Research Project - Midpoint Report

Project Objective

After our midpoint meeting, our project objective has been re-evaluated. We are going to use the Google API to have a visual representation of an ideal trip and the deviations from the bread crumb data that we received from Professor Bruce. We will be calculating the Min, Max, Average, and Median deviations. The project scope will have 2-3 trips of 2 different routes.

The project objective has deviated heavily from the initial goal of building an open source application for CTRAN due to time constraints. These changes are further highlighted in Project Approach

Project Approach

Our project approach is to code a python application that would connect to Google's API to visualize the bus trips on a map. The Google APIs we will use are Roads API to snap gps points to roads and Maps Javascript API or Leaflet for trip visualization.

Team Structure

Our team is still but one of three teams working with Bruce. The structure of the 3 teams has also remained the same. We will be working on different analysis projects and sharing any algorithms or implementations that could be used by the other teams.

We have received project implementation of animating routes using bread crumb data from Sam another student not in this class working on the CTRAN data. We might end up deviating from the main group due to project changes, time constraints and our personal team progress.

Project Progress in contrast to Milestones

Our team is behind in managing the data with an algorithm to snap the trip to the roads. We are now shifting from the initial goal of an uncostly program application for CTRAN and now analyzing the data using various Google APIs. This is again due to time constraints and our learning curve in GTFS data querying.

Here is a list of things we have done, things that have changed, and things we plan to do

Initial Goals
- ✓ Group) Understand and devise a common schema for the bread crumb data
- ✓ (Group) Choose a common technology stack for the three teams so they all use the same tech
- ● (End Goal)Create Mapping Algorithms for deviations (Was initially Group Goal and is now based off our project data analysis)

Cancelled Goals (Cut out because of time constraints)
- ● ~~(Group) Read the data from the input files and store using the agreed technology stack (such as python + pandas + Map Tools) IN PROGRESS~~
- ● ~~(Stretch Goal) Host the Snap2Route tool as a web application such that C-Tran analysts can use it.~~
- ● ~~(Stretch Goal Automatically adjust all readings for a large set of input data. Output data to CSV format file(s) that mimic the input data.~~
- ● ~~(Stretch Goal) Process and analyze a new set of C-Tran bread crumb data~~

New Goals (Some were pulled from initial goals and redesigned)
- ● Create visual estimations for 2 to 3 trips per route with the ideal trip snapped on an actual map along with the actual trip data.
- ● Two different routes visualized
- ● Min, Max, Average of Deviations from the trip data
- ● Google API

Thoughts on Project Progress

We had considered that we would be in the middle of having a somewhat working application by now and having a clear idea of when we are finishing. We only have 3 weeks left for finishing project implementation as we are nearing the end of week 5. We are not in a state that we want to be in and some data analysis of the CTRAN data

That is why after talking with Professor Kristin we have these primary main goals repeated here for clarity

- ● Create visual estimations for 2 to 3 trips per route with the ideal trip snapped on an actual map along with the actual trip data.
- ● Two different routes visualized
- ● Min, Max, Average of Deviations from the trip data
- ● Google API

Scheduled Midpoint Meeting 7/23/20 1:40 PM