

PROJECT REPORT

URBAN TRAJECTORY VISUALIZATION

Team 20

Rishi Koushal Naganathan

Sathyaram Venkatesan

Abinandaraj Rajendran

INTRODUCTION:

The project involves a visual analytical system for taxi trajectory data that supports data exploration and analytical reasoning with interactive visual interfaces. The data includes the taxi route information from the city of New York over a certain period of time. It involves latitude, longitude, trip information (distance, speed etc.) and the tripid. Using these factors, we were provided with a prototype to begin with. It involved the area selection in the map to display the trajectories. Our goal was to create three level-1 diagrams (Scatter matrix, word cloud and chord diagram).

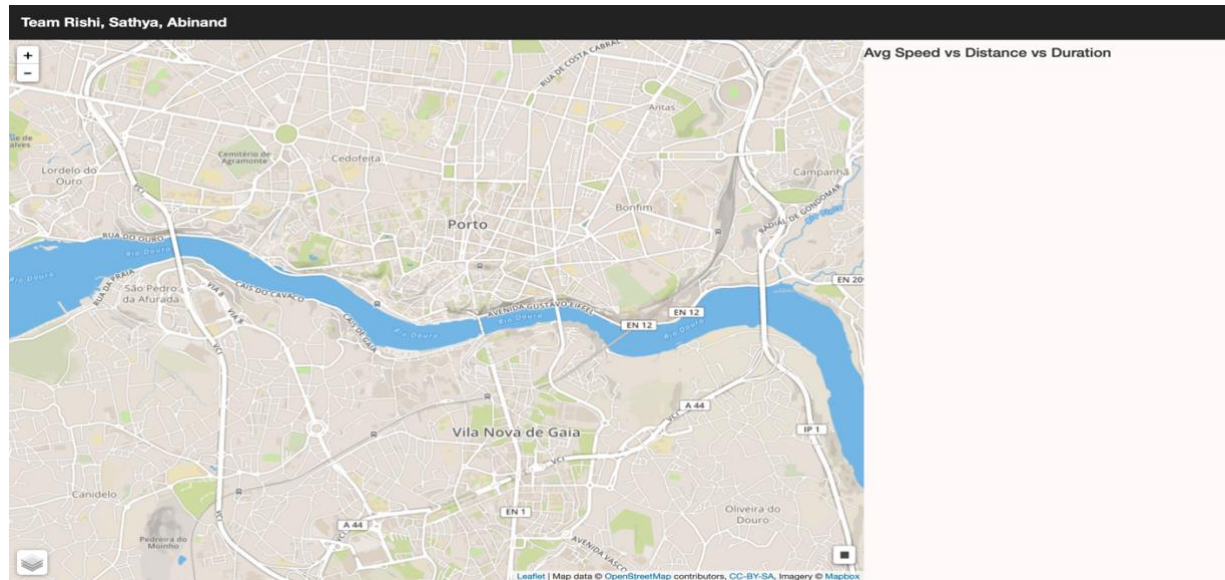
PREREQUISITES AND INSTALLATION:

- Download 200 OK chrome extension that helps our folder to act as a local server. Then point out the downloaded folder to the 200 OK and click on the link. Once you deploy, you can drag and drop by selecting the small square in the right bottom corner. The visualizations appear on the right.
- Selecting a random area helps the system to understand the number of taxis and the trips in that selected portion. Now the region will help to feed the diagrams by their requirements that ultimately ends with interactive diagrams.
- Whenever a user selects a region, it develops the trajectory that involves specific area. Here, the red lines show the path of the trip and the small yellow dot describes the point of origin or destination. The trajectory of every taxi in the selected region looks appears as red line. Every red line in the diagram represents a trip across the streets from origin to destination. Thus, the yellow small dot helps to point out the ends of the trip segment.

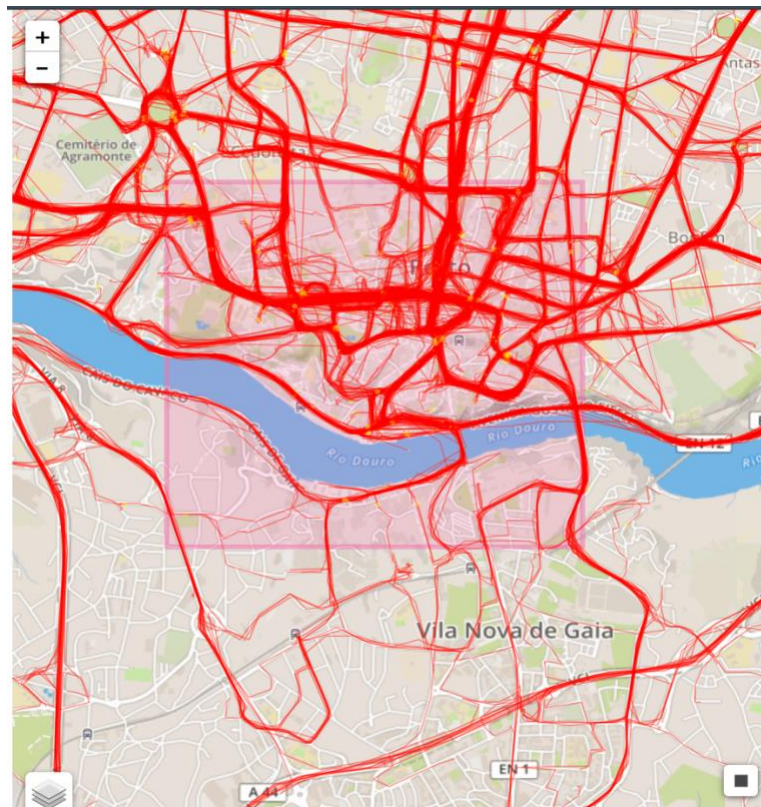
WORKFLOW:

The following are the steps to look into project. Whenever a user enters.

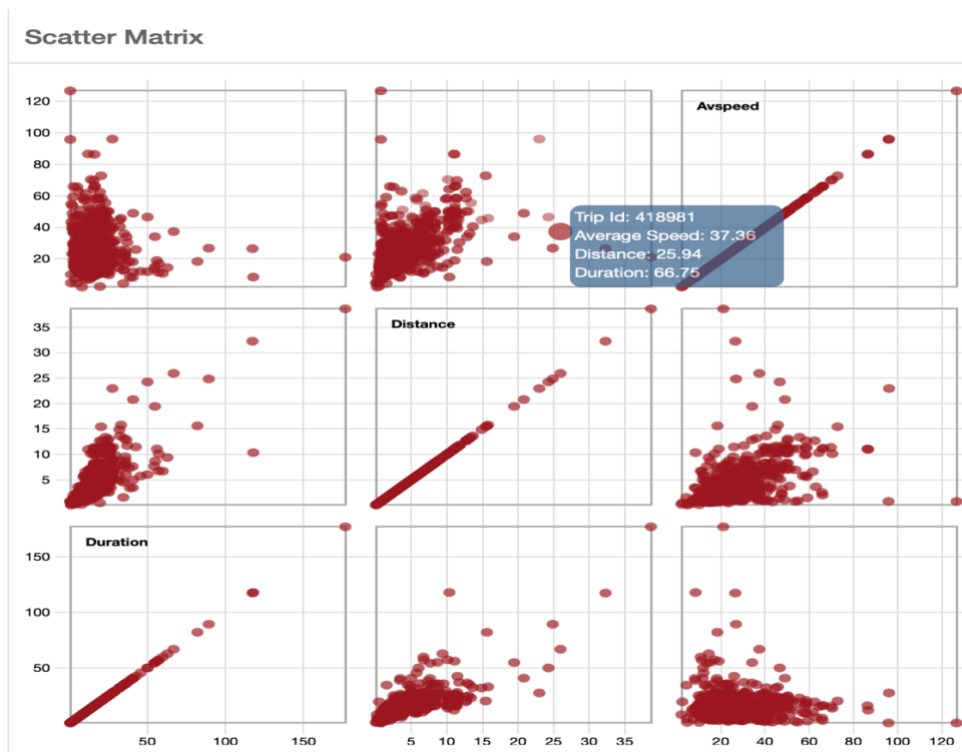
Step 1: Once the local server is switched on, the UI look like the following



Step 2: The user needs to select the area on the map, it displays the list pf trajectories like the following.



Step 3: Once the selection, the system automatically generates 3 diagrams. Scatterplot, word cloud and chord diagram. The user can play with the data points to see the interaction.



User can click to see the specific taxi trajectory. It looks like:

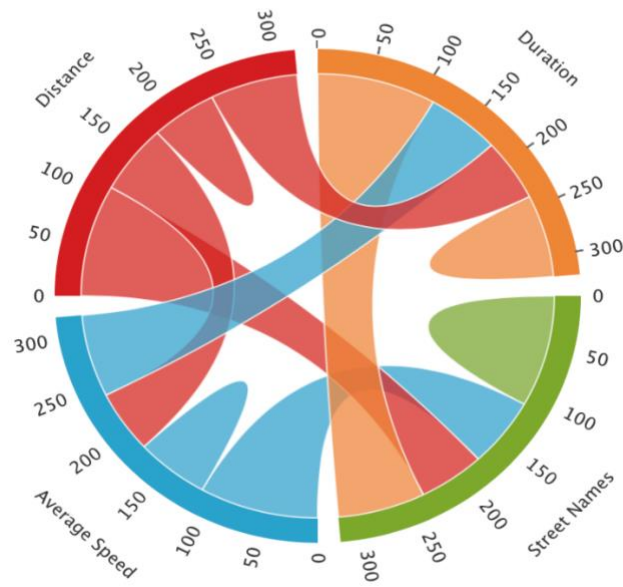


The black ring indicates the origin point of the trip. Also, when the trip was selected, the word cloud also changes correspondingly.

WORD CLOUD:

Word cloud is generally a visual representation of available words, here in our case, we took the word as the street names among the user selection. For a given json file, every specific taxi id has the list of street names that it has travelled. So, few taxi trips have single street, and few has around 100. So, the word cloud involves

Chord Diagram



REFERENCES:

Following are the reference for the project. The code snippets, reference papers and video/ blog tutorials from various sources like blocks.org, charts for d3.js, GitHub and stack overflow are listed below:

- Blocks.org for chord diagram [Link 1](#)
- Word cloud using d3.js [Link 2](#)
- Scatter matrix code snippet [Link 3](#)
- Chord Diagram using zender [Link 4](#)
- D3.js for responsive word cloud [Link 5](#)
- Visual index for d3.js charts [Link 6](#)
- Interactive data visualization using charts [Link 7](#)