Coursera Capstone Project

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Executive Summary

- This project provides **REAL-TIME** data in the event of a disaster to provide:
  - First Responder resource assignments to the most populated areas
    - Based on Foursquare check-in data
  - The initial project will include earthquake data for the Los Angeles area only
    - Subsequent updates will expand the geographic area and additional disaster types

Data

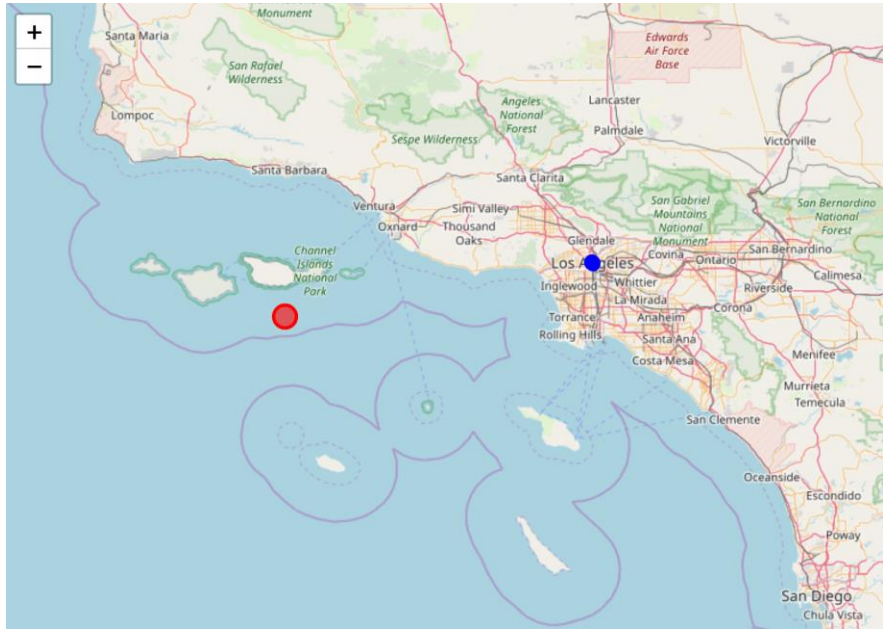
- Earthquake Data from CalTech
  - http://service.scedc.caltech.edu/eq-catalogs/date_mag_loc.php
  - Retrieves data within the last 24 hours, repeating every 10-15 minutes
- Foursquare Data API
  - https://developer.foursquare.com/places-api
  - Retrieves the “check-in” feature of venues within the specified latitude/longitude values

Methodology

- With climate change, the number of natural disasters continues to escalate, both in quantity, force/gravity, and the number of people affected
  - Examples include: earthquakes, fires, flooding, hurricanes
- Initial effort will limit scope to, expanding in subsequent efforts:
  - Disaster Event Types: Earthquake
    - Data Retrieved Includes: DateTime, Magnitude, Depth, Latitude/Longitude
    - Magnitude greater than 5.0
  - Geographic Area: Los Angeles, CA
- Data collection every 10-15 minutes for near real-time check-ins and events
- A geographic map, using Folium, will be shown for the “event” and nearby populated venues

Results

- As there have not been any Earthquakes in the LA Area greater than 5.0 recently, we will use the 5.31 magnitude earthquake that occurred on 4/5/2018 to use as an example/simulation
- The Foursquare API data was pulled on 11/11/2018 at 3:24pm PDT showing:
  - 30 of the most populated venues in the LA area
- The map shows the earthquake with the “red” dot, and venues with “blue” dots



Please note: the “zoom” on this map Should be clearer in the event of an Earthquake occurring on land, versus In off the coast in the ocean.

Discussion

- Two main considerations/observations:
  - Users must use the check-in feature of the Foursquare API for this to work
  - The application and any associated hardware will need to be up 24x7 for real-time response
- Observations:
  - Multiple events may occur, such as aftershocks, that are larger/more severe than the initial event
  - First responders could create their own “events” for check-in, such as “Triage Venue/Event”
    - Would allow family, government officials, additional aid/responders, etc. to use for identification
- If successful and users continue to use the check-in feature, this could be worldwide for ANY type of disaster event
  - Earthquakes
  - Floods
  - Hurricanes

Conclusion

- This project has the potential to greatly improve first response to people in need, in the event of a disaster
- Families and others may be able to know the last known location (less than 10-15 minutes ago) of their loved ones in case of emergency
- The application would help aid agencies know how many people to confirm/look for, e.g. 250 people “checked-in” at this venue/location