Natural Disaster Application

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INTRODUCTION

Background

Since 2008, there have been 121 natural disasters on average each year in the United States [1]. Many of these disasters, such as Hurricane Katrina, had significant loss of life due to drowning [2]. This loss of life could have been reduced if better access to citizen's locations as well as environmental hazards existed. There are many organizations that aid in rescue during natural disasters (Disaster Medical Assistance Teams, American Red Cross, etc.), but time being spent on rescuing is reduced due to time spent on communicating between organizations.

Project

The project is a Web-based Application designed to collect and display user information before, during, and after a natural disaster. This application hopes to provide a unified source of information for citizens and relief agencies during a natural disaster.

PROBLEMS

Problems

1. Current recovery methods following a Natural DIsaster take an extremely long time, due to difficulty of communicating information between survivors and rescuers.
2. Other applications primarily focus on information being collected via satellites or rescuers, not survivors.

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APPROACH

How to Find A User

A user first must give permission, through any web browser, for the application to both track and store their location. The application then grabs the latitude and longitude of the user creating an icon marker, representing their current location. We can then pass the points to the database along with a timestamp, for tracking the user as they move overtime.

How Polygons are Created

Figure 1: Once a user designates their location, they are encouraged to declare a nearby hazard, which places them in that type of hazard group, such as flooding.

Figure 2: Assuming another user indicates flooding nearby, they are also placed in that hazard group, creating a line between the two locations.

Figure 3: Similarly, if a third user is also nearby and indicates flooding, a triangle is created.

Figure 4: Another hazard nearby is indicated in the manner described in figures 1-3.
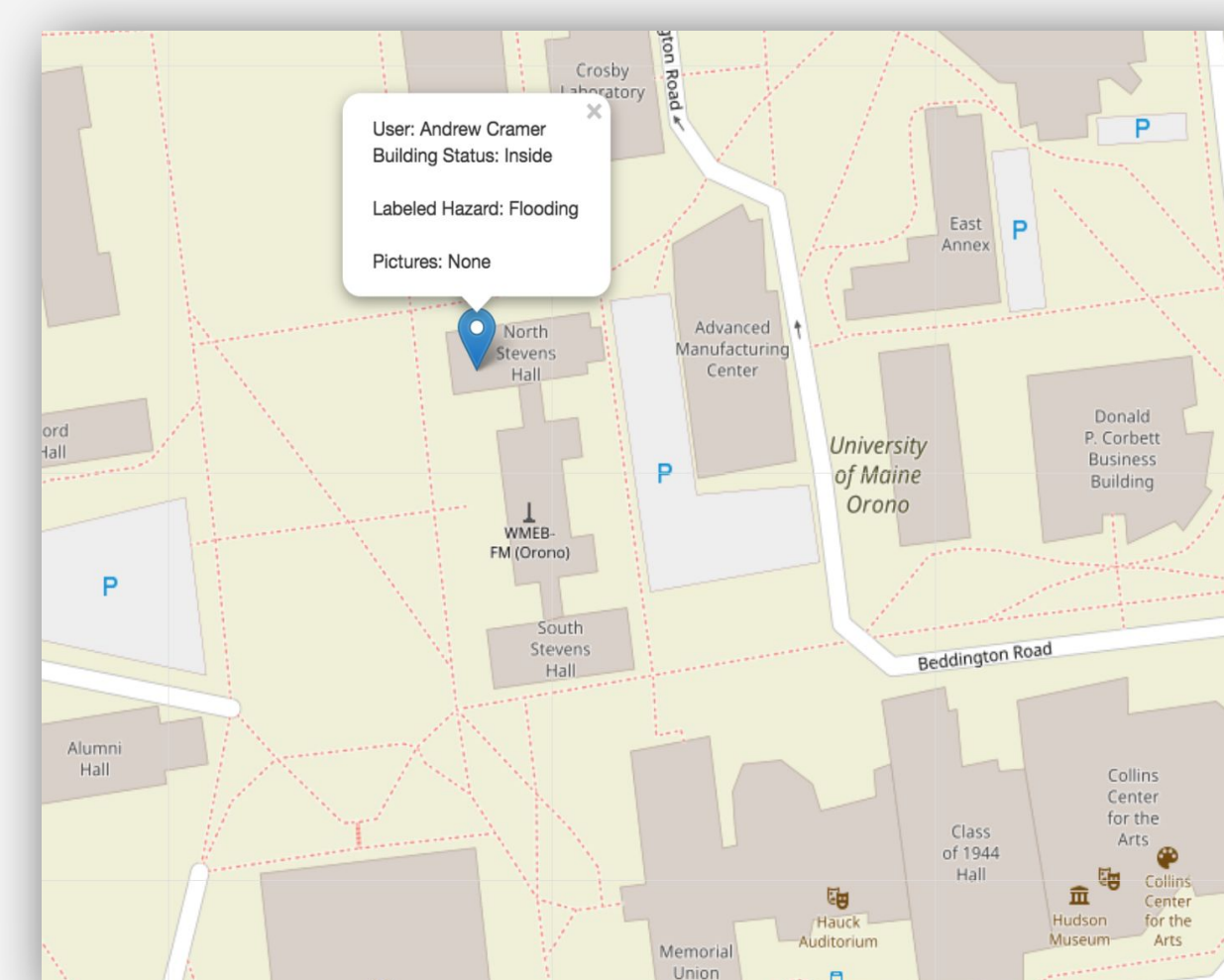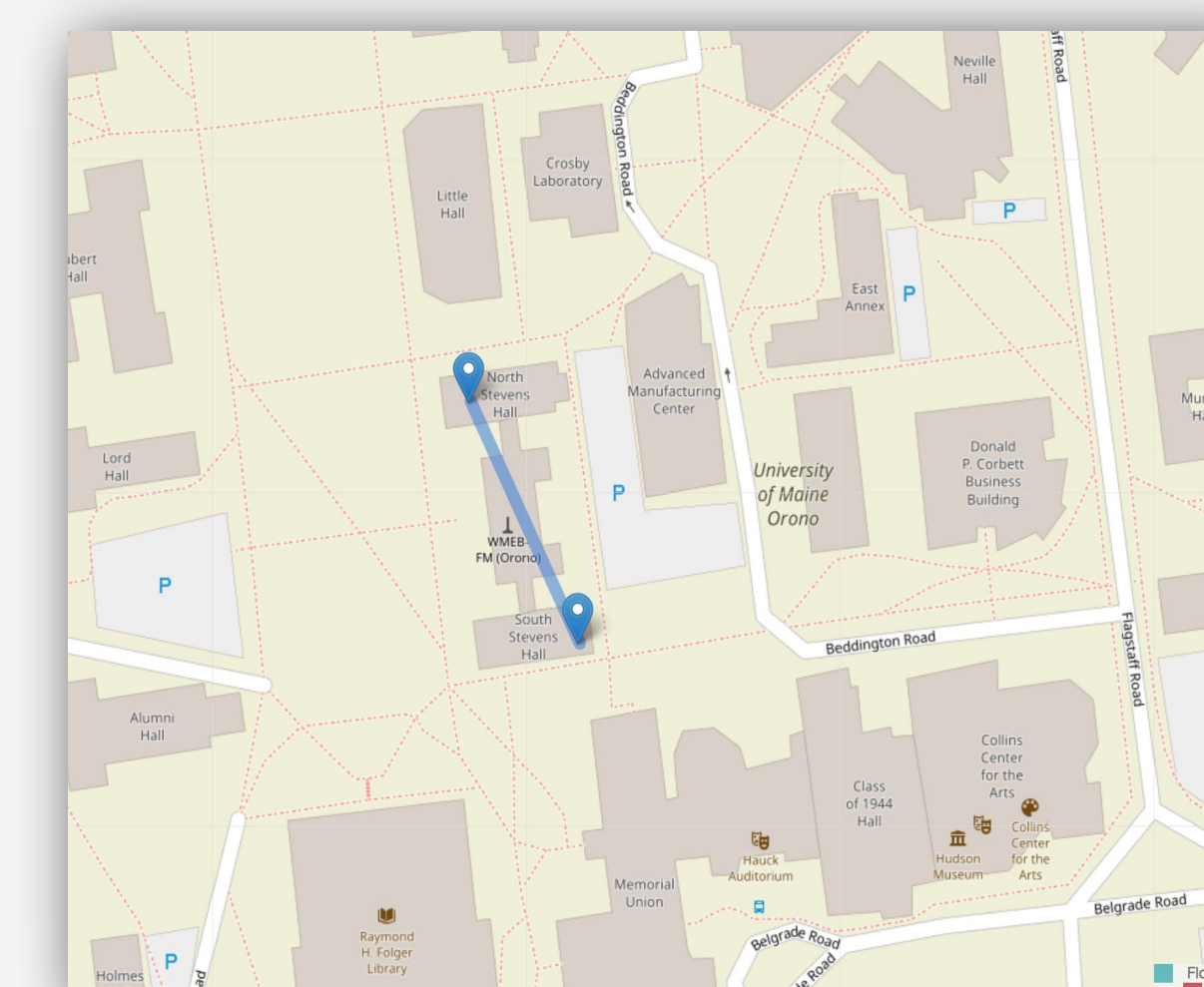

Figure 1: User declares location
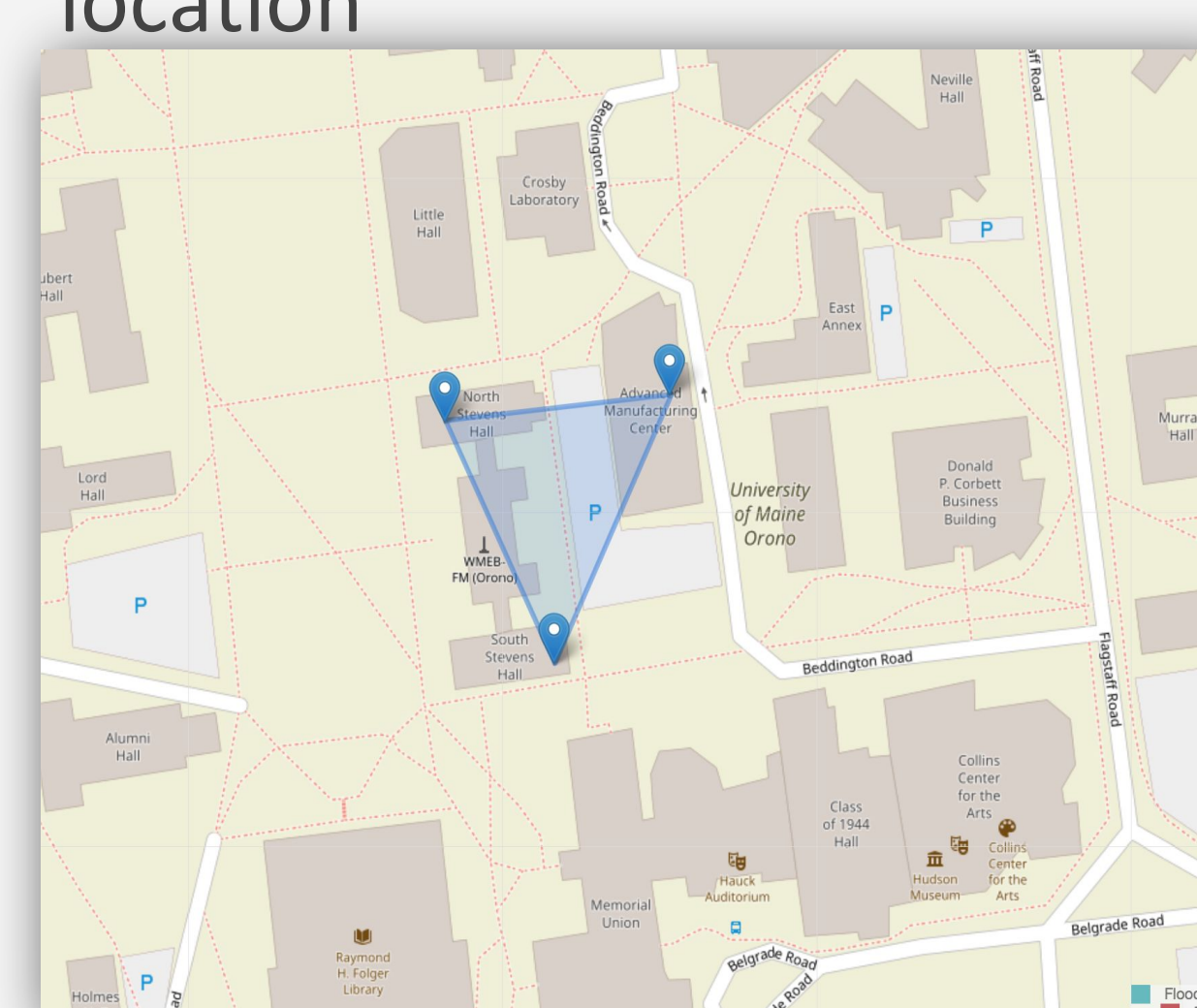

Figure 2: Line drawn
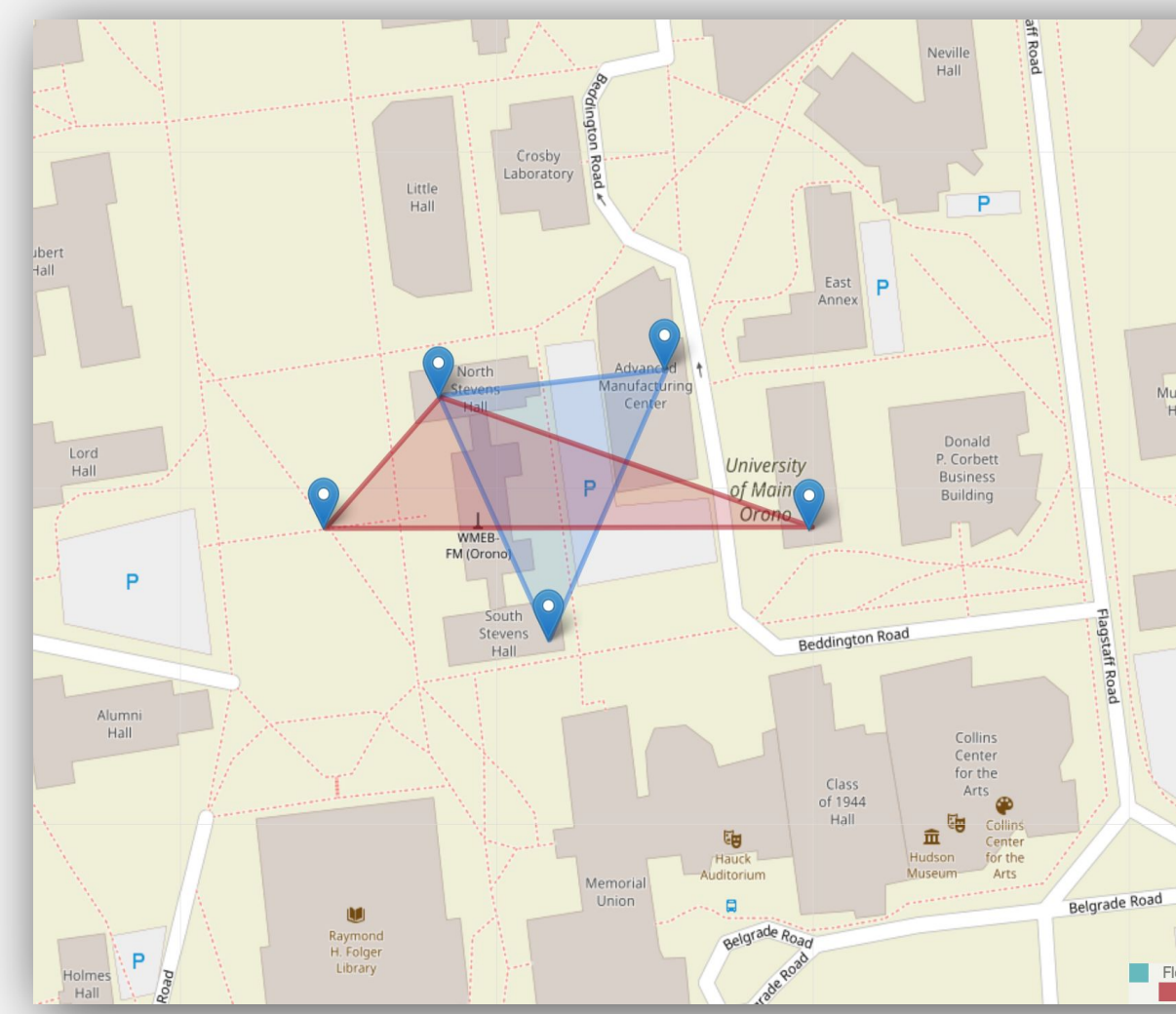

Figure 3: Triangle drawn

Figure 4: New hazard polygon

RESULTS

Features

- GIS Location Tracker, and Location Finder.
- Displaying User Given information with markers and polygons.
- Users have the ability to share their location, pictures, videos, and hazards in their area.
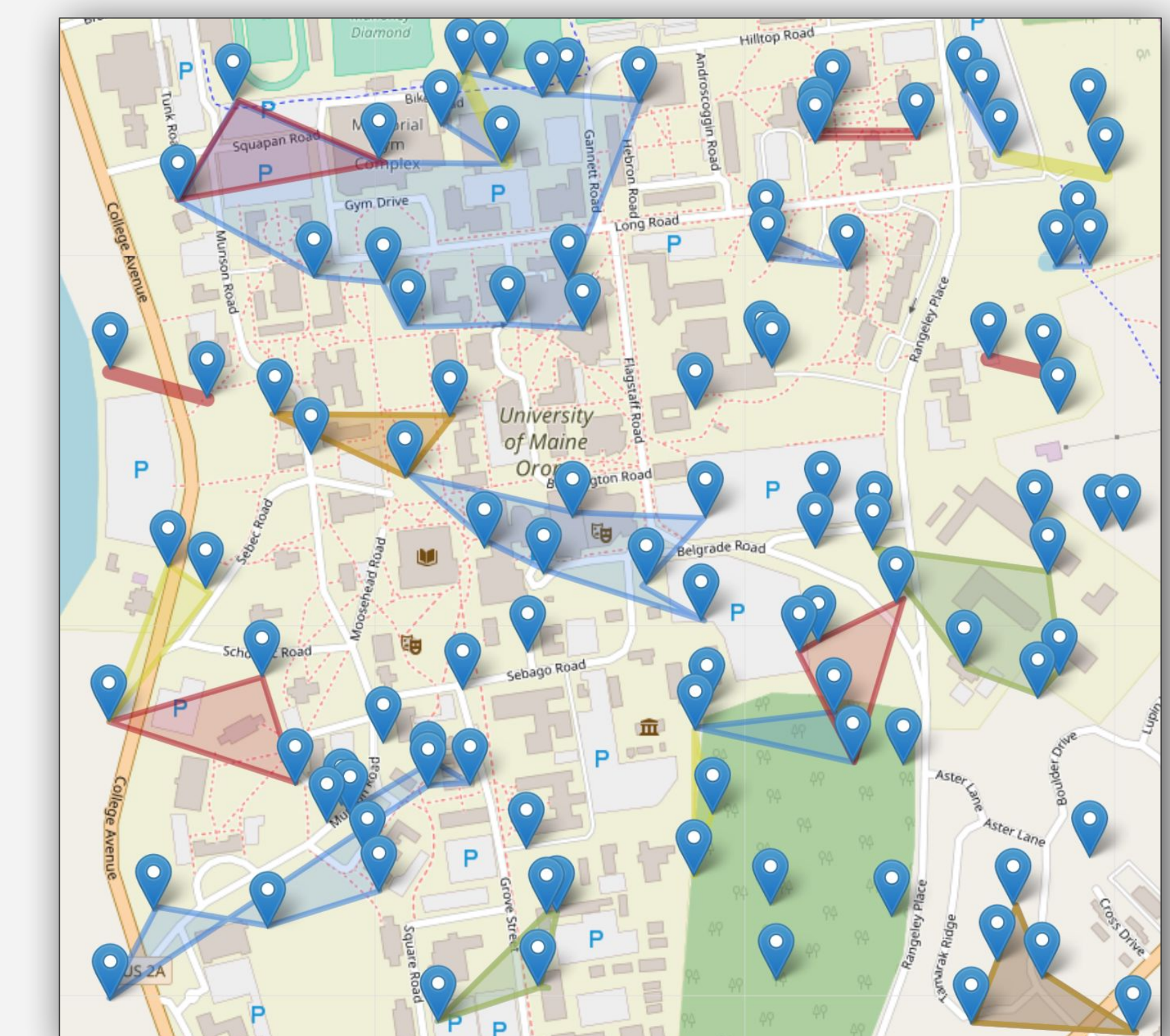

Figure 5: Larger scenario view

FUTURE WORK

- Connect to a Weather Database, for displaying of satellite imagery over the spatial map, to notify users of current weather conditions.
- Implement a SMS notifying system, in the event users are unable to login.
- Create an admin monitoring system, for first responders to post information, and have direct connection with users.

REFERENCES

[1] *"Disaster Declarations by Year." Disaster Declarations by Year | FEMA.gov*, www.fema.gov/disasters/year.

[2] *"Facts for Features: Katrina Impact." Deaths |* www.datacenterresearch.org/data-resources/