Import the OpenCVForUnity.package. You do not need to import plug-in files for platforms not supported by your project. If there is a previous version of OpenCVForUnity in the project, please delete the OpenCVForUnity folder first and then import the new version.



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



3. Move the "OpenCVForUnity/StreamingAssets/" folder to the "Assets/" folder.

Additional Setup for MobileNetSSDExample or Mobile Net SSD Web Cam Texture ExampleDownlod https://github.com/chuanqi305/MobileNet-SSD/blob/master/images/004545.jpg. Copy 004545.jpgto "Assets/StreamingAssets/dnn/" folder. Downlod https://drive.google.com/file/d/0B3gersZ2cHIxRm5PMWRoTkdHdHc/view.

Copy MobileNetSSD\_deploy.caffemodel to "Assets/StreamingAssets/dnn/" folder. Downlod <a href="https://raw.githubusercontent.com/chuanqi305/MobileNet-SSD/master/MobileNetSSD\_deploy.prototxt">https://raw.githubusercontent.com/chuanqi305/MobileNet-SSD/master/MobileNetSSD\_deploy.prototxt</a>. Copy MobileNetSSD\_deploy.prototxt to "Assets/StreamingAssets/dnn/" folder.

- Additional Setup for OpenPoseExample: Downlod <a href="https://github.com/CMU-Perceptual-Computing-">https://github.com/CMU-Perceptual-Computing-</a>
  - <u>Lab/openpose/blob/master/examples/media/COCO\_val2014\_00000000589.jpg.</u>
    Copy\_COCO\_val2014\_000000000589.jpg\_to "Assets/StreamingAssets/dnn/" folder.

    Downlod

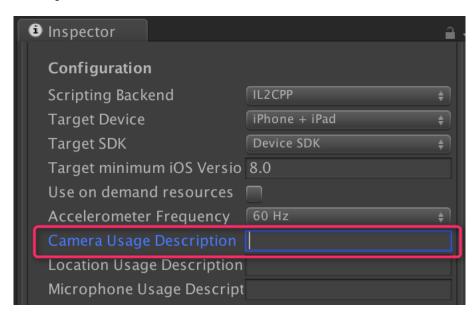
http://posefs1.perception.cs.cmu.edu/OpenPose/models/pose/mpi/pose\_iter\_16
0000.caffemodel. Copy pose\_iter\_160000.caffemodel to
"Assets/StreamingAssets/dnn/" folder. Downlod
https://raw.githubusercontent.com/opency/opency\_extra/master/testdata/dnn/
openpose\_pose\_mpi\_faster\_4\_stages\_prototxt. Copy
openpose\_pose\_mpi\_faster\_4\_stages\_prototxt\_to "Assets/StreamingAssets/dnn/"

openpose\_pose\_mpi\_faster\_4\_stages.prototxt to "Assets/StreamingAssets/dnn/" folder.

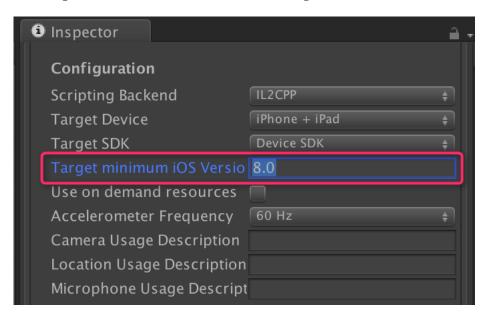
- Additional Setup for ResnetSSDFaceDetectionExample : Downlod <a href="https://raw.githubusercontent.com/opency/opency\_3rdparty/b2bfc75f6aea5b1f">https://raw.githubusercontent.com/opency/opency\_3rdparty/b2bfc75f6aea5b1f</a> 834ff0f0b865a7c18ff1459f/res10\_300x300\_ssd\_iter\_140000.caffemodel. Copy res10\_300x300\_ssd\_iter\_140000.caffemodel to "Assets/StreamingAssets/dnn/" folder. Downlod <a href="https://raw.githubusercontent.com/opency/opency/master/samples/dnn/face\_detector/deploy.prototxt">https://raw.githubusercontent.com/opency/opency/opency/master/samples/dnn/face\_detector/deploy.prototxt</a>. Copy deploy.prototxt to "Assets/StreamingAssets/dnn/" folder.
- Additional Setup for TensorFlowWebCamTextureExample : Downlod and unzip <a href="https://storage.googleapis.com/download.tensorflow.org/models/inception5h.zi">https://storage.googleapis.com/download.tensorflow.org/models/inception5h.zi</a>
  p. Copy tensorflow\_inception\_graph.pb and imagenet\_comp\_graph\_label\_strings.txt to "Assets/StreamingAssets/dnn/" folder.
- Additional Setup for YoloObjectDetectionExample orYolo Object Detection Web Cam Texture ExampleDownlod https://github.com/pjreddie/darknet/blob/master/data/person.jpg. Copy "Assets/StreamingAssets/dnn/" folder. Downlod person.jpg to https://raw.githubusercontent.com/pjreddie/darknet/master/cfg/yolov3-tiny.cfg. Copy yolov3-tiny.cfg to "Assets/StreamingAssets/dnn/" folder. Downlod

https://pireddie.com/media/files/yolov3-tiny.weights. Copy yolov3-tiny.weights to "Assets/StreamingAssets/dnn/" folder.

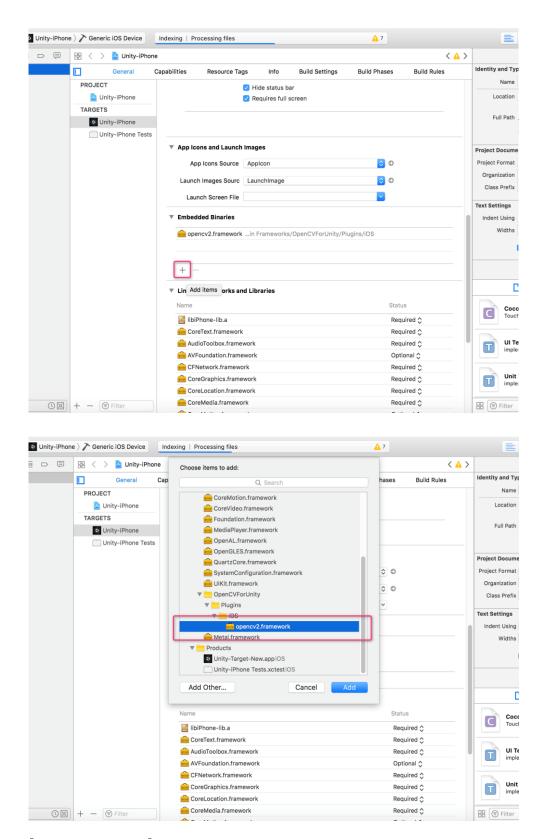
4. **[iOS]** Set [PlayerSettings]-[Other Settings]-[Configuration]-[Camera Usage Description].



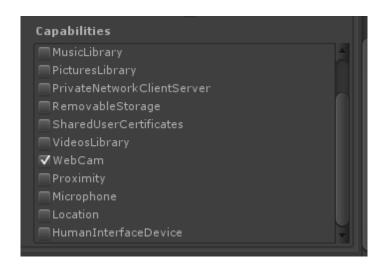
Set Target minimum iOS Version to 8.0 or higher.



If the version of Unity is less than 2017.2, you have to set opencv2.framework to Embedded Binaries manually.



5. [Windows10 UWP] If use webCamTextue class, Please choose "WebCam" in [PlayerSettings]-[PublishingSettings]-[Capabilities].



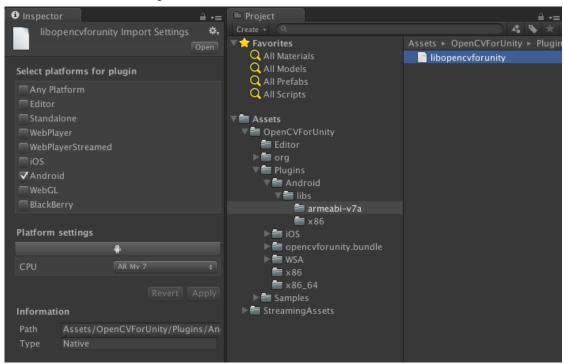
6. Add all of the "\*\*\*.unity" in the "OpenCVForUnity/Examples" folder to [Build Settings] – [Scene In Build].

## Screenshot after the setup



## **Android Setup Procedure**

• "OpenCVForUnity/Plugins/libs/armeabi-v7a/\*.so" - Select platform Android and CPU ARMv7 in Inspector.



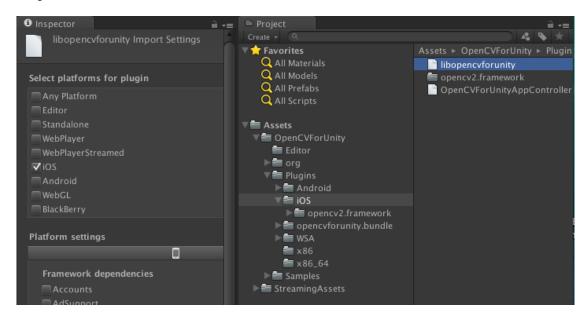
 "OpenCVForUnity/Plugins/libs/x86/\*.so" – Select platform Android and CPU x86 in Inspector.



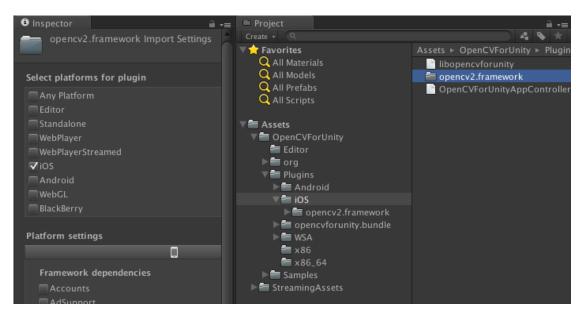
- If you do not use opency\_contrib module, build size will be reduced by using native plugin file excluding opency\_contrib module.
  - 1. Replace the OpenCVForUnity/Plugins/Android/libs folder to the OpenCVForUnity/Extra/exclude\_contrib/Android/libs folder.
  - 2. Select MenuItem[Tools/OpenCV for Unity/Set Plugin Import Settings].
  - 3. Delete the OpenCVForUnity/Assets/OpenCVForUnity/org/opencv\_contrib folder and the OpenCVForUnity/Examples/ContribModules folder.

## iOS Setup Procedure

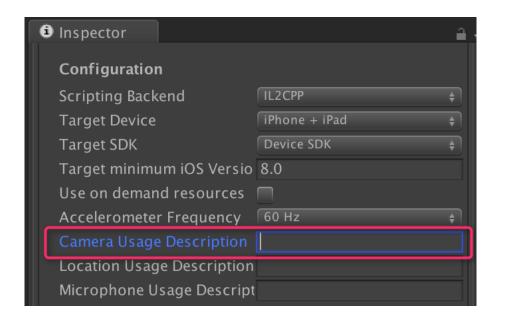
• "OpenCVForUnity/Plugins/iOS/libopencvforunity.a" – Select platform iOS in Inspector.



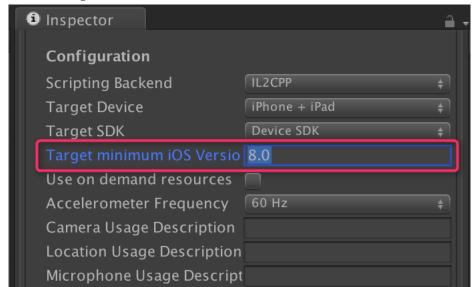
• "OpenCVForUnity/Plugins/iOS/opencv2.framework" – Select platform iOS in Inspector.



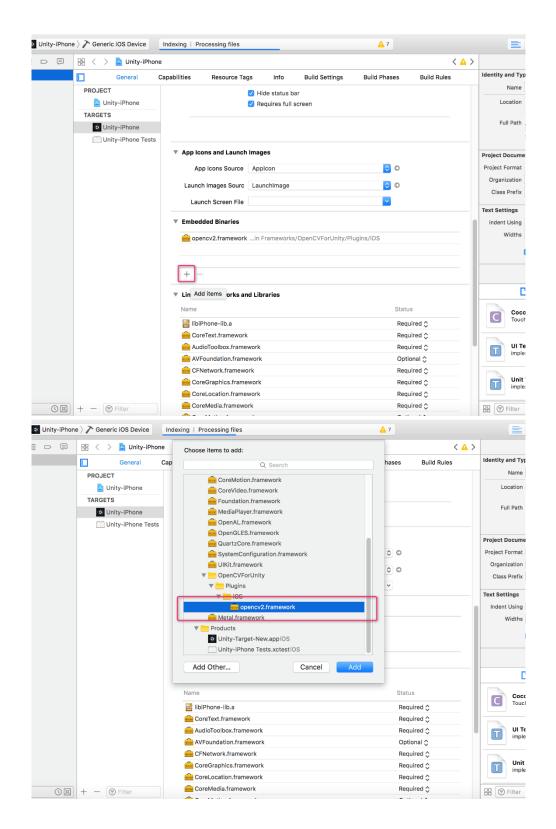
• If iOS platform, Set [PlayerSettings]-[Other Settings]-[Configuration]-[Camera Usage Description].



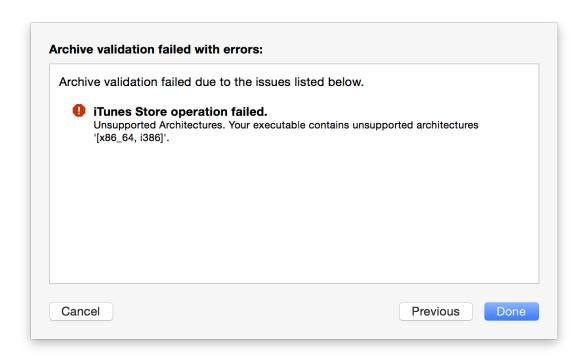
• Set Target minimum iOS Version to 8.0 or higher.



• If the version of Unity is less than 2017.2, you have to set opency2.framework to Embedded Binaries manually.



• When exporting ipa file, you need to remove the unneeded architectures from opency2.framework, before submitting it.



Please see Q & A No.9 for details.

• When "-ObjC" is set to "OTHER\_LDFLAGS" by other Asset, the following error may occur.

Undefined symbols for architecture armv7:

"\_OBJC\_CLASS\_\$\_ALAssetsLibrary", referenced from:

objc-class-ref in opencv2(cap\_ios\_video\_camera.o)

ld: symbol(s) not found for architecture armv7

clang: error: linker command failed with exit code 1 (use -v to see invocation)

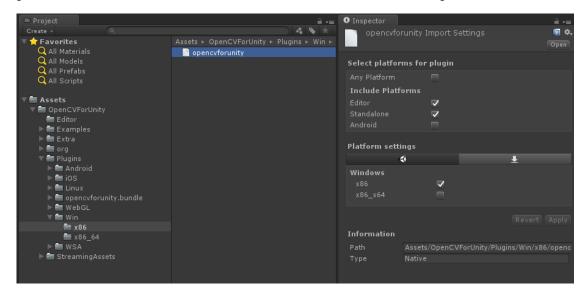
In that case, add "proj.AddFrameworkToProject (target, "AssetsLibrary.framework", false);" to "Assets/OpenCVForUnity/Editor/iOS\_BuildPostprocessor.cs".

- If you do not use opency\_contrib module, build size will be reduced by using native plugin file excluding opency\_contrib module.
  - 1. Replace the OpenCVForUnity/Plugins/iOS folder to the OpenCVForUnity/Extra/exclude\_contrib/iOS folder.

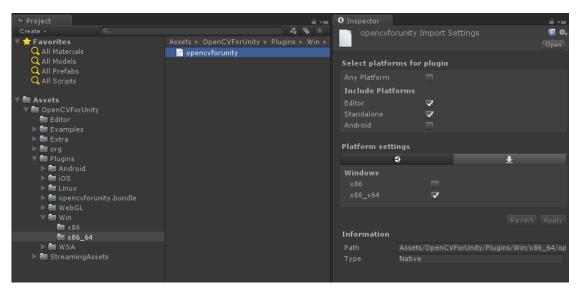
- 2. Select MenuItem[Tools/OpenCV for Unity/Set Plugin Import Settings].
- $3. \quad Delete \ the \ OpenCVForUnity/Assets/OpenCVForUnity/org/opencv\_contrib\\ folder \ and \ the \ OpenCVForUnity/Examples/ContribModules \ folder.$

## Win Standalone Setup Procedure

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



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



- If you want to use more video formats with the "Video Capture (string filename)" or "VideoWriter" method, setup is required.
  - 1)Download "OpenCV for Windows Version 3.4.2"(http://opencv.org/downloads.html).
  - 2)Set PATH variable to "opency\_ffmpeg3.4.2.dll" or "opency\_ffmpeg3.4.2\_64.dll".

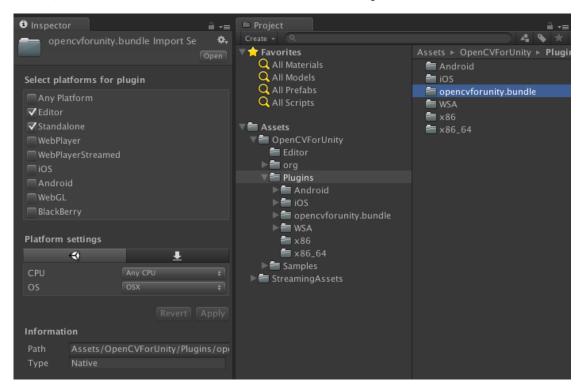
 $if\ 32bit, "\$path\$to\$opencv\$build\$x86\$vc14\$bin\$".$   $if\ 64bit, "\$path\$to\$opencv\$build\$x64\$vc14\$bin\$".$  Or

2)Copy to Project Folder.

- Assets
- Library
- ProjectSettings
- test\_Data
- ☐ Assembly-CSharp.csproj
- # Assembly-CSharp-vs.csproj
- opencv\_ffmpeg310\_64.dll
- **∢** test.exe
- TestProject.sln
- TestProject.userprefs
- ▼ TestProject-csharp.sln

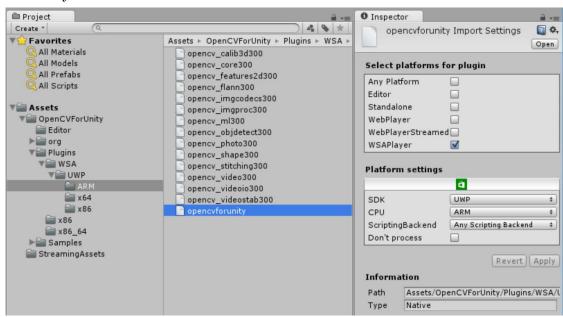
## Mac Standalone Setup Procedure

• "OpenCVForUnity/Plugins/macOS/opencvforunity.bundle" — Select platform Editor, Standalone and CPU x86\_64 and OS OSX in Inspector.

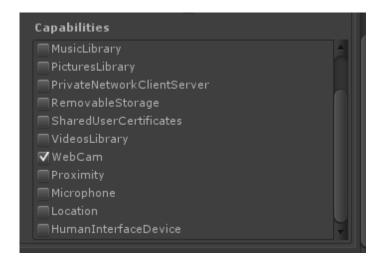


## **UWP Setup Procedure**

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

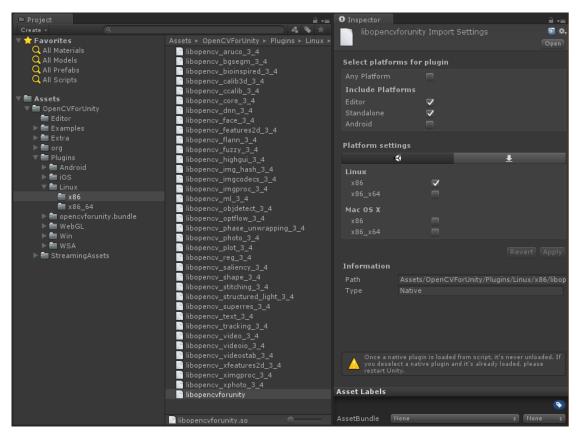


• If use webCamTextue class, Please choose "WebCam" in [PlayerSettings]-[PublishingSettings]-[Capabilities].

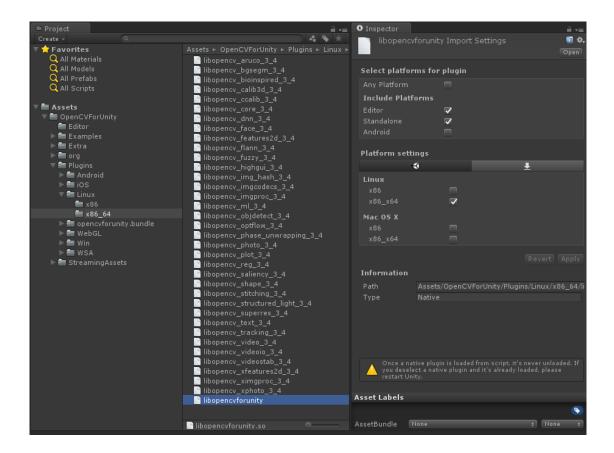


## Linux Setup Procedure

• "OpenCVForUnity/Plugins/Linux/x86/libopencyforunity.so" — Select platform Editor, Standalone and CPU x86 and OS Linux in Inspector.



• "OpenCVForUnity/Plugins/Linux/x86\_64/libopencvforunity.so" — Select platform Editor, Standalone and CPU x86\_64 and OS Linux in Inspector.



- Additional Setting is required to run on the editor. <a href="http://forum.unity3d.com/threads/native-plugin-in-editor-steam-specifically.384970/">http://forum.unity3d.com/threads/native-plugin-in-editor-steam-specifically.384970/</a>
- If you want to use the OpenCV library you built yourself, you can create the libopencv\_\*\_4\_0.so file by following the procedure below.
  - 1. Build OpenCV3.4.2. (https://github.com/opencv/opencv/tree/7e9b5d9e30180f291d1861aaabec6ea bc9876049) with opencv-contrib(https://github.com/opencv/opencv\_contrib/tree/ef965066faafe82cb2e693d4de5329a4993f4755)

#### Example of Build command

#!/bin/sh

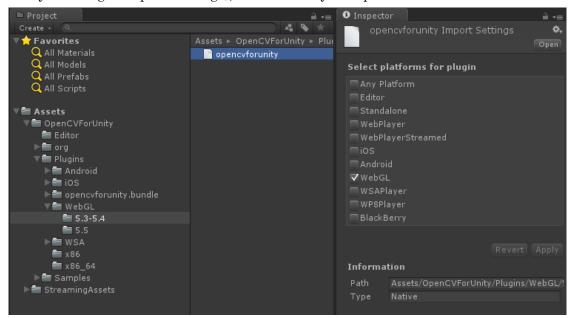
sudo apt-get -y install build-essential cmake git pkg-config unzip

```
mkdir opency
cd opency
wget
https://github.com/opency/opency/archive/7e9b5d9e30180f291d1861aaabec6ea
bc9876049.zip
unzip 7e9b5d9e30180f291d1861aaabec6eabc9876049.zip
wget
https://github.com/opencv/opencv_contrib/archive/ef965066faafe82cb2e693d4d
e5329a4993f4755.zip
unzip ef965066faafe82cb2e693d4de5329a4993f4755.zip
cd opency-7e9b5d9e30180f291d1861aaabec6eabc9876049
mkdir build
cd build
cmake
               -D
                          CMAKE_BUILD_TYPE=RELEASE
                                                                    -D
CMAKE_INSTALL_PREFIX=/usr/local
                                         -D
                                                WITH TBB=ON
                                                                     -D
BUILD_opencv_python2=OFF
                                 -D
                                         BUILD_opencv_python3=OFF-D
BUILD_opencv_java=OFF -D WITH_V4L=ON -D WITH_OPENCL=OFF -D
CV TRACE=OFF
                                                                     -D
OPENCV_EXTRA_MODULES_PATH=../../opencv_contrib-
ef965066 faafe 82 cb 2e693 d4 de5329 a4993 f4755/modules\\
                                                                     -D
WITH FFMPEG=OFF DENABLE CXX11=ON D CPU BASELINE=SSE2..
make -j $(nproc)
sudo make install
sudo /bin/bash -c 'echo "/usr/local/lib" > /etc/ld.so.conf.d/opencv.conf'
sudo ldconfig
sudo apt-get install rpl
objdump -p libopencyforunity.so
rpl -R -e .so.4.0 "_4_0.so" libopencyforunity.so
rpl -R -e .so.4.0 "_4_0.so" libopencv*.so.4.0.0
rename "s/".so.4.0.0"/"_4_0.so"/;" libopencv_*.so.4.0.0
```

2. Copy libopencv\_\*\_4\_0.so to "/OpenCVForUnity/Plugins/Linux/x86\_64" folder.

## WebGL Setup Procedure

• "OpenCVForUnity/Plugins/WebGL/unity\_version/opencvforunity.bc" – Select platform WebGL in Inspector. By Selecting MenuItem [Tools/OpenCV for Unity/Set Plugin Import Settings], You can easily set up.



- Put the file that you want to use for Utils.getFilePathAsync() in the "Aseets/StreamingAssets/". In Case of WebGL platform, you need to use Utils.getFilePathAsync() instead of Utils.getFilePath(). (haarcascade\_frontalface\_alt.xml is for OpenCVForUnityExample.scene. Please copy only when necessary.)
- In the WebGL (asm.js) platform, the calculation result of Float type may be significantly different from other platforms. When using the OpenCV's method that use the Mat class (CvType is CV\_32F) as an argument, you need to pay attention to the calculation precision.

## Q & A

Q1.

Asset package size is large. Is there a way to reduce?

A1.

Please remove plugin folders of non-output target platforms that are included in the package.

Q2.

Support Web platform?

A2.

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

A WebGL platform was added as an alternative. (Unity 5.3 or higher).

Q3.

How do learn the details of OpenCV's method and argument?

A3.

Please refer to OpenCV official document (<a href="http://docs.opencv.org/3.4.2/index.html">http://docs.opencv.org/3.4.2/index.html</a>) and OpenCV Tutorials (<a href="http://docs.opencv.org/3.4.2/d9/df8/tutorial\_root.html">http://docs.opencv.org/3.4.2/d9/df8/tutorial\_root.html</a>) for the details of the argument of the method..

Q4.

How can I convert Mat class operators defined in C++?

A4.

Way to translation of Mat class operators defined in C++.

 $\underline{\text{https://enoxsoftware.com/opencyforunity/way-to-translation-of-mat-class-operators-}} \\ \underline{\text{defined-in-cpp/}}$ 

Q5.

"DllNotFoundException: opencyforunity" is displayed on the console when run the example scene.

A5.

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

Q6.

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

A6.

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

Q7.

"Level 'Texture2DtoMatExample' (-1) could not be loaded because it has not been added to the build settings." is displayed on the console when run the example scene.

A7.

Please add all of "\*\*\*.unity" scenes into the "Assets/OpenCVForUnity/Examples" folder to [Build Settings] – [Scene In Build].

Q8.

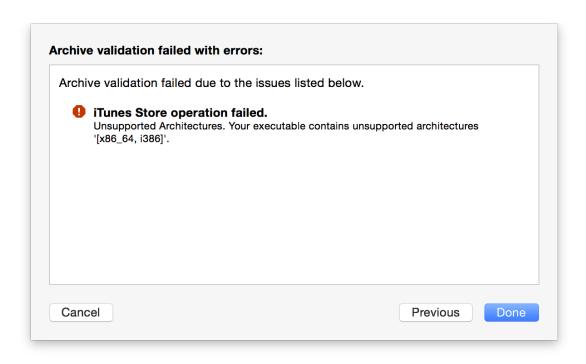
In DetectFaceExample or WebCamTextureDetectFaceExample, red rectangle is not displayed around a face.

A8.

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

Q9.

[iOS]Submit to App Store issues: Unsupported Architecture x86, i386"Unsupported Architecture '[x86\_64, i386]'."



A9.

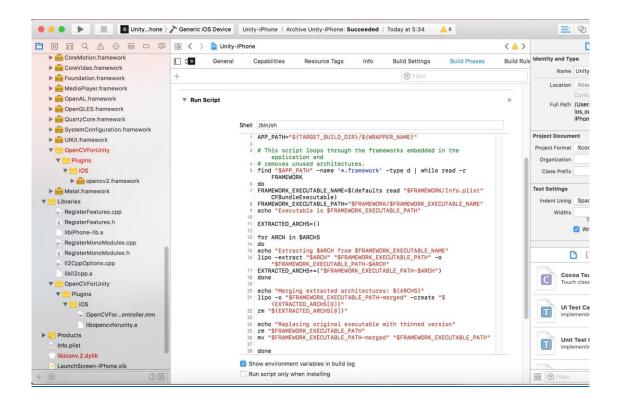
http://ioscake.com/submit-to-app-store-issues-unsupported-architecture-x86.html

"The problem is that the Buy framework contains a build for both the simulator (x86\_64) and the actual devices (ARM).

Of course, you aren't allowed to submit to the App Store a binary for an unsupported architecture, so the solution is to "manually" remove the unneeded architectures from the final binary, before submitting it."

There are two ways to solve this error.

Please add the script of this page to BuildPhases->RunScript.
 http://ikennd.ac/blog/2015/02/stripping-unwanted-architectures-from-dynamic-libraries-in-xcode/



2. Please execute the following command on terminal.

 $\underline{\text{https://stackoverflow.com/questions/42641806/check-and-remove-unsupported-architecture-x86-64-i386-in-ipa-archive}$ 

//remove i386 architectures.

lipo -remove i386 opencv2.framework/opencv2 -o opencv2.framework/opencv2

//remove x86\_64 architectures.

lipo -remove x86\_64 opencv2.framework/opencv2 -o opencv2.framework/opencv2

//check the architectures.

lipo -info opencv2.framework/opencv2