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December 19, 2016
UAS Research

UAS Research App

Dependencies:

Android OS:
- Android 4.4 (Kit Kat)

Project IDE Used:
- Android Studio

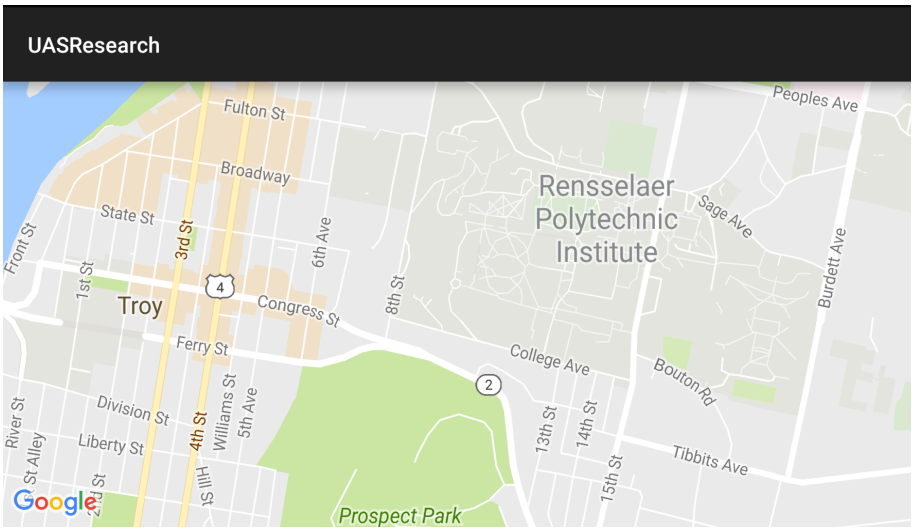
App Permissions (Listed Below):

```
<uses-permission android:name="android.permission.VIBRATE" />
<uses-permission android:name="android.permission.INTERNET" />
<uses-permission android:name="android.permission.ACCESS_WIFI_STATE" />
<uses-permission android:name="android.permission.WAKE_LOCK" />
<uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION" />
<uses-permission android:name="android.permission.ACCESS_NETWORK_STATE" />
<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />
<uses-permission android:name="android.permission.CHANGE_WIFI_STATE" />
<uses-permission android:name="android.permission.MOUNT_UNMOUNT_FILESYSTEMS" />
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
<uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE" />
<uses-permission android:name="android.permission.SYSTEM_ALERT_WINDOW" />
<uses-permission android:name="android.permission.READ_PHONE_STATE" />
```

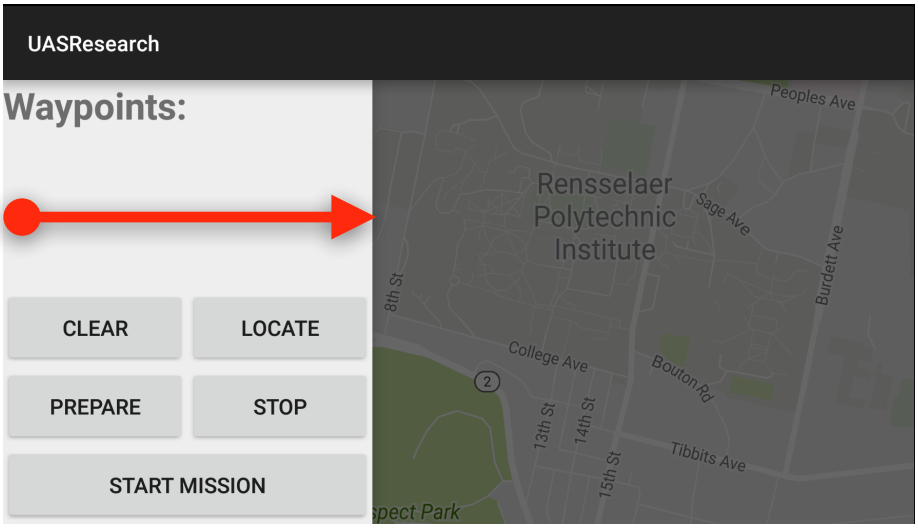
Required API Keys:
- Google Maps
- DJI SDK

Required Modules:
- DJI SDK Library (dJISDKLIB)
- OpenCV 3.1.0 (openCVLibrary310)

Launching the Application

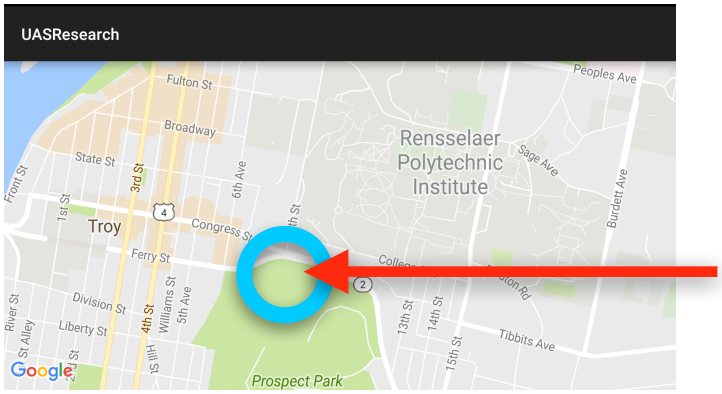


When users enter the application, the application currently zooms in at RPI. Future iterations of the application will include detecting current user location and zooming in at his or her position.

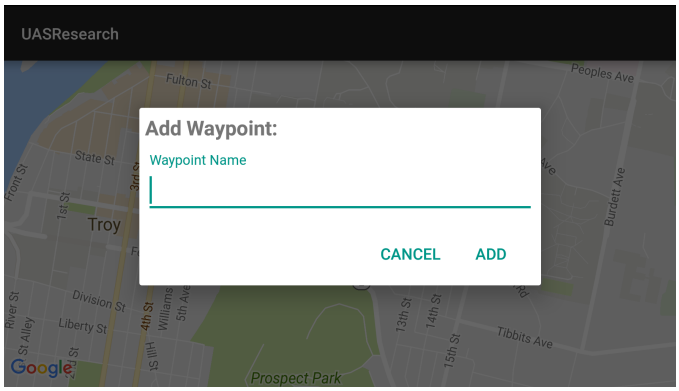


A user may swipe from left to right to open up the list of current Waypoints specified in the application. On startup, the list is clear.

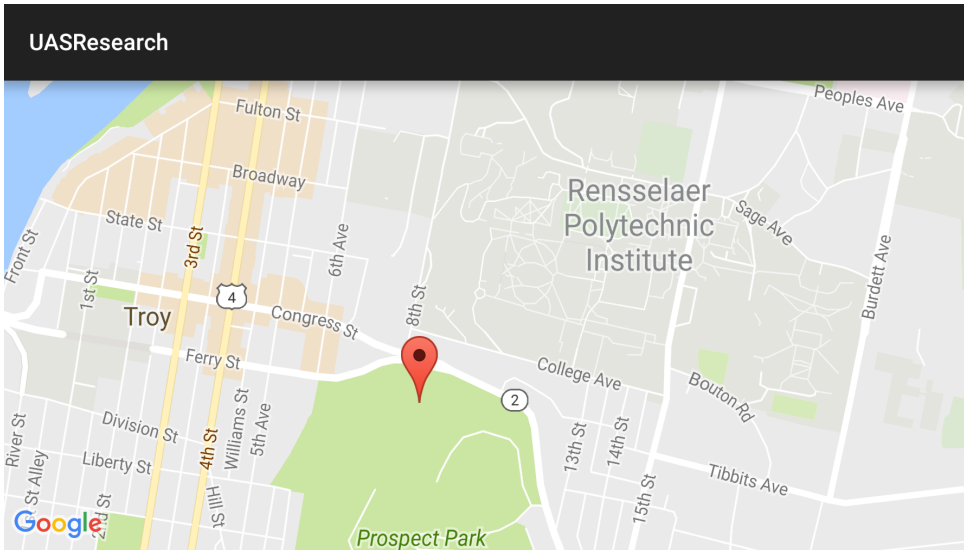
Adding Waypoints



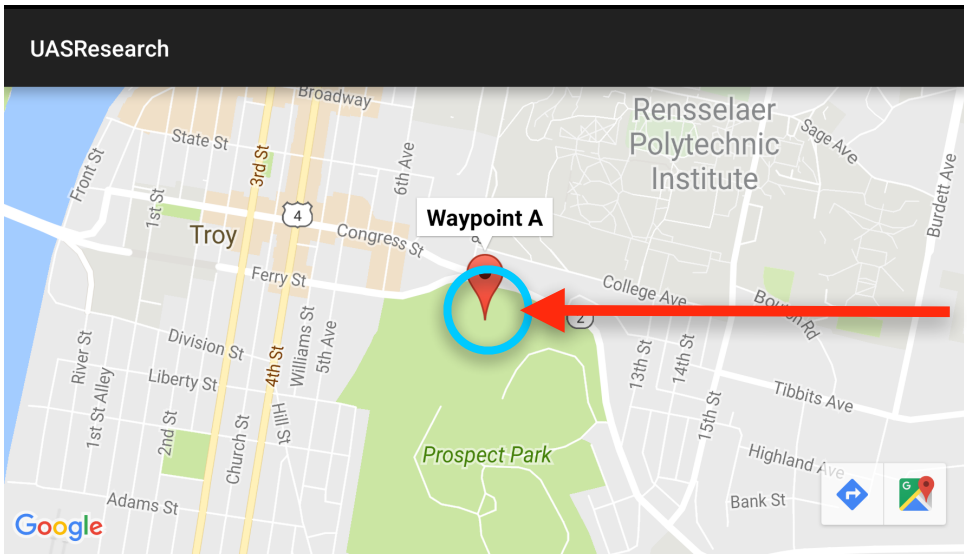
To add a waypoint, long click on the desired area.



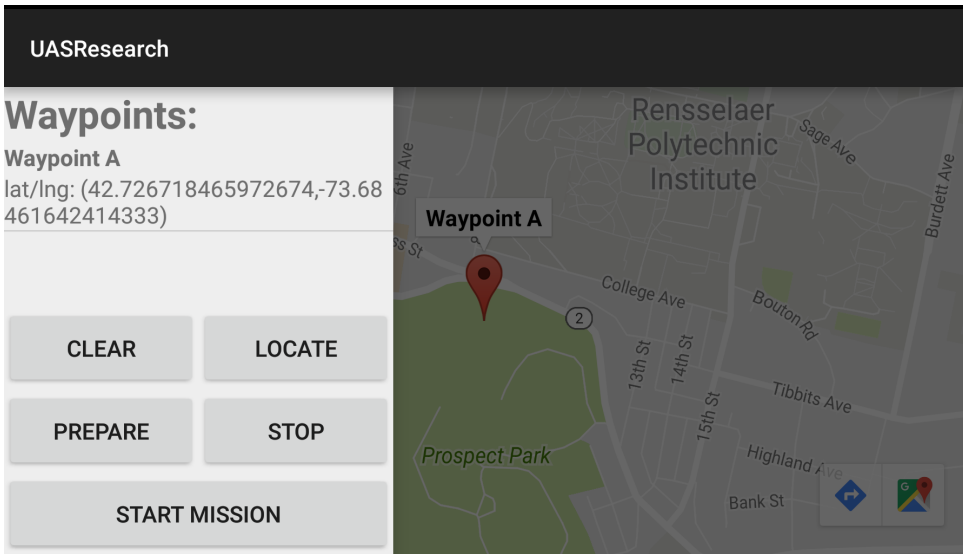
Input a label for the waypoint and click “Add”. The map will update accordingly.



Viewing Waypoints



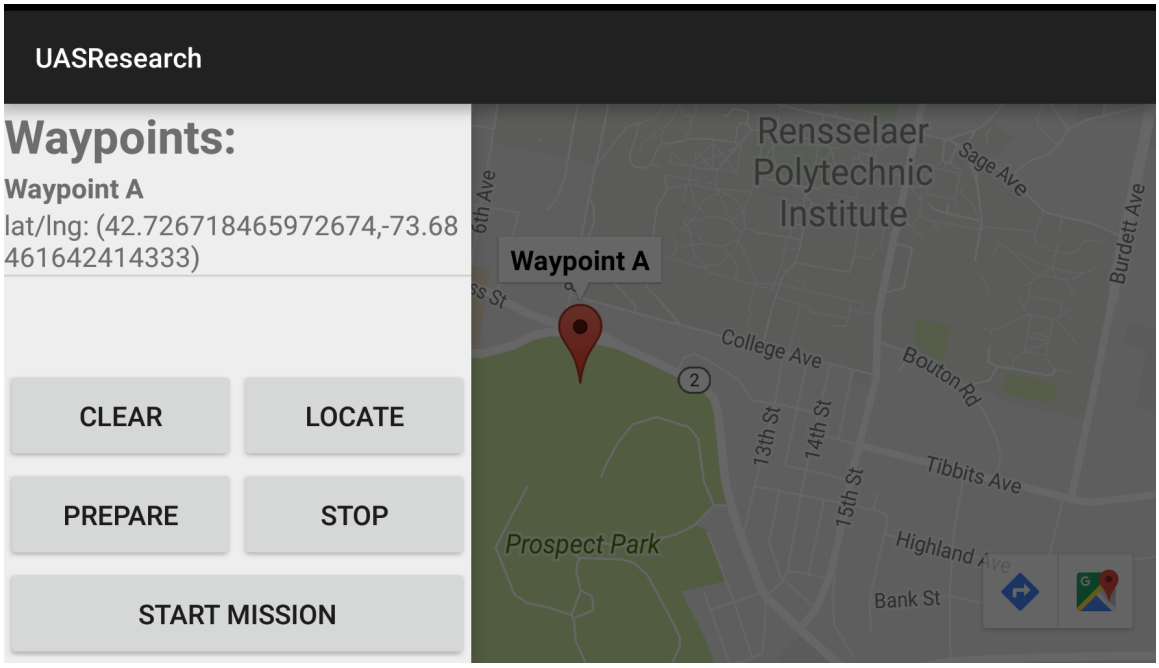
Click on a waypoint to see its label.



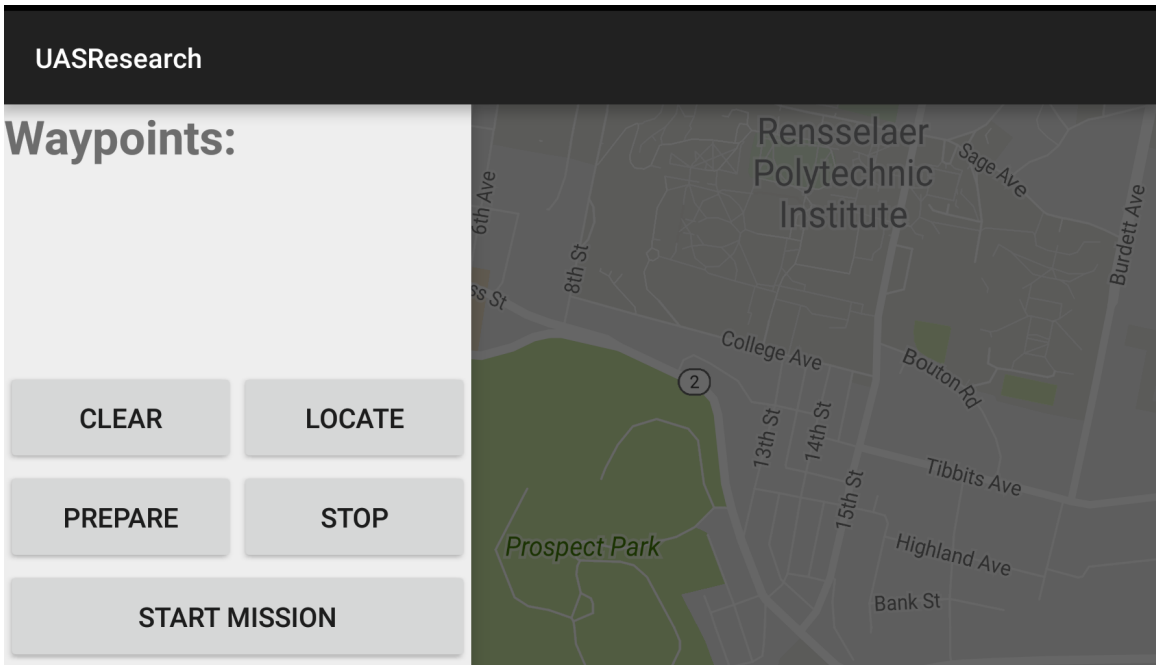
Alternatively, swipe from left to right to see the ordered list of waypoints. Each waypoint consists of:

- A label
- Latitude and Longitude

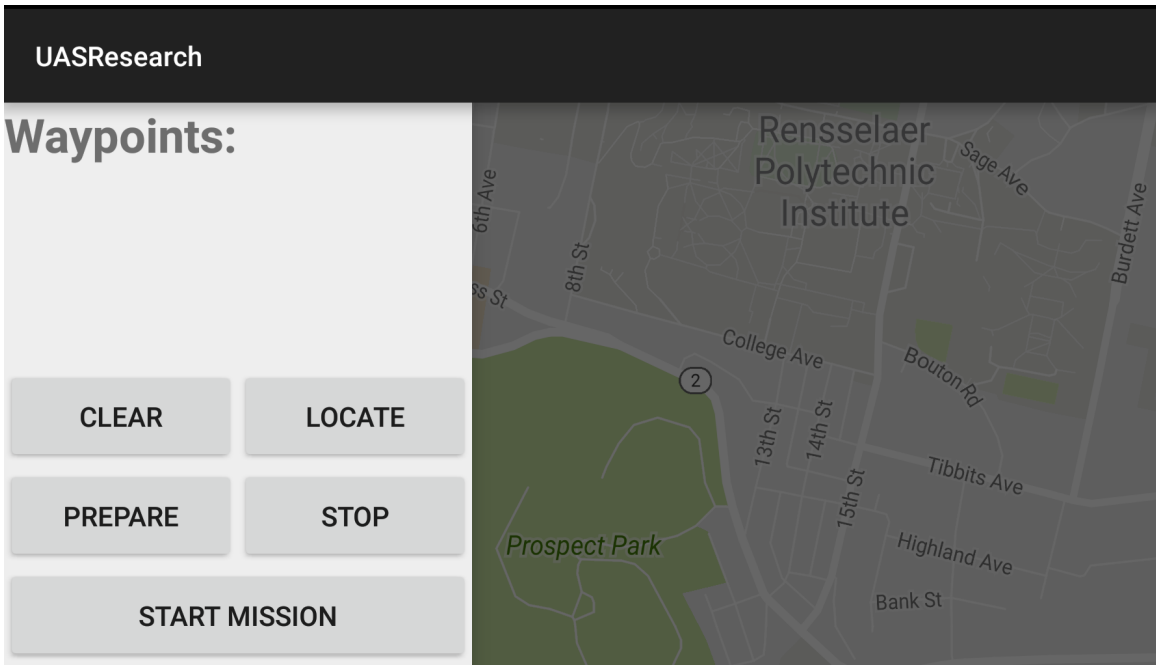
Clearing Waypoints



Click on the "**CLEAR**" Button. Waypoints are now cleared.



Locating Drone

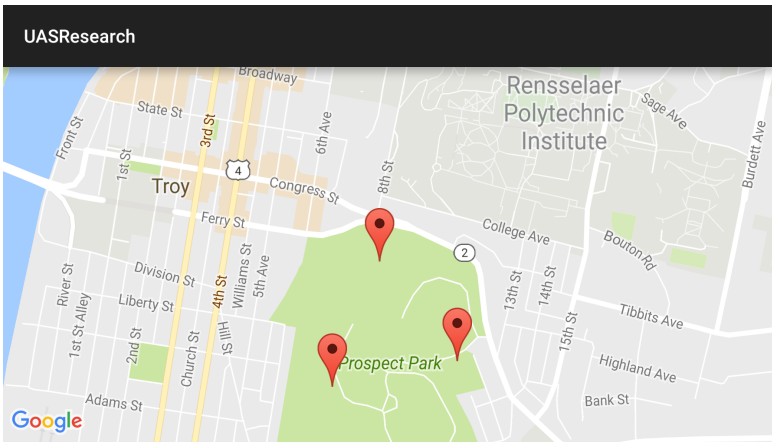


Click on the "**LOCATE**" Button. The Map view will automatically shift focus to the location of the drone.

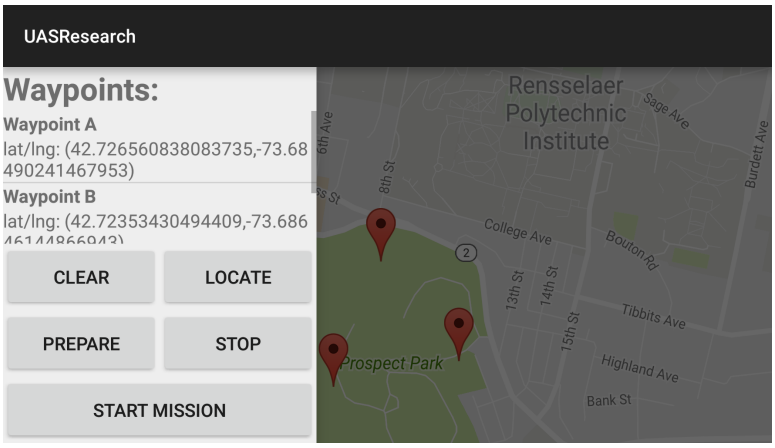
Stopping A Waypoint Mission

Click on the "**STOP**" Button. The drone will cancel its Waypoint Mission.

Overall Workflow



Add desired target locations for drone to visit.



Swipe right, and review locations.

Click "**PREPARE**" to send Waypoint Mission to drone. WAIT until popup messages state that the mission is 100% uploaded

Click "**START MISSION**" to send

Drone switches to video feed with people detection algorithm running. Video feed continues until drone completes waypoint mission, at which point the drone will return the HOME point (as set in DJI GO app).