

HORUS VIEW & EXPLORE

TECHNICAL DOCUMENTATION

Converting GoPro Recordings to the Horus Format

For use with Horus Applications

Horus View & Explore
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1 Introduction

Interested in Mobile Mapping, but not quite ready to invest in expensive hardware?

Horus has a low-cost solution, using consumer grade 360 cameras such as the GoPro Fusion/Max, or the Garmin Virb. These cameras can still provide detailed 360 degrees recordings and positional data, and are perfect for getting started with mobile mapping, at a much lower price.

The recordings from the GoPro or Garmin are not natively supported by Horus, but through the use of a plugin, these recordings can be converted to become usable in the Horus environment.

This document will describe the process of converting these, for use with Horus software.

2 Converting GoPro Recordings for use in the Horus Environment

2.1 Convert footage for Horus software

Before you can start working with the recorded data, you should check the cameras settings to make sure that the GoPro is recording correctly. The Horus software does not support the recordings from the GoPro natively, so it is necessary to convert them. This is a 2-step process; the footage from the GoPro needs to be exported first through GoPro software, before being converted into the Horus Format via the 'Horus Movie Maker'.

Recording with a GoPro

To ensure that the recordings are usable for mobile mapping ensure that you have the following settings selected:

1. Recording Mode

- **GoPro Max**

Check that you are in '360 Video' mode indicated by the icon indicated by the blue circle in figure 1. This mode is required to capture 360 degree video, the normal video or 'Hero' mode will only record from a single camera.

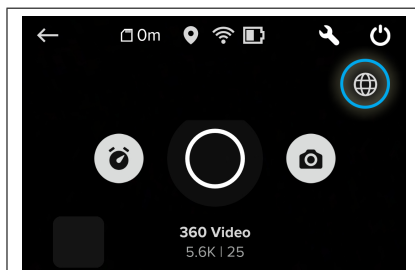


Figure 1: GoPro Viewfinder

- **GoPro Fusion**

The Fusion doesn't have different modes for recording video, so simply select the 'Video' mode.

2. GPS Data

To record GPS data during your recordings, ensure that the GPS setting is set to on.



Figure 2: GPS Setting

Exporting Recordings

The recordings from the GoPro are saved in a '360' file format. For our purposed we need an 'MP4' file. Fortunately, GoPro offers software to export the '360' recordings as an 'MP4'. The software that is used differs for either camera. Below, the method for exporting video from either camera is described.

- **GoPro Max**

To export recordings from the GoPro Max, the 'GoPro Max Exporter' software is required.

Once the software has been installed, start it and a window similar to figure 3 will be displayed on the screen.

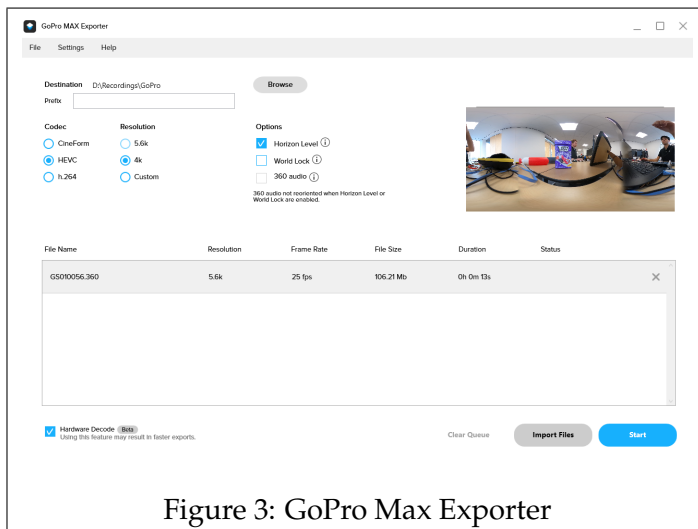


Figure 3: GoPro Max Exporter

1. Add Recordings by dragging the .360 file from your GoPro's SD card into the box at the bottom of the window.
2. Specify the directory where the exported recordings will be saved to.
3. Select either 'HEVC' or 'h.264', set the resolution to 4K, and check the 'Horizon Level' option.
Ensure that the 'World Lock' option is disabled.
4. Press the 'Start' button to export the recording.

You can find the exported recordings as an MP4 file in the specified directory.

- **GoPro Fusion**

To export recordings from the GoPro Fusion, the 'GoPro Fusion Studio' software is required.

Once the software has been installed, start it and a window similar to figure 4 will be displayed on the screen.

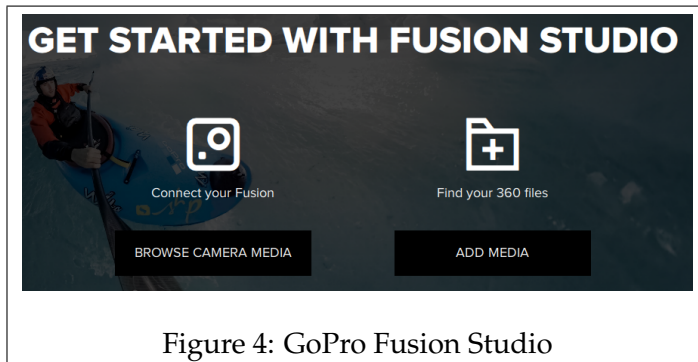


Figure 4: GoPro Fusion Studio

If you have the Fusion connected to your PC via USB, then click on 'Browse Camera Media'.

If you moved the recordings from both SD cards to a local directory on your PC, then click on 'Add Media'.

Once the Recordings have been loaded, you will be directed to the window seen in figure 5.

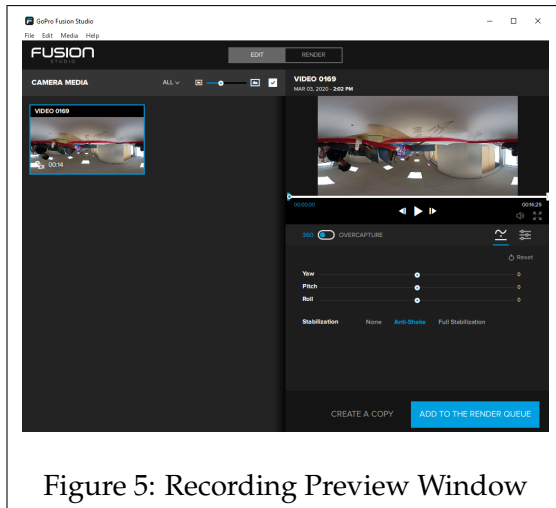


Figure 5: Recording Preview Window

1. Click on the recording that you wish to export.
2. Set the 'Stabilization' to 'Anti-Shake', and click on 'Add To The Render Queue'.

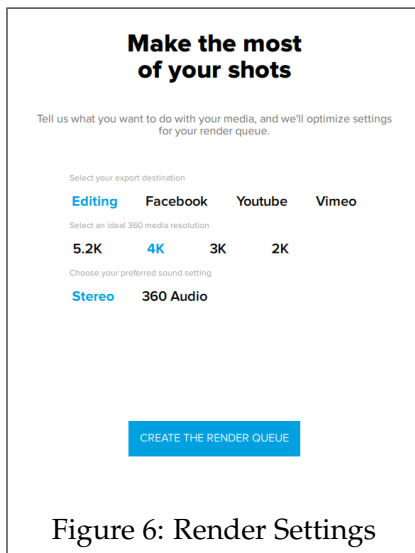


Figure 6: Render Settings

3. A window similar to figure ?? will be displayed. Set the export destination as 'Editing', the output resolution to '4K', and then press 'Create the Render Queue'.
4. Click on 'Render All' to start exporting the recordings.

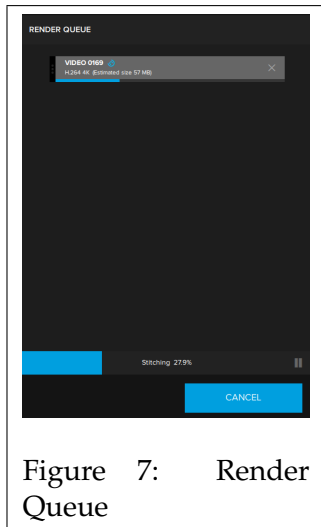


Figure 7: Render Queue

Once the render is completed you can find the recordings in the 'Export Location' as an MP4 file.

Default Export Location
C:\Users\Gebruiker\Pictures\GoPro Fusion\Rendered

Checking Recording Telemetry

You can check if the recording contains GPS data, or see if the data is correct by using the GoPro Telemetry Checker.

Converting to Horus Format with the Movie Maker

Now that you have exported the recordings as an MP4, the next step will be to convert it into the Horus format.

To convert the recording, you will require the 'Horus Movie Maker'.

Below, you will find step-by-step instructions on how to convert the recordings.

1. Start up the Movie Maker software.
2. Click on 'File' and then 'Import Data'.

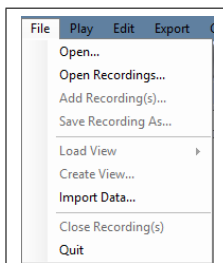


Figure 8:
Importing
Data in Movie
Maker

3. Select 'Video with Metadata' from the list, and press 'OK'.

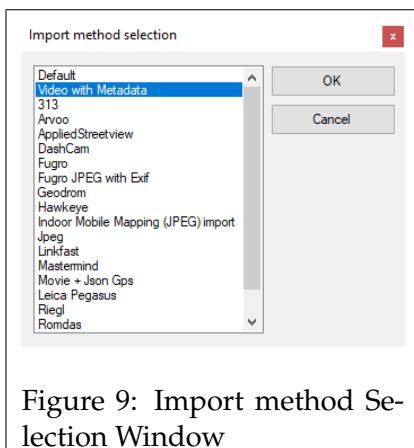


Figure 9: Import method Se-
lection Window

4. The 'Video with Metadata Settings' window will open.

- **Type**, Select 'GoPro' or 'Garmin' depending on your camera.
- **Video**, enter the file path, or browse and select the video that you wish to convert.
- **Metadata**, enter the file location of the original '360' file.
- **Interval**, the time between each frame. An interval of 0.1 would result in 10 frames per second. An interval of 0 will use the fps of the recording.
- **equirectangular**, Enable this setting if your recording is 360 degrees.

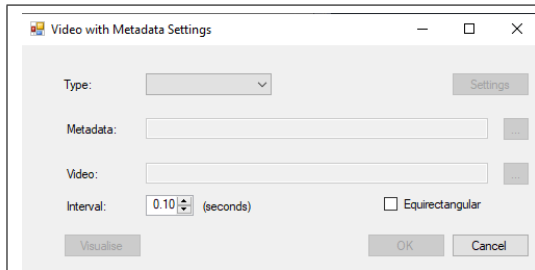


Figure 10: Video with Metadata Settings

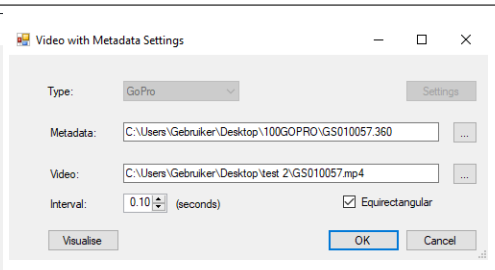


Figure 11: Settings Example

Fill in the requested settings and press 'OK' to continue.

If you can play the recording after converting then it is ready for use. You can find the recording in the Horus format in the same folder as the original 'MP4' file.

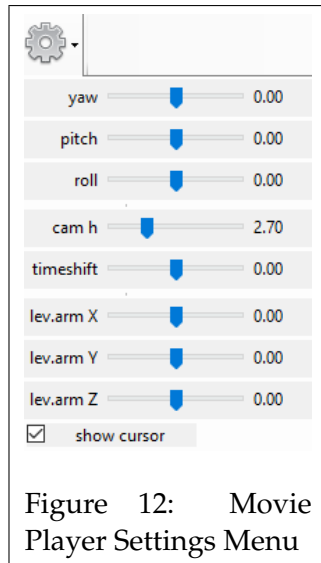
Initial Setup for GoPro Recordings in the Movie Player

The Recordings (.idx) can now be opened in the Movie Player. Before you can start geotagging, you need to configure the camera setup.

This involves setting the height, roll, pitch, and yaw. Please use the following steps to make this setup file.

1. Turn the button 'Show alignment axis' to on. This makes it easier to visualise your camera configuration.

2. Open the 'Settings' menu by clicking on the gear icon at the top right.



3. Set the camera height (cam h) in meters.
4. Adjust the roll, pitch, and yaw parameters. The redline in the screen should match the horizon.
5. Measure an object on flat ground with a known size to check if the settings are fine, adjust the parameters in the Settings sliders till it is correct.
6. Use the layermanager to draw line geometry (e.g. of a curbstone with a known length) and turn on the label of this line, that shows 'Length'.
7. Check on the map if the field of view is pointing at the right direction. If not, adjust the yaw settings (maybe 180 degrees)
8. Once all the settings seem correct, go to: menu -> File -> Save View (*.hsf), and name it 'setup.hsf'. Store/copy this file in each recording folder with the same camera setup.

After configuring the camera setup you should be ready to start geotagging the recording.

Tutorial Videos

Prefer watching a video?

Converting the GoPro Recordings

Geotagging GoPro Recordings