Video Capture Plugin

v1.2.2

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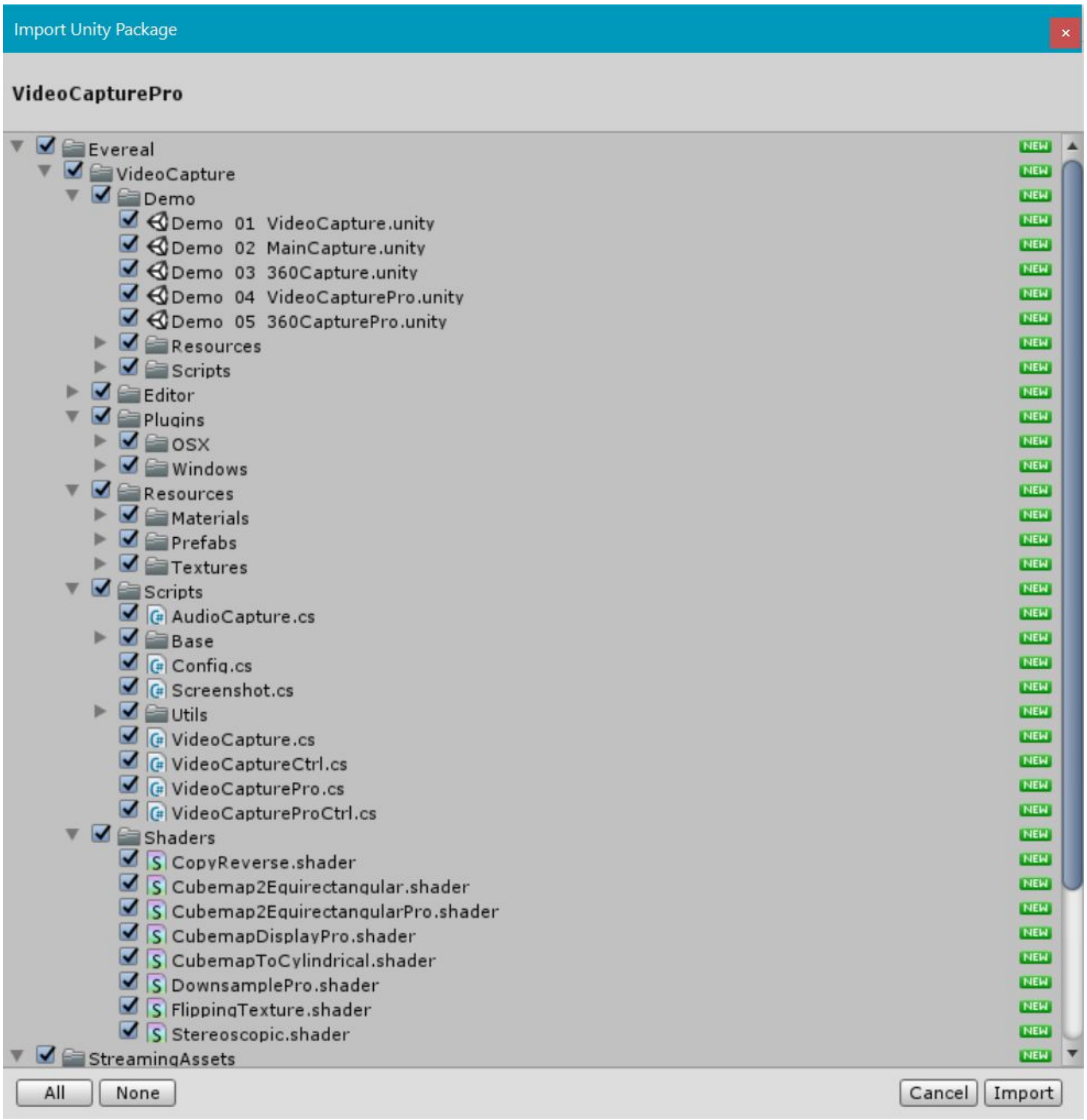
1. Overview

Video Capture is a plugin that enables you, the Unity developer, to capture video and audio from your Unity application. It’s great for recording video trailers, demos and in-app footage for your Unity-based game or app. It’s fast, flexible and easy to use. When the video is recorded, you will decide how it’s handled. Give your users complete freedom to share it, restrict it to playback from within your app, or anything in between.

When you import Video Capture plugin into your Unity project, the following assets will be added:



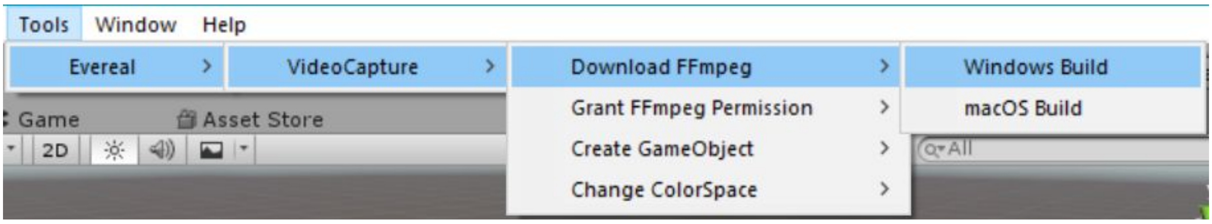
VideoCapturePro

```
▼ ☑ Evereal                                             NEW
    ▼ ☑ VideoCapture                                    NEW
        ▼ ☑ Demo                                        NEW
              ☑ Demo 01 VideoCapture.unity              NEW
              ☑ Demo 02 MainCapture.unity               NEW
              ☑ Demo 03 360Capture.unity                NEW
              ☑ Demo 04 VideoCapturePro.unity           NEW
              ☑ Demo 05 360CapturePro.unity             NEW
            ▶ ☑ Resources                               NEW
            ▶ ☑ Scripts                                 NEW
        ▶ ☑ Editor                                      NEW
        ▼ ☑ Plugins                                     NEW
            ▶ ☑ OSX                                     NEW
            ▶ ☑ Windows                                 NEW
        ▼ ☑ Resources                                   NEW
            ▶ ☑ Materials                               NEW
            ▶ ☑ Prefabs                                 NEW
            ▶ ☑ Textures                                NEW
        ▼ ☑ Scripts                                     NEW
              ☑ AudioCapture.cs                         NEW
            ▶ ☑ Base                                    NEW
              ☑ Config.cs                               NEW
              ☑ Screenshot.cs                           NEW
            ▶ ☑ Utils                                   NEW
              ☑ VideoCapture.cs                         NEW
              ☑ VideoCaptureCtrl.cs                     NEW
              ☑ VideoCapturePro.cs                      NEW
              ☑ VideoCaptureProCtrl.cs                  NEW
        ▼ ☑ Shaders                                     NEW
              ☑ CopyReverse.shader                      NEW
              ☑ Cubemap2Equirectangular.shader          NEW
              ☑ Cubemap2EquirectangularPro.shader       NEW
              ☑ CubemapDisplayPro.shader                NEW
              ☑ CubemapToCylindrical.shader             NEW
              ☑ DownsamplePro.shader                    NEW
              ☑ FlippingTexture.shader                  NEW
              ☑ Stereoscopic.shader                     NEW
▼ ☑ StreamingAssets                                     NEW
```

2. Prepare

Video Capture requires **FFmpeg** build, it’s a third party, open-source, cross-platform tool that lets you easily convert video formats, and is bundled with Video Capture. You can learn more about FFmpeg through https://www.ffmpeg.org.

First you need download FFmpeg executable build, you can use the tools we provided to download based on your platform:



Or you can download it through our official website.

Windows:

Download url: https://evereal.com/download/windows/ffmpeg.exe

And place it at: *StreamingAssets/Evereal/FFmpeg/Windows/*

macOS:

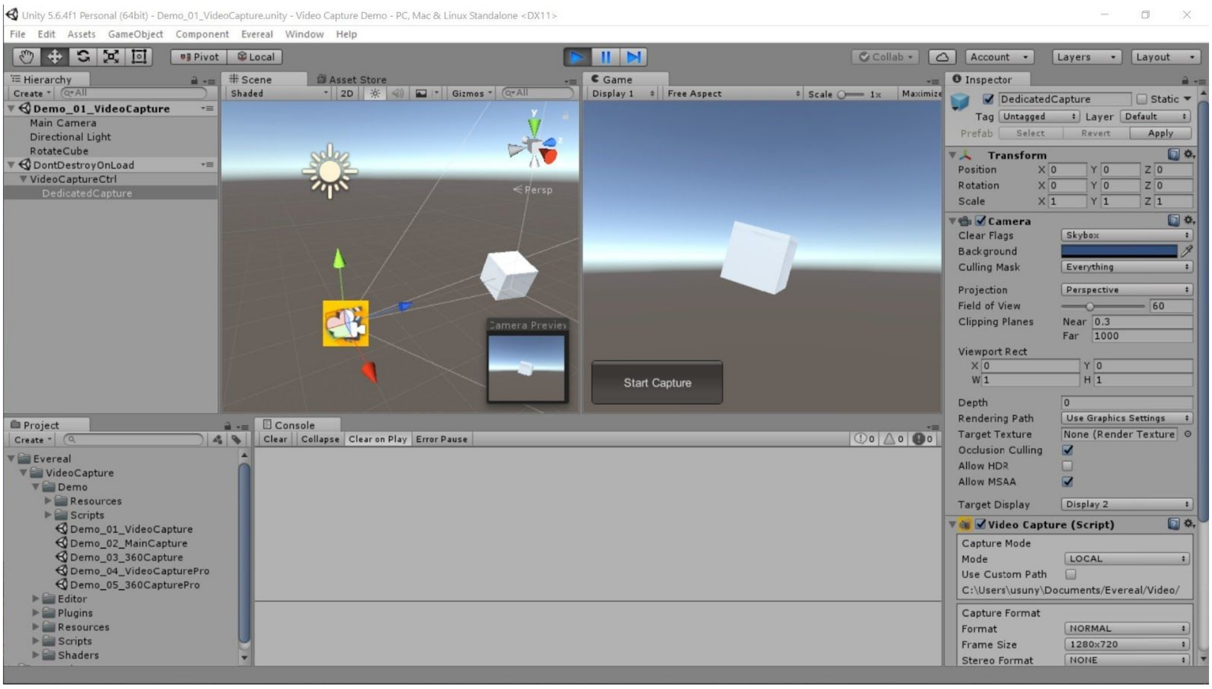
Download url: https://evereal.com/download/osx/ffmpeg

And place it at: *StreamingAssets/Evereal/FFmpeg/OSX/*

3. Getting Started

Video Capture comes with several demos to help you to understand the functionality of plugin quickly. Start by creating a new project and importing all Video Capture package assets included demo scenes files.

Let's get started with the first demo which demonstrates basic video record functionality with a dedicated camera:



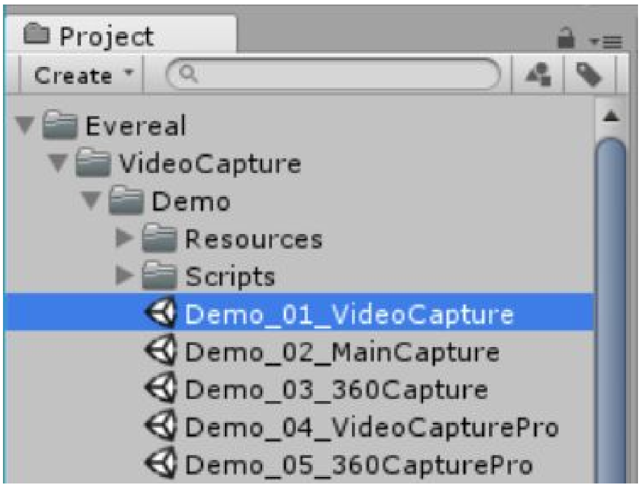
☑ DedicatedCapture ☐ Static
Tag: Untagged Layer: Default
Prefab: Select Revert Apply

Transform
Position X 0 Y 0 Z 0
Rotation X 0 Y 0 Z 0
Scale X 1 Y 1 Z 1

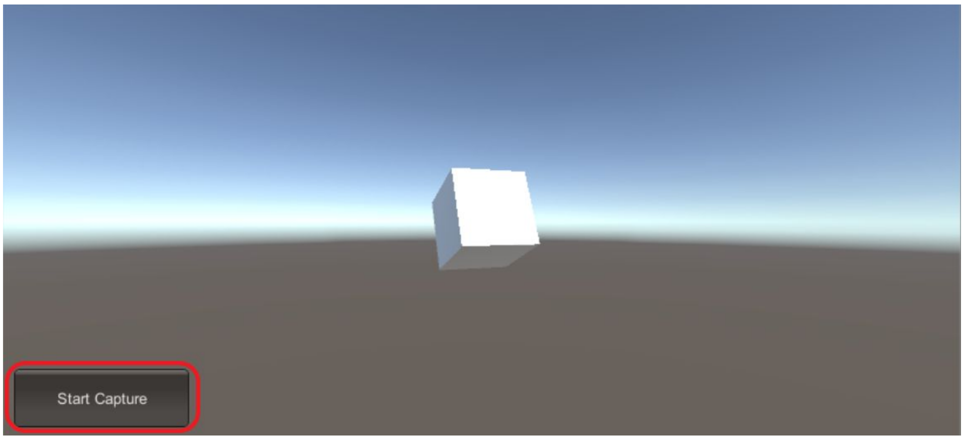
☑ Camera
Clear Flags: Skybox
Background
Culling Mask: Everything
Projection: Perspective
Field of View: 60
Clipping Planes: Near 0.3 Far 1000
Viewport Rect: X 0 Y 0 W 1 H 1
Depth: 0
Rendering Path: Use Graphics Settings
Target Texture: None (Render Texture
Occlusion Culling: ☑
Allow HDR: ☐
Allow MSAA: ☑
Target Display: Display 2

☑ Video Capture (Script)
Capture Mode
Mode: LOCAL
Use Custom Path: ☐
C:\Users\usuny\Documents/Evereal/Video/
Capture Format
Format: NORMAL
Frame Size: 1280x720
Stereo Format: NONE

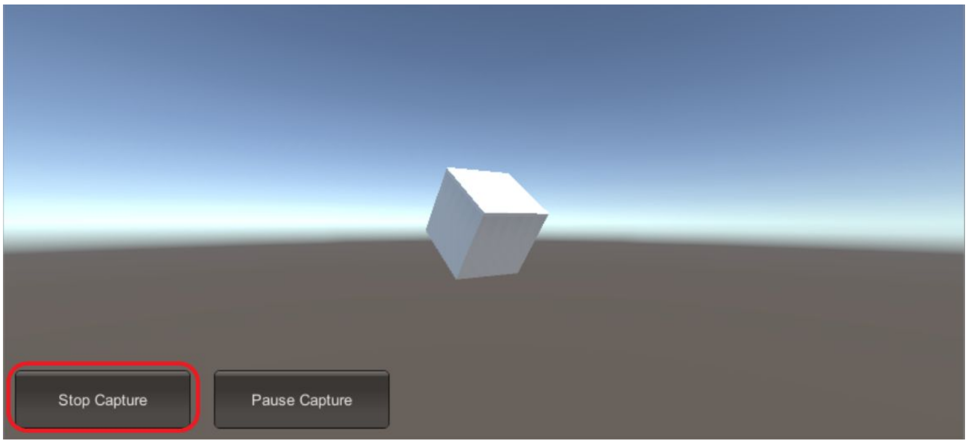
Step 1: Open the *Demo_01_VideoCapture* scene located in *Assets/Evereal/VideoCapture/Demo/*:



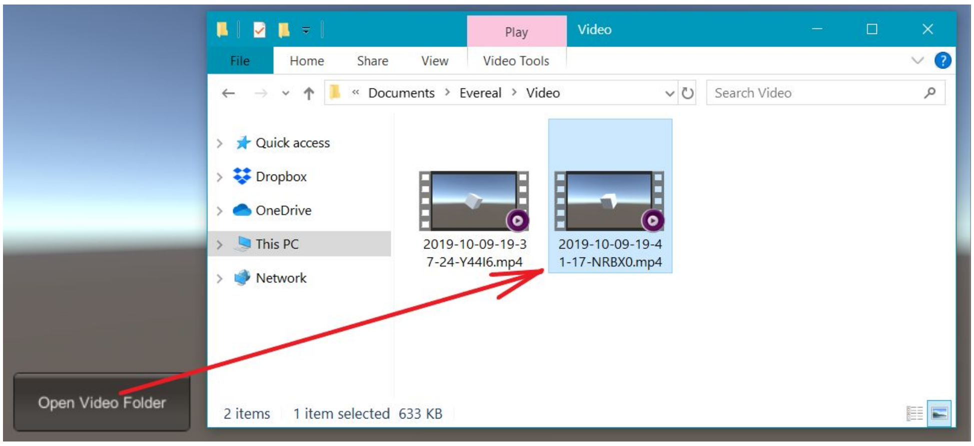
Step 2: Play in the editor, click *Start Capture* button:



Step 3: Wait for a few seconds (depending upon how long you want to record), and then click *Stop Capture* button:



Step 4: Click the *Open Save Folder* check out the video you just recorded.



There are a few more demo you can try, the setup process will be the same:

Demo_02_MainCapture recording video from your Main Camera.

Demo_03_360Capture is for recording 360 videos.

Demo_04_VideoCapturePro recording video from the dedicated camera with GPU encoding.

Demo_05_360CapturePro is for recording 360 videos with GPU encoding.

4. Content List

File Directory	Description
Evereal/VideoCapture/Demo	Contains the scene file and all other assets for a fully functional demo of Video Capture plugin.
Evereal/VideoCapture/Editor	Contains helper scripts and resources used in the Unity Editor and Inspector window.
Evereal/VideoCapture/Plugins	Contains the platform-dependent native library for Video Capture plugin.
Evereal/VideoCapture/Resources/Materials	Materials used for video processing, such as panorama video stitch.
Evereal/VideoCapture/Resources/Prefabs	Contains useful prefabs can be dragged and dropped into your scene.
Evereal/VideoCapture/Scripts	Contains all the video capture core logic and utility and helper functions scripts.
Evereal/VideoCapture/Shaders	Shaders work with materials for video processing.
StreamingAssets/Evereal/FFmpeg	Contains the FFmpeg binaries for Windows and macOS. If you are only building for one target platform, you can exclude the file you don't need.

5. Scripts

Script	**Description**
VideoCaptureCtrl.cs	This script used to control and manage the *VideoCapture* and *AudioCapture* module which is used to generate desired videos.
VideoCapture.cs	This core script used to gather texture frames from Unity and encode to the video files.
AudioCapture.cs	This core script used to gather audio samples from Unity and encode to the audio files.
VideoCaptureCtrlPro.cs	Available in the Pro version, works the same as *VideoCaptureCtrl.cs*.
VideoCapturePro.cs	Available in the Pro version, works the same as *VideoCapture.cs* but with hardware acceleration enabled.
Config.cs	Plugin config settings script, such as third party executable path, save folder, etc.

6. Integration Guide

The integration process of Video Capture is easy:

Step 1: Attach the *VideoCapture.cs* script to a game object (or you can just create a new empty object) in your scene, this script will add a camera to capture the scene in your game. We recommend using the pre-set prefab objects:

DedicatedCapture - Used to capture the different views with main camera.

MainCapture - Used to capture the main camera's perspective, the original main camera should be replaced with this prefab.

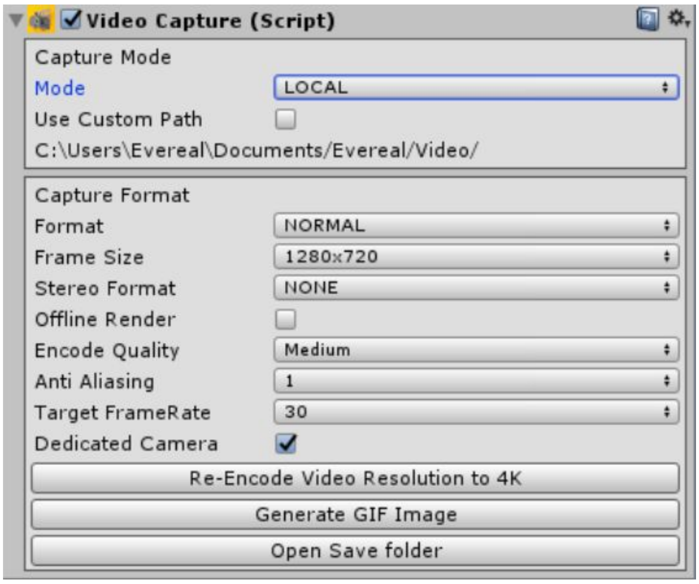
360Capture - Used to capture 360-degree panorama video.

DedicatedCapturePro - Is the same as the *DedicatedCapture* but with high performance.

360CapturePro - Is the same as the *360Capture* but with high performance.

Step 2: Configuring *VideoCapture* component's properties:

Basic Settings:



☑ Video Capture (Script)

Capture Mode	
Mode	LOCAL
Use Custom Path	□
C:\Users\Evereal\Documents/Evereal/Video/	
Capture Format	
Format	NORMAL
Frame Size	1280x720
Stereo Format	NONE
Offline Render	□
Encode Quality	Medium
Anti Aliasing	1
Target FrameRate	30
Dedicated Camera	☑

Mode - You can set the mode as *Local* for now, the *Live Streaming* mode is under development, will be available soon.

Frame Size - The resolution of recorded video; the higher size set, the better video quality. The better quality costs more in terms of machine performance.

Available sizes are:

- 640x480
- 720x480
- 960x540
- 1280x720
- 1920x1080
- 2048x1080
- 3840x2160
- 4096x2160
- 7680x4320

Encode Quality - Lower quality will decrease the file size on disk and video bitrate.

Available qualities are:

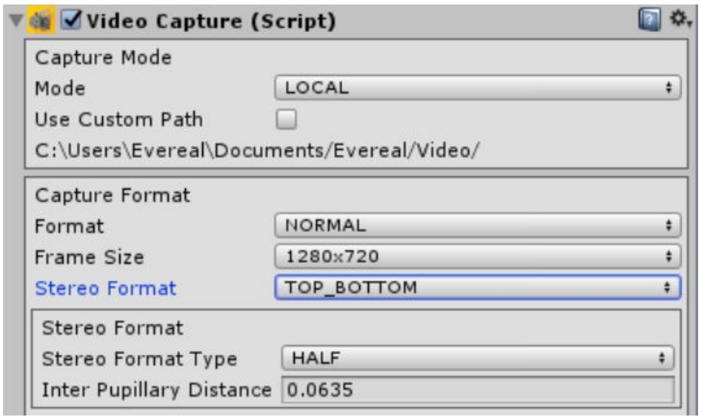
- Low (1000 bit/s)
- Medium (2500 bit/s)
- High (5000 bit/s)

Anti-Aliasing - Set the anti-aliasing factor for frame captured, higher anti-aliasing will increase video quality.

Target Framerate - Set the target frame rate for recorded video. To avoid performance loss, use a lower target framerate.

Dedicated Camera - Set the false for main camera, and true for individual camera.

Stereo Video Settings:



☑ Video Capture (Script)

Capture Mode
Mode: LOCAL
Use Custom Path: □
C:\Users\Evereal\Documents/Evereal/Video/

Capture Format
Format: NORMAL
Frame Size: 1280x720
Stereo Format: TOP_BOTTOM

Stereo Format
Stereo Format Type: HALF
Inter Pupillary Distance: 0.0635

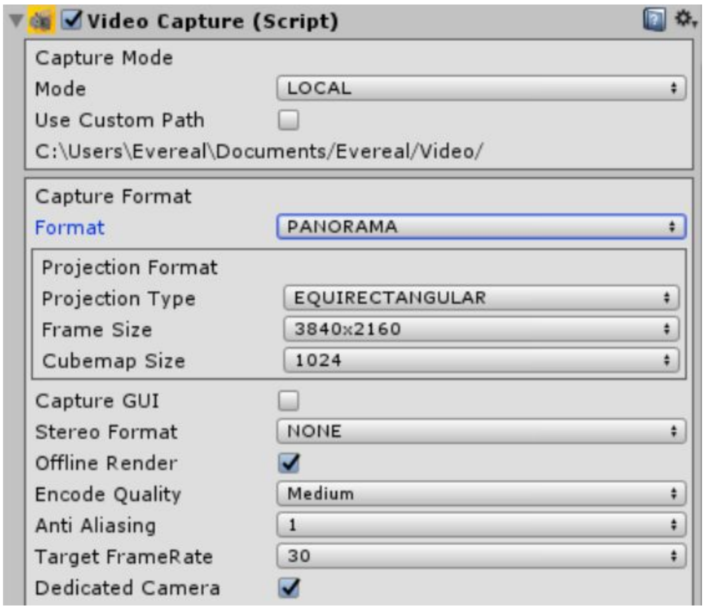
Stereo Format - Set stereo format for video capture, *TOP_BOTTOM* or *LEFT_RIGHT*.

Stereo Format Type - Set stereo format type for video capture, *HALF* or *FULL*.

If set *FULL*, will capture a full resolution image for the stereo video, i.e. if the target resolution is 1280x720, the stereo video will be 1280x1440 for *TOP_BOTTOM* or 2560x720 for *LEFT_RIGHT*.

If set *HALF*, will capture a half-resolution image for the stereo video, i.e. if the target resolution is 1280x720, the stereo video will also be 1280x720.

Panorama Video Properties:



☑ Video Capture (Script)

Capture Mode
Mode: LOCAL
Use Custom Path: □
C:\Users\Evereal\Documents/Evereal/Video/

Capture Format
Format: PANORAMA

Projection Format
Projection Type: EQUIRECTANGULAR
Frame Size: 3840x2160
Cubemap Size: 1024

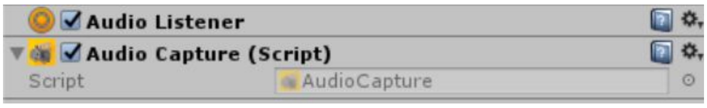
Capture GUI: □
Stereo Format: NONE
Offline Render: ☑
Encode Quality: Medium
Anti Aliasing: 1
Target FrameRate: 30
Dedicated Camera: ☑

Format Type - Set as *PANORAMA* for 360 video capture, 360 video capture camera always uses the dedicated camera.

Projection Type - Currently you can choose *EQUIRECTANGULAR* or *CUBEMAP*, most video platforms support equirectangular format, like Youtube, etc. However, cubemap format can reduce bitrate for generated video.

Cubemap Size - Square pixel size of frames captured by each direction camera. If use *CUBEMAP* type, *Frame Size* will not work, the size will be (3 x *Cubemap Size*) x (2 x *Cubemap Size*).

Step 3: Attach the *AudioCapture.cs* script to the Main Camera (which contains Audio Listener) to enable the audio record function:

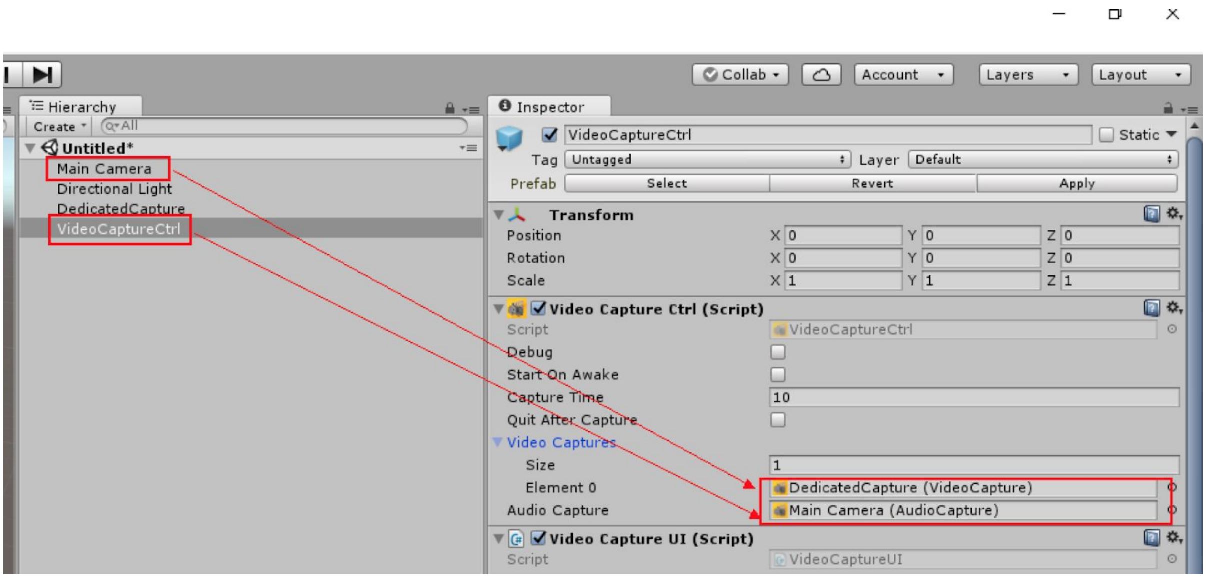


☑ Audio Listener
☑ Audio Capture (Script)
Script: AudioCapture

Note: This step is not required in the Pro version.

Step 4: Attach the *VideoCaptureCtrl.cs* script to a game object (or you can just create a new empty object) in your scene, this script is used to manage the work of video and audio processor, and merge video stream and audio stream into one video container file.

Drag *VideoCapture* and *AudioCapture* set in the previous step into *VideoCaptureCtrl* properties (You can set multiple cameras):



Untitled*
- Main Camera
- Directional Light
- DedicatedCapture
- VideoCaptureCtrl

☑ VideoCaptureCtrl □ Static

Tag Untagged Layer Default

Prefab Select Revert Apply

Transform

Position	X 0	Y 0	Z 0
Rotation	X 0	Y 0	Z 0
Scale	X 1	Y 1	Z 1

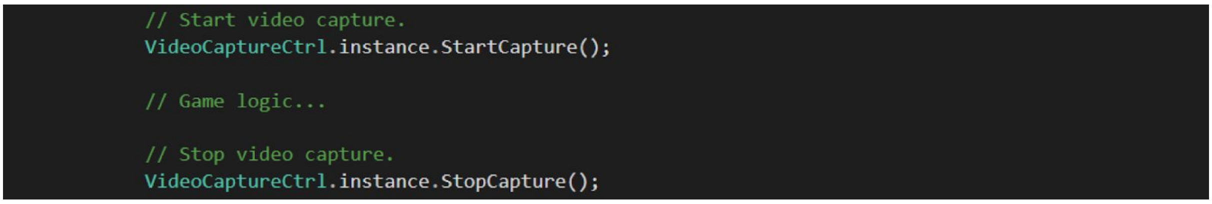
☑ Video Capture Ctrl (Script)

Script	VideoCaptureCtrl
Debug	□
Start On Awake	□
Capture Time	10
Quit After Capture	□
Video Captures	
Size	1
Element 0	DedicatedCapture (VideoCapture)
Audio Capture	Main Camera (AudioCapture)

☑ Video Capture UI (Script)

Script	VideoCaptureUI

Step 5: Enable the video capture function by code, *VideoCaptureCtrl* provide API to start or stop video recording, you can call those functions according to your requirements:

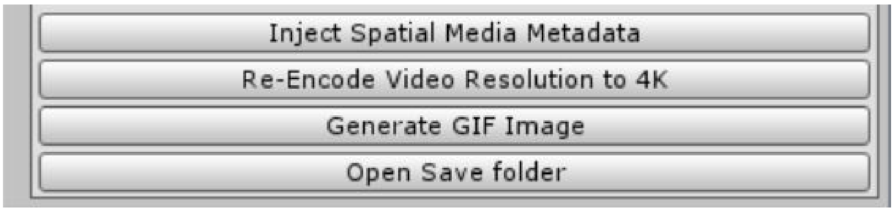


```
// Start video capture.
VideoCaptureCtrl.instance.StartCapture();

// Game logic...

// Stop video capture.
VideoCaptureCtrl.instance.StopCapture();
```

After all setup, you should be able to start capturing your fantastic game!

Video Capture Pro setup is quite the same as the free version setup process, the Pro version will remove the watermark and enable hardware encoding improvement.

Useful tools for your recorded video:


Inject Spatial Media Metadata
Re-Encode Video Resolution to 4K
Generate GIF Image
Open Save folder

Spatial Media Metadata Injector - A tool for manipulating spatial media (spherical video and spatial audio) metadata in MP4 and MOV files. It can be used to inject spatial media metadata into a file or validate metadata in an existing file. It will be very useful when you upload 360 videos to YouTube.

Updated 10/29/2019:

This tool has been removed due to Unity cannot bundle exe file within the package, but you can still use it and download from https://github.com/google/spatial-media/releases

Re-Encode Video Resolution to 4K - Generate a new video for your last recorded video and resize it to 4K.

Generate GIF Image - Generate a GIF format image for your last recorded video.

Open Save Folder - Open the folder where save all your recorded video.

7. Video Capture Pro

Instead of *Video Capture Free*, we also provide the Pro version.

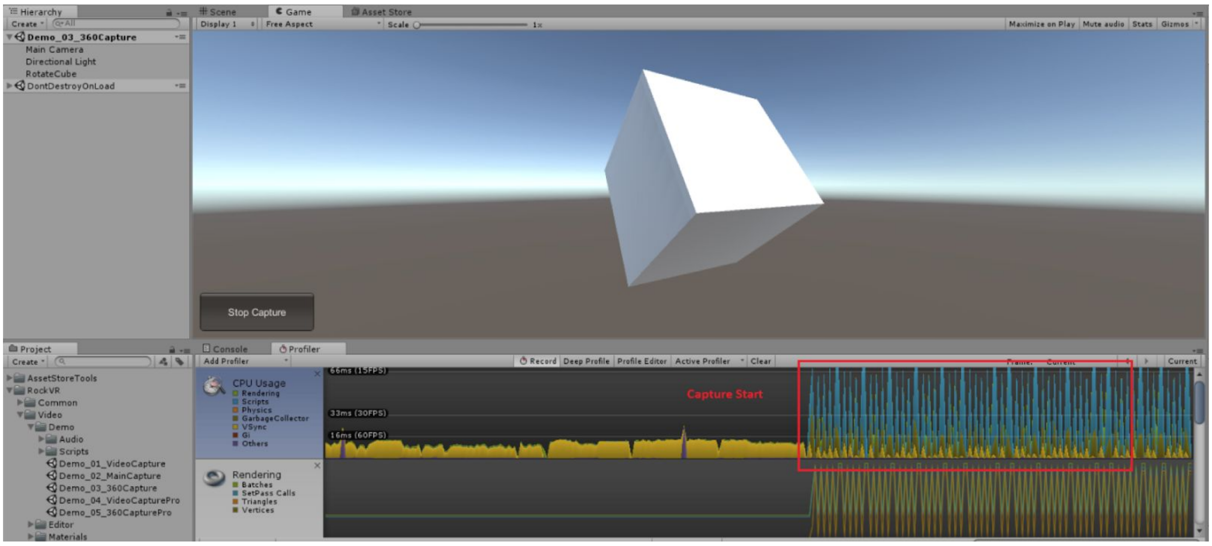
You can purchase the Pro version from the asset store.

Feature	**Free**	**Pro**
Video Capture	√	√
Audio Capture	√	√
360 Video Capture	√	√
Remove Watermark		√
High-Performance GPU encode		√

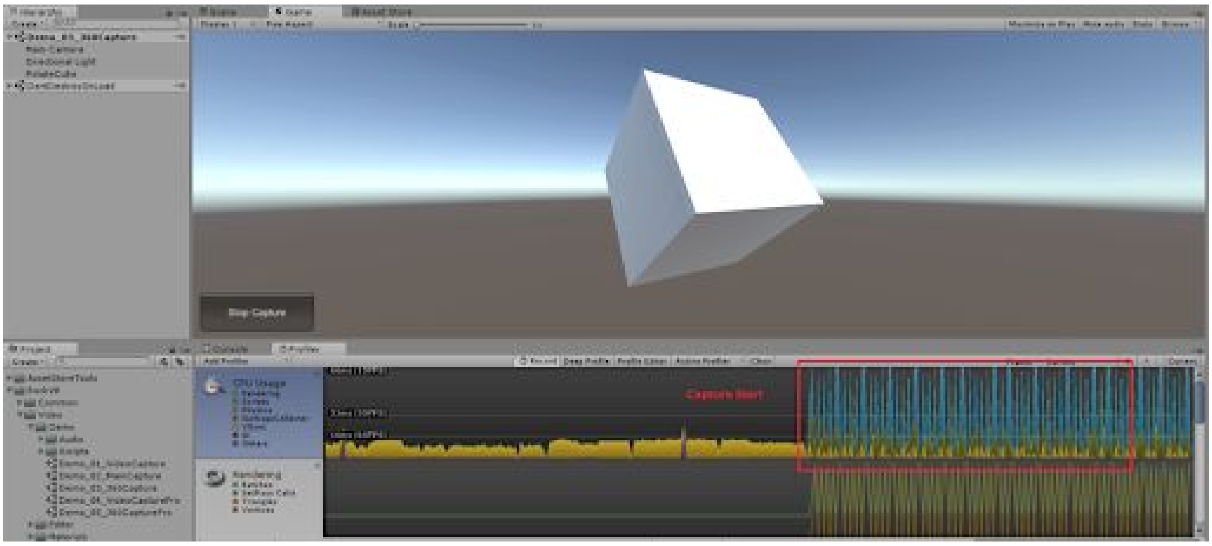
The Pro version can generate 360 videos in real-time.

The screenshot below shows the profiler windows between Free version and Pro version to capture 360 videos:

Profiler Window during 360 video capture by Free version:



Profiler Window during 360 video capture by Pro version:



Known Issues:

1. Recording video in Pro version by GPU encoder may fail due to hardware compatibility issues.

2. Recording stereo videos from the Main Camera may fail due to special screen size.

8. Feedback

If you have any feedback on *Video Capture* plugin, please email us through ***dev@evereal.com*** directly, your advice will be very valuable to us.

You are also very welcome to rate our plugin and leave your comment on the Unity Asset Store.

9. FAQ

Q: What's the Unity version required for Video Capture plugin?

A: We recommend using Unity 5.6 or newer.

Q: Can I use multiple cameras for capturing simultaneously?

A: Yes, but the more cameras you use, the more resources you cost on your device. In addition, the 360 video record does not support multi-camera record for now.

Q: What is offline render settings?

A: If you enable offline render settings, the capture session will only move to the next frame until the current frame record succeeds. It's useful for you to create a smooth video when you capture 360 video or intensive video capture.

Q: Why I cannot generate a video on macOS?

A: If you cannot generate a video on macOS, this may be due to the program have no permission to run FFmpeg or Spatial Media Metadata Injector. To fix this, please click *Grant FFmpeg permission* item in the *VideoCapture* editor menu.