

WiFiSLAM Positioning

WiFiSLAM's positioning API allows you to set up, map, and enable positioning for any location.

1 Getting Started

1.1 Wireless Settings

- Enable WiFi on your device
- We suggest that you disconnect from any known WiFi networks to increase scanning ability

1.2 Floorplan

Floorplans are important for WiFiSLAM's application so users can see an accurate visual representation of your location on the device.

- Floorplans of a location should have a nice level of detail and can either be created by you or obtained from the building
- We suggest that your floorplan image does not exceed 1024x1024 pixels
- Floorplans will be the visual representation that you see of your location on the device and can be uploaded in PNG or JPEG format

2 New Locations

1.1 How to set up a new location

- Log in to <http://eval.wifislam.com> on your computer browser
- Select "Location Editor" on left panel
- Select "New Location" tab
 - Option: Create a Location Group by selecting "<Create New Group>"
- Specify Location Name
- Upload a floorplan image by selecting "Choose File" under Floorplan
- Click "Create Location" to save this new location

To align floorplans by lat/lon:

- Select "Align Using Map Overlay" under Lat/Lon Alignment
- Search for your building address in the search box
- Select "Move Selection to Viewport" to see your floorplan overlayed on GoogleMaps
- Drag the blue corners of your floorplan to match its real-world location on GoogleMaps
- Aligning your floorplan will allow us to give you lat/lon coordinates as output when positioning you

Occupancy

Occupancy represents an optional image that indicates walkable and unwalkable areas on a floorplan. Including this image may improve accuracy in certain environments.

To create an Occupancy image:

- Use the original floorplan as a basic layout
- Walkable areas should be denoted by white pixels
- Unwalkable areas should be denoted by black pixels
(See example below)
- Align Occupancy image to Floorplan

To align Occupancy image to floorplan:

- Select “Map Editor” on left panel
- Select “Group” and “Location” from dropdown menu
- Check “Occupancy” under Layers
- Resize image to overlay accurately on floorplan using the resize tool at edge of image

1.2 How to record data for a new location

- Load WiFiSLAM application on device
- Press the “Settings” button
- Select “Switch Location”
- Select the Location name for mapping; wait for floorplan to load
- Press the “Settings” button
- Select “Start Mapping Run”
- Select “Map” (“Map” is used for recording data, “GT” is used for Ground Truth runs and is used primarily for debugging positioning in a location)
- Move the pin cursor to the area on the map you are standing using your fingers to adjust to floorplan location on the device’s screen
- Mark your first position using the Up or Down volume button
- Begin walking while holding device in default orientation (for compass alignment). For tablets, this usually means holding the device in landscape mode
- Add points as necessary while walking at a constant pace. In particular, add points when changing direction; the more points added, the better the performance
- To complete data gathering, press the “Settings” button
- Select “Stop Mapping Run”
- When prompted to “Upload file”, select “Yes” (You must select “Yes” for the data to be uploaded and processed. You may select “No” if you made an error collecting data, or if you do not want that dataset to be processed)
- Your data will automatically be processed and should be complete in a few minutes

1.3 Real-Time Positioning

- After data has been processed and completed, you can use the app for localization
- Restart the WiFiSLAM application on your device
- If your location does not automatically load when the app starts, you may press the “Settings” button
- Select “Switch Location” and select your Location name
- The blue dot indicates your current position
- Note: Localization will only be available for locations that have valid recorded data
- Zoom/Scale - You can zoom in and out using your fingers on the device’s screen

- Location Focus - Enabling this option will pinpoint your current location at the center of the screen, and will follow as you move. Location focus is the button located at the top right corner of the screen.
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Support

If you require additional help, we would be happy to support you. Please send an email to support@wifislam.com.

FAQ:

How does Wi-FiSLAM's positioning work?

Wi-FiSLAM's technology uses a combination of radio signals (including Wi-Fi) in the environment and sensors on the phone to create accurate positioning.

How long will the data collection take?

The data collection takes just as long as it takes for you to walk around the desired space. We have found that this averages to be about 10 minutes for every 2500 sq ft. For larger buildings with multiple floors (malls, airports, etc.), this tends to be on the order of 3-4 hours.

What do I do if I recorded a bad dataset?

If you record an incorrect datapoint or dataset, you can stop mapping by pressing the "Settings" button, and selecting "Stop Mapping Run". When prompted to upload the data for processing, select "No". This will prevent the bad data from being added to your dataset. Now you can start a new mapping run.

How long will it take for my data to be processed?

Once you have uploaded your data, it will take a few minutes for your dataset to be processed. You must restart the Wi-FiSLAM app in order to download the newly processed data.

Do I have to capture a location's data all in one run?

You can incorporate as many runs as you would like for one location. Runs can be as short or long as you would like. We suggest that you make multiple shorter runs in order to prevent location input errors.

I had poor/no connectivity when I finished collecting data. What happens now?

As long as your phone remains on, the background upload process of our app will continue to reconnect/retry as long as the process is active, until it successfully uploads. The process will remain active as long as you do not task-kill any Wi-FiSLAM processes.

I can't see my blue dot. What should I do?

Hit the Location Focus button on the top right corner of the app. This should make the blue dot appear. If it is still not visible, restart the app.