

Weekly report: May 12-November 22, 2015

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1 Goals for the week

- The city of Cambridge has asked us to perform additional analysis on their data so I have worked on setting the database and cleaning their data for analysis. This should be finished within the next few weeks.

Webike project:

- Become familiar with the work done during the winter term on the webike project.
- Change the current process of analysis (first perform trip detection and then cleaning of data) by inverting it, and check the accuracy of the results obtained.

2 Activities

Additional work on Cambridge data (temporary work):

- Set up database (regular and GIS database)
- Clean data to be uploaded to database
- Clean errors due to data inconsistencies (in process).

Webike work:

- Go through the reports written by URA's who worked during the winter term.
- Revision of the modified code.
- Modification of the process used to analyze the webike data (trajectory analysis). This has been done but I have not gotten accurate results yet, so I am modifying the parameters of the trip detection algorithm in order to increase the accuracy.

3 What I learnt

I have gone through the changes done by the URA's. I became familiar with their work (especially Mikhail's) by reading his report and looking at their work. I think it would be important to ask for a final report to the other URA who modified the web page since I see several changes that have not been committed to the repository; this also means the changes have been done directly to the production server which is not recommended. Additionally, some changes in the web page have been done so I would just want to make sure they were properly implemented, and documented.

Also, I changed the process in which the trajectory analysis is done by inverting its 2 steps. This is done locally but I can only run it from on my computer so I am implementing a way to create a hidden portal (another path in the webike web page) where we can dynamically test my changes and see how accurate the results are (this would be useful for when we are considering making changes to the production server and we want to test them before they go live). As mentioned before, the results so far haven't been accurate but I am modifying the parameters of the trip detection to increase the accuracy. I have noticed that after cleaning the data first, the trip detection algorithm reduces accuracy since most of the data is not taken in count anymore, which leads the algorithm to think that the current trip has finished earlier or a single trip could be divided into 2 or more trips. This could be solved by increasing the value of time and distance between subsequent points but this also joins trip together in some occasions. Currently, I am working with prof. Golab's data but once I implement the additional URL or a local more user friendly portal, anybody (in our research team) should be able to see their data and give feedback about the results.

Also, as suggested by prof. Golab, I have been looking into the literature of trajectory detection to check if there is additional ideas we can implement to improve our trip detection algorithm. So far, I have gone through the papers I already reviewed before leaving for my internship in December (a summary can be found in the last report submitted in December). Considering the data available, we have an one additional feature that I have not found in other papers which is the use of the magnetic field data; besides that, the papers I reviewed do not present any additional methods or data that can be used to improve our analysis.

4 Proposed goals for next week

- Modify the trip detection algorithm parameters in order to reach higher accuracy.
- Look for more literature in the trajectory detection field.
- I will partly be working on analyzing the data from Cambridge.