CS490 Senior Design

Sprint 2 Planning Document

MyMapper

Team Members:

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1 Sprint Overview

1.1 Overview

For the second sprint, we will continue developing the Spark-based backing data store. We will expand the geographical bounds our product will support, from just West Lafayette to both West Lafayette and the greater Lafayette area. We will also start the process of supporting moving points of interest within our system, including police cars and taxi cabs. Lastly, we will further improve the end-user experience by altering and adding to the web UI and its functionalities.

1.2 SCRUM developing team and meeting schedule

Our SCRUM developing team members include Chen Gong, Yunkai Sun, Yang Xu, Zhihao Hu, Ben Pastene and Mingsheng Xu, with Yunkai being the team leader and Ben being the deputy. Our scrum team weekly meeting time would be every Thursday 1:30pm. However, once we divided tasks into small sub-developing groups, each group may have some more meeting time every week depending on people's available time.

2 Sprint Details

2.1 List of User Stories to be implemented

Functional

As a developer, I want to:

- distribute all map and object data into multiple machines in an efficient manner that allows for fast queries.
- generate the whole map in one user machine.
- update the locations of moving objects in real time, which requires a fresh batch of data inserted at regular, short intervals.
- know how to refreshing the database continuously to point out the moving points for users.

As an administrator, I want to:

- generate moving objects data and insert them into the Spark database.
- add/delete/modify already existed data in the database.

As a user (such as drivers, travelers etc), I want to:

- visualize my query results in a web based map interface.
- query for nearby POIs (Point Of Interests, including locations and buildings etc.).
- view the closest object or POI of any type.
- check how busy or congested an area is, such as checking how taxis are there in a giving area.
- get the real time data of any moving objects in or around a specific area.

Nonfunctional

As a user (such as drivers, travelers etc), I want to:

- view the information displayed to be accurate.

- make the application that can gracefully handle and process a heavy amount of data.
- have an intuitive and clear UI.

2.2 Task Description and Workload Estimation

- **TASK1:** Expand geographical bounds supported by the product by downloading the expanded location data set from OSM, parsing it, and inserting it into Spark.
  Duration: 5 hours per week
  Team Members: Yang Xu
- **TASK2:** Design and implement a script to randomly generate a consistent, but sufficiently random, set of moving actors. This set should contain the past, present, and future locations of each actor, from the moment they enter the geographical bounds of our product to the moment they leave them.
  Duration: 20 hours per week
  Team Members: Ben Pastene, Zhihao Hu
- **TASK3:** Design and implement a new database schema within Spark that represents the moving points of interest and supports sophisticated queries on its data.
  Duration: 10 hours per week
  Team Members: Yunkai Sun, Chen Gong
- **TASK4:** Add to the UI functionality to search for moving points of interest, and have it update every few seconds, giving the user a real-time display of POIs.
  Duration: 10 hours per week
  Team Members: Mingsheng Xu
- **TASK5:** Implement in the UI the functionality needed to query the datastore for moving points of interest.
  Duration: 5 hours per week
  Team Members: Zhihao Hu, Yunkai Sun
- **TASK6:** Implement in the UI the functionality needed to display the moving points of interest returned by the query.
  Duration: 10 hours per week
  Team Members:Chen Gong
- **TASK7:** Further develop the design of the UI. Change the marker icon of a POI to one

that represents its location type, prevent static markers from being dragged, prevent the on-hover window from disappearing randomly, and additional miscellaneous improvements.

Duration: 5 hours per week

Team Members:Yang Xu

3. Remaining Tasks

3.1 Remaining Functional Requirements

As a user (such as drivers, travelers etc), I want to:

- use the query instance while I'm moving (the query moves follow the user and update results in real time).
- create an account with the system so the application can deliver personalized results. (If time allows.)

As an administrator, I want to:

- have the ability to update the map data in the database when OpenStreetMap's repository is updated.

As a developer, I want to:

- Test the map interface and make sure it have a good performance
- Test the database structure and make sure it have a good performance
- Test the database queries and make sure it have a good performance
- Test the ingestor and make sure it have a good performance

3.2 Remaining Non-functional Requirements

Performance Requirements

- As a user I want the query information to be real time.
- As a user I want the moving objects' location to be updated without too much lag.
- As a user I want the application to rank the results I find.

- As a user I want the application to return as many results that satisfy my requirements.
- As a user I want when the application crashes will have no impact on the other processes currently running on the machine.
- As a user I don't want my phone or computer goes slow when i am using this application.
- As a user I want to see a pop up from the application if my internet connection is lost.

Platform Requirements

- As a user I want to access the web application from any major type of browsers.
- As a user I want to access the web application from any type of devices such as phones, tablets and computers, in which the screen size may vary.
- As a user I want to operate this application always in the same way, even when I run this application on different platforms.

Process Requirements

- As a developer, we will use github for source control, and rely on it to store finalized versions of all iterations of our design documents, in addition to source code.
- As a developer, Google docs and spreadsheets used by team members for collaboration will have final revisions duplicated to the github in PDF or other common format for recordkeeping purposes.

Other Requirements

- As a user, I want to see a user guide or tutorial when I use this application for the first time.(if time allowed).
- As an administrator, I want to validate and sanitize any user-inputted information for security concerns.
- As a developer, I want the system to support 100 concurrent users querying and using the application.