

Creating Google Street Views with the Samsung Gear 360 Camera¹

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Google Street View Camera Loan Kit

In October 2016, Google loaned a 360-camera kit to IGIS (a statewide technical support program in ANR), for the purposes of exploring how Google's Street View technology can be useful for research and management at the Hopland Research and Extension Center (and ANR field stations more generally).

Street View app and the Samsung Gear 360

The Street View app (for both Android² and iOS) is what you use to create and upload Street Views. The Samsung Gear 360 is one of about four 360 cameras that the Google Street View app is setup to work with (meaning the app can control the camera pretty seamlessly).

Most people use the Street View app only to view off-road street views. You can also view off-road street views in plain old Google Maps, but the Street View app makes it a little easier to find user generated content. If you have a VR device such as the Google Cardboard, you can view Street Views in cardboard mode³.

In terms of content creation, the Street View app has three main functions: i) control the camera, ii) process images (which includes stitching them together, blurring faces and license plates, adding locations as needed, and linking nearby photos), and iii) upload the images to Google Street View (after which they'll be available in Google Maps immediately).

The Samsung Gear can also record 360 video. For that you need the Samsung Gear 360 Manager (or another app). See the Gear users guide for more info.

Set up and connect the Samsung Gear 360 camera to your mobile device

The Gear 360 creates a WiFi hotspot. This is how you connect it to the Google Street View app on your mobile device (not Bluetooth, although the Gear also supports Bluetooth). The Gear 360 WiFi does **not** connect to the internet, which means when your phone is connected to the Gear, you won't have access to the internet through WiFi (you may of course connect through your cellular provider). This is not a problem however, because typically you take images, and then process and upload them later on.

¹ Questions, corrections, or suggestions for this info sheet? Please email Andy Lyons at andlyons@ucanr.edu.

² The Android Google Street View requires Android 4.4 (Kitkat) and up

³ To view Street Views with Google Cardboard, you probably want to also install the Cardboard app. Other VR viewers may have their own apps.

As you take photos, the images are transferred from the camera to your phone through the WiFi. 360-images are 10-15Mb each, so you can estimate of how much storage space you'll need on your phone.

Something else to remember is that the Gear 360 does not have a GPS receiver. Instead it uses the location information from your mobile device. Normally this should be fine but if you need better precision you could consider a Bluetooth GPS antennae. You can also assign a location using the app.

*Connecting the Gear 360 to Your Mobile Device*⁴

1. Make sure a micro SD card is inserted in the Gear 360. The card slot is located behind the door. The Gear 360 will not go into "Street View" mode without a microSD card.
2. Turn the camera on by pressing and holding the power button on the side.
3. Make sure the camera is fully charged. On the camera screen, you can see the battery level.
4. Press and hold the Menu button until you see "Gear 360 Manager".
5. Quick press the Menu button twice until you see "Google Street View".
6. Press the button on the top of the camera to select this mode and turn on Wi-Fi.
7. Make sure your phone is fully charged.
8. On your phone, open the Settings app.
9. Connect your phone to the 360 camera's wifi network (which will end in ".OSC"). The default password is the set of 8 numbers shown on the second line of the camera display.
10. Open the Google Street View app.
11. Look for the little camera icon in the lower right corner. When the phone is connected to the camera, you'll see a blue linked camera. If it is orange, you are not connected. Click on it to connect.

Video about setting up and connecting a Samsung Gear 360:

<https://support.google.com/maps/answer/6281877?hl=en>

⁴ <https://support.google.com/maps/answer/6281877?hl=en>

Using the Street View app for Content Creation

There are four tabs across the top.

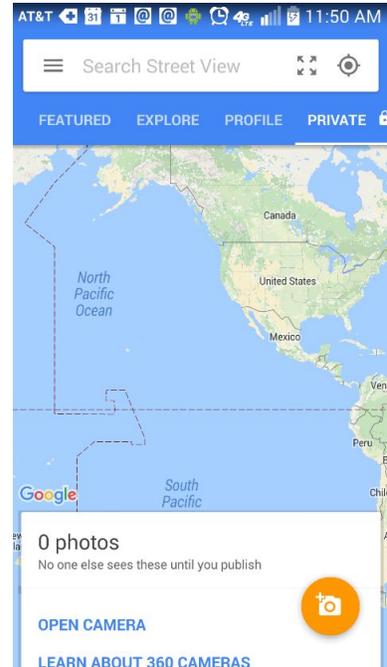
Featured – there are Street Views that have been created by Google. They tend to be very good quality.

Explore – these are user contributed Street Views, some of which are highlighted by Google for being really awesome.

Profile – these are Street Views which you have created and published.

Private – these are 360 images that are still on your phone, have not been published.

The orange camera icon indicates you are not connected to a 360 camera. To connect to the Gear 360, make sure the Gear 360 is in 'Street View' mode, and you have connected to the Gear's WiFi (see above).



Mounting the Camera and Taking Photos⁵

- Make sure your phone is fully charged and has enough memory to store your photos.
- Stabilize the camera at 1.20 - 1.80 m / 4 - 6 ft. You can do this by attaching the camera to a monopod, a tripod, or helmet.
 - **Monopod:** Keep the monopod steady above your head and keep your head down when taking photos.
 - **Tripod:** Step out of the way before taking photos.
 - **Helmet:** The Google camera loan kit comes with a GoPro camera mount and removable tape to mount the camera on a bike helmet or something similar (any helmet that doesn't have ribs on top)⁶. When using a helmet, adjust the helmet so the camera mount is as perfectly *vertical as possible*, and make sure to keep your head *still, steady and facing forward* when taking photos.
- Space the photos about two small steps apart (1 m / 3 ft) when indoors and five steps apart (3 m / 10 ft) when outdoors. At this distance, the 'Auto-Connect' images feature should work (at least in theory).
- Follow natural paths and walkways so that there is a clear line of sight between the photos.
- Start taking photos from the street and keep taking them until you're indoors.
- When taking photos indoors, limit your collection to 100 photos.

⁵ https://support.google.com/streetviewloan/answer/7000632#tips_multi

⁶ For more details on attaching the camera mount to a helmet, see: <https://www.youtube.com/watch?v=fKhiA928i34>

See also this video from Google for tips on taking 360 photos:

https://www.youtube.com/watch?v=N38_OPXluk0

Keeping the Camera Level



When taking photos with a helmet mount, try to make sure i) the camera is mounted perpendicular to your head, and ii) your head is horizontal with the horizon (i.e., not looking down at the ground or up at the sky). Slanted images like this one are still 360-images, but they look funny and scrolling across the landscape requires the user to drag along the diagonal rather than the familiar sideways motion.

Taking photos using the Street View app

Click the camera icon to manually take a photo. The camera will beep.

To put the camera in 'Auto' mode, click the little gear icon and turn on Auto Capture. Tap the icon to start auto-capture, and start walking at a normal pace. It will take an image about every 6 seconds.

For the Auto-connect feature to work, images have to be within 10 feet of each other. So don't walk more than 10 feet between images. This is about 5 steps.

**Tip: What Happens When You Long-Press a 360-Image
in the Street View App**

- If the image is on the **Private tab** (meaning not yet published), long-pressing will add or remove a blur
- If the image is on the **Profile tab** (i.e., published), long-pressing will allow you to add a connection arrow to another image.

Blurring Faces and License Plates⁷

Google's [Privacy Policy](#) requires that images published by Google itself should have faces and license plates be blurred. They don't automatically blur images published by third party content creators, but ask photographers to respect people's privacy by proactively blurring faces prior to publishing. This is easy to do in the Street View app, but must be done before publishing the photos. Once published on Google Maps, faces can not be blurred and can only be taken down.

Auto Blurring

There is an 'Auto Blur' feature that you can turn on in Settings.

Manual Blurring

You can only blur photos in the "Private" tab. You can't blur a photo or remove a blur after a photo has been published.

To blur a face, open a photo by tapping it in the Private tab (a long-press will select it, not open it). Scrub around the photo. To apply a blur, press and hold a spot on the photo. To remove a blur, select a blur spot and click 'Delete'

Connecting Images

When 360-images are connected, you'll see the little Chevron arrows indicating another image is ahead. This is a proper Street View. Connecting photos takes place *after* they've been published.

If 'Auto Connect' is turned on when you publish them (under Settings), *and* your 360 photos are taken within 10 feet of each other, they should get Auto-connected by Google within 24 hours.

To manually link published photos using the app,

1. On the "Profile" tab, open a photo.
2. Touch and hold the spot in the photo where you want to connect to another photo.

⁷ See also <https://support.google.com/maps/answer/7011973>

3. Choose a photo to connect to from the list.
4. To align the photos together, drag the view of both photos *so that the top photo matches the highlighted portion in the bottom photo*.
5. Tap Done. To try your new connection, tap the white arrow.

See also

- <https://support.google.com/streetviewloan/answer/7001034>
- <https://www.youtube.com/watch?v=Vne1WMa7rA0>

Add a Maps Listing

If you intend on publishing your photos, assigning them to a ‘map listing’ is a great idea. A ‘map listing’ is simply a named place (including Businesses) in Google Maps. You can publish photos without adding a map listing, and they will still be discoverable in Google Maps by their location, however a map listing makes it a lot easier for people to find your photos through search terms.

Google wants you to add a map listing. You can add a map listing to photos in either the Private or Profile tab. To add a map listing to several photos, select them all first.

Other notes about the Street View app

- You can also take photos with your phone (including Panorama mode), and import those into the Street View app.
- Some people prefer to take a series of 360 images using the native “Samsung Gear 360 Manager”⁸ app, which provides more manual control for the aperture, shutter speed, stitching, etc. They then import these images into the Street View app, which they use to publish the images to Google Maps.
- The app assigns a location to images using Android's location service (i.e., GPS). You can also edit the location of images.
- The Street View app also allows you to preview your images in a virtual reality accessory, like the Google Board.

To View or Delete 360 Photos You’ve Published

On the app, click on the ‘Profile’ tab.

Go to maps.google.com, Menu, My Contributions.

⁸ Note that the [Samsung Gear 360 Manager](#) app only works with high-end Samsung devices, like the Galaxy S6 or S7. Note however a [modified version](#) of the Samsung Gear 360 Manager which works with other devices.