Explore New York

1. Introduction

1.1 Background

There are 306 neighbourhoods in New York alone. In these neighbourhoods there are lots of hospitals, cafes, restaurants, parks, zoos, etc. In addition to the above data every New York witnesses thousands of visitors. Some of them are tourists, some are students, and some are job-seekers.

1.2 Problem

Whenever someone visits a new place and have no one familiar in that city, they might feel uncomfortable since they don't know what venues are around them. Even if they face an emergency situation they might not have any idea where to go. Therefore we need to create a system where the user could easily find where could find their preferred venue.

1.3 Interest

This project will be most useful for the international students who come to New York for studies, they might be too busy explore the neighbourhoods manually. Therefore all they have to is enter the number associated with a particular type of venue and enter the neighbourhood they want the venues of.

2. The Data

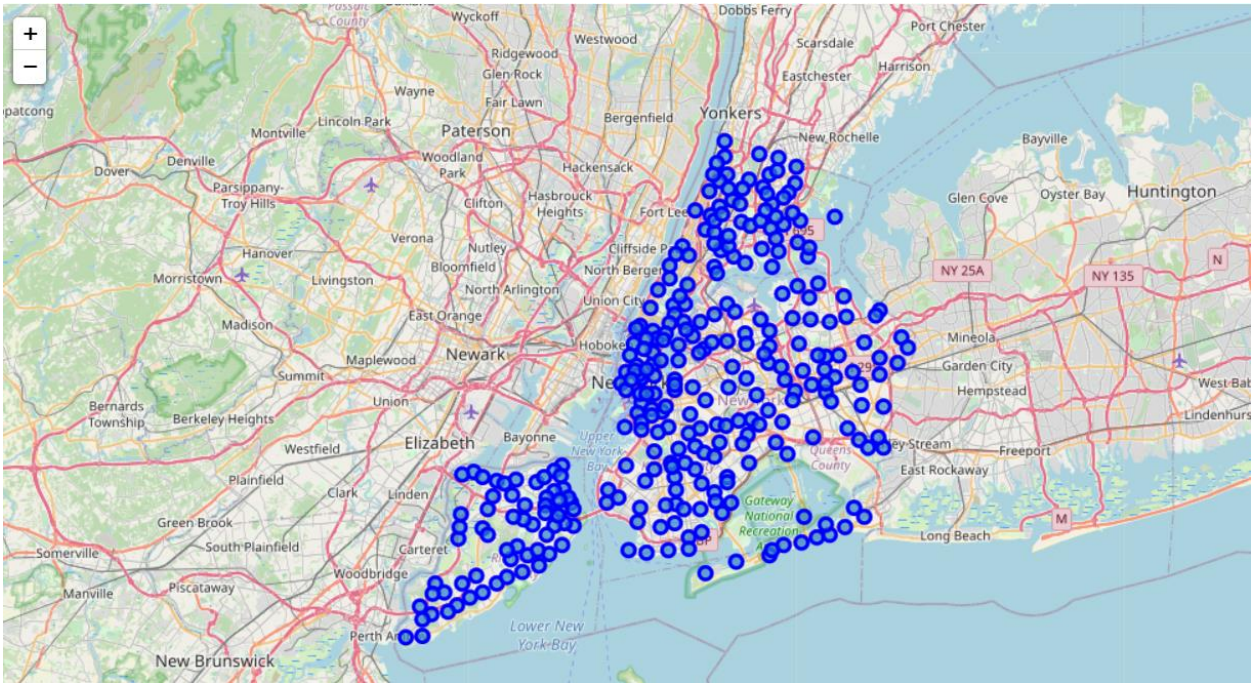
The data that was required for the project was of the entire New York City which included latitudes and longitudes of every neighbourhood. The json file could be found here. The json file that gets downloaded needs to be converted into a DataFrame.

	Borough	Neighborhood	Latitude	Longitude
0	Bronx	Wakefield	40.894705	-73.847201
1	Bronx	Co-op City	40.874294	-73.829939
2	Bronx	Eastchester	40.887556	-73.827806
3	Bronx	Fieldston	40.895437	-73.905643
4	Bronx	Riverdale	40.890834	-73.912585

After we get the above DataFrame all we need is to define the variables for our foursquare API.

3. Exploratory Data Analysis

After we define the dataframe we will use the folium map to display the map of New York with neighbourhoods as markers on it.



After this we will define the foursquare API variables such as Client-ID , Client-Secret, Limit, Radius, etc. in order to create the URL.

After this we will print the menu for the user so that we could receive the input from them.

```
            INFORMATION MENU

1. Enter 1 for Hospitals
2. Enter 2 for Restaurants
3. Enter 3 for Cafes
4. Enter 4 for Deasert Shops
5. Enter 5 for Bars
6. Enter 6 for Theatres
7. Enter 7 for Gym
8. Enter 8 for Water Parks
9. Enter 9 for Parks
10.Enter 10 for Zoo
```

After this we will store the input provided by the user and upon receiving the integer we will prompt the user again to enter the neighbourhood.

After storing the input string into a variable will proceed further to create the url for foursquare API

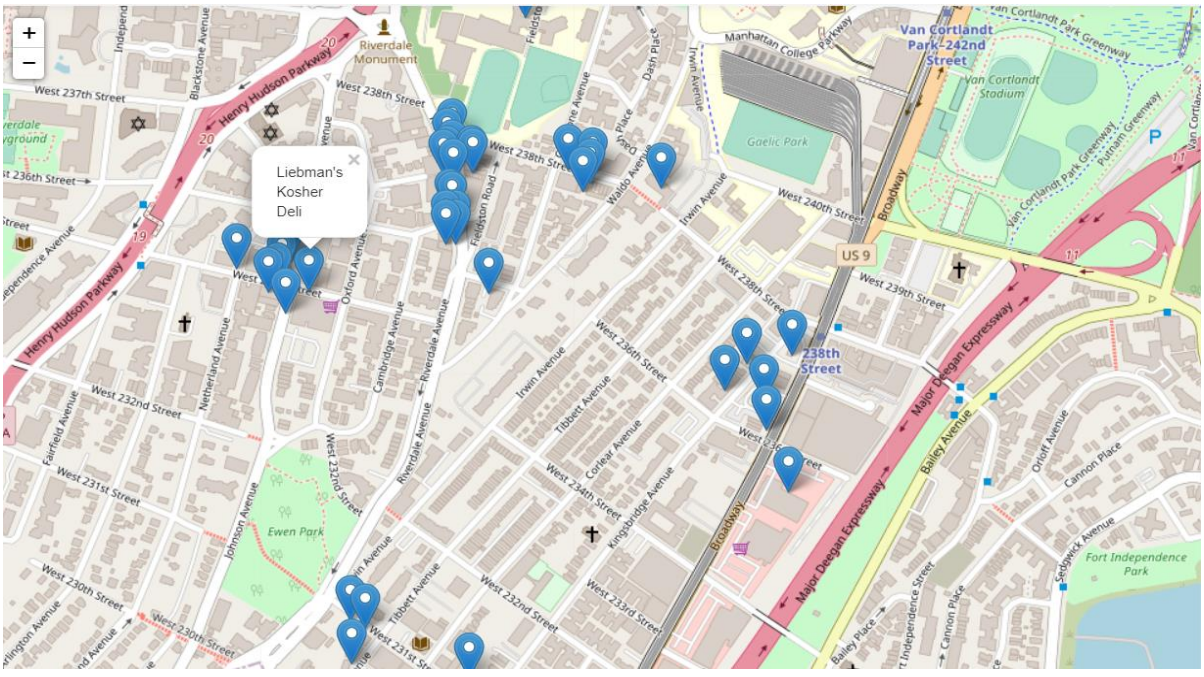
```
url
```

```
'https://api.foursquare.com/v2/venues/search?ll=40.890834493891305,-73.9125854610857&categoryId=4d4b7105d754a06374d81259&client_id=WY04EP2PLIS1BOQISJXQLPVHLET2COE2SWVZ05N4WMNJDQIU&client_secret=DSS32L3SW0ELM4USMWDOFUTJTOWRTZTNXUORVAIKXLNDDTHW&radius=1000&limit=100&v=20180628'
```

After the URL that has been created we send a GET request to the foursquare API to retrieve information about the venues. The data that is returned is in the JSON format and needs to be converted into Dataframe. The resulting Dataframe should contain Name, Latitudes, Longitudes of the venue.

	Name	Latitude	Longitude
0	Menchie's	40.886388	-73.910025
1	Metate	40.886061	-73.910030
2	Blue Bay Restaurant	40.886358	-73.909896
3	Wendy's	40.884697	-73.901217
4	Neem	40.886483	-73.909830

Then I plotted these points on the map of the neighbourhood using folium.popup() method.



Therefore it becomes easy to explore and reach desired destination.

4. Conclusion

I used the foursquare API, which was the main function of this project. This API allowed me to retrieve data of the venues with their corresponding co-ordinates. Though this project is not perfect and requires further corrections such as with name the popup marker could also display the address of the venue. I will visit this project again in a short while after learning after learning more about the folium library and the foursquare API. The project right now aid you if you want to visit in any of below mentioned types of venues.

- Hospitals
- Cafes
- Restaurants
- Desert Shops
- Gym
- Theatres
- Parks
- Water Parks
- Zoo

5. Future Directions

The immediate addition to this project could be the inclusion of the data of the entire. However, accurate the project is it is still restricted to only one city. Further improvements could be:-

- Filter on the venues such as types of restaurants, For example:-Indian restaurants, Italian restaurants, etc.
- The project could be connected with GPS API so that the location of the user is accurately defined.
- The variety of venues could be increased such as stadiums, ski spots, boating spots, etc.