Location recommender system for opening a new restaurant in Brooklyn

Capstone Project - The Battle of Neighborhoods

Project Presentation
by Samuel I

Problem Statement and Idea

- A chef wants to open his own restaurant in Brooklyn, New York City. He wants to know the best area to open a restaurant by analyzing different neighborhoods.

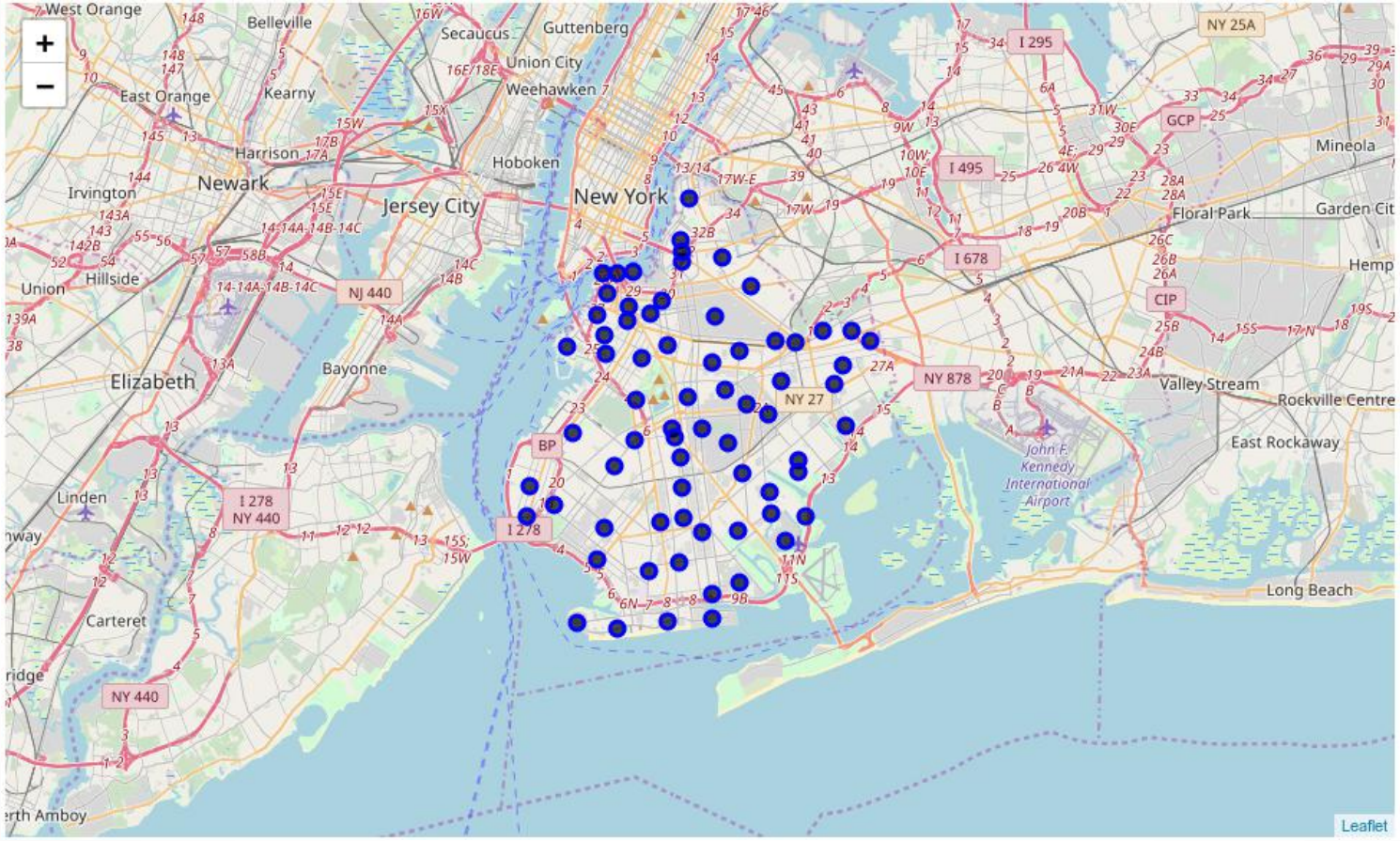
- Therefore, solution for this problem is to create a machine learning recommender system which will help the chef to make better and informed decision on best areas to open the restaurant

Data Used

- Four-square API : To get location details like Venue Name, Catagory, customer likes, etc.

- New York City GeoJson data

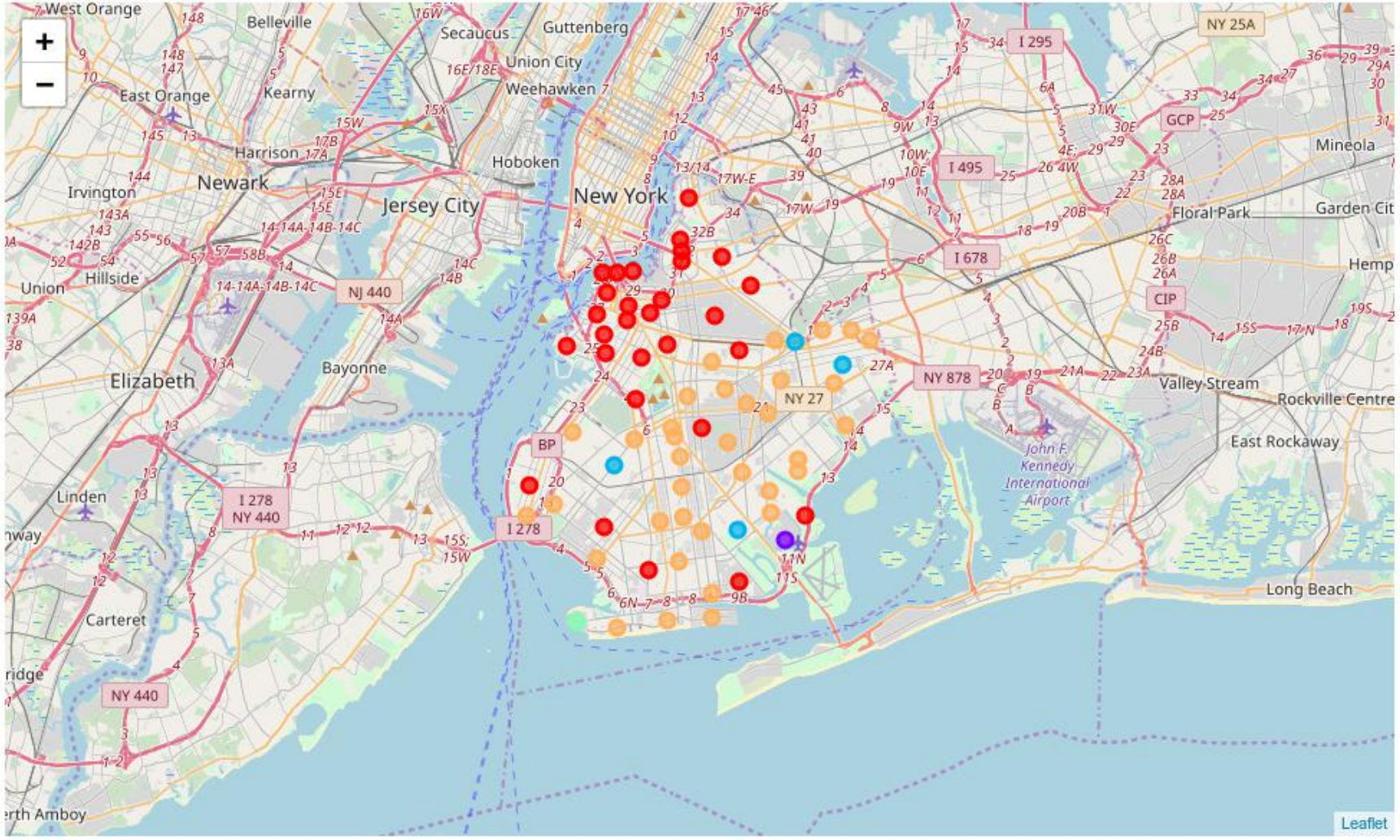
Analysis



Location of all the neighborhoods only in Brooklyn

Location of all the venues optained by Foursquare API excluding all the restaurants in the neighborhood

With the help of K-means clustering technique we can cluster the data into 5 groups with most common restaurants and other venues



Types of restaurant located in Brooklyn

```
['American Restaurant',
 'Arepa Restaurant',
 'Argentinian Restaurant',
 'Asian Restaurant',
 'Café',
 'Cajun / Creole Restaurant',
 'Cantonese Restaurant',
 'Caribbean Restaurant',
 'Chinese Restaurant',
 'Coffee Shop',
 'Cuban Restaurant',
 'Dim Sum Restaurant',
 'Dumpling Restaurant',
 'Eastern European Restaurant',
 'Ethiopian Restaurant',
 'Falafel Restaurant',
 'Fast Food Restaurant',
 'Filipino Restaurant',
 'Food Court',
 'French Restaurant',
 'German Restaurant',
 'Greek Restaurant',
 'Halal Restaurant',
 'Hawaiian Restaurant',
 'Hotpot Restaurant',
 'Indian Restaurant',
 'Israeli Restaurant',
 'Italian Restaurant',
 'Japanese Restaurant',
 'Jewish Restaurant',
 'Kebab Restaurant',
 'Korean Restaurant',
 'Kosher Restaurant',
 'Latin American Restaurant',
 'Lebanese Restaurant',
 'Mediterranean Restaurant',
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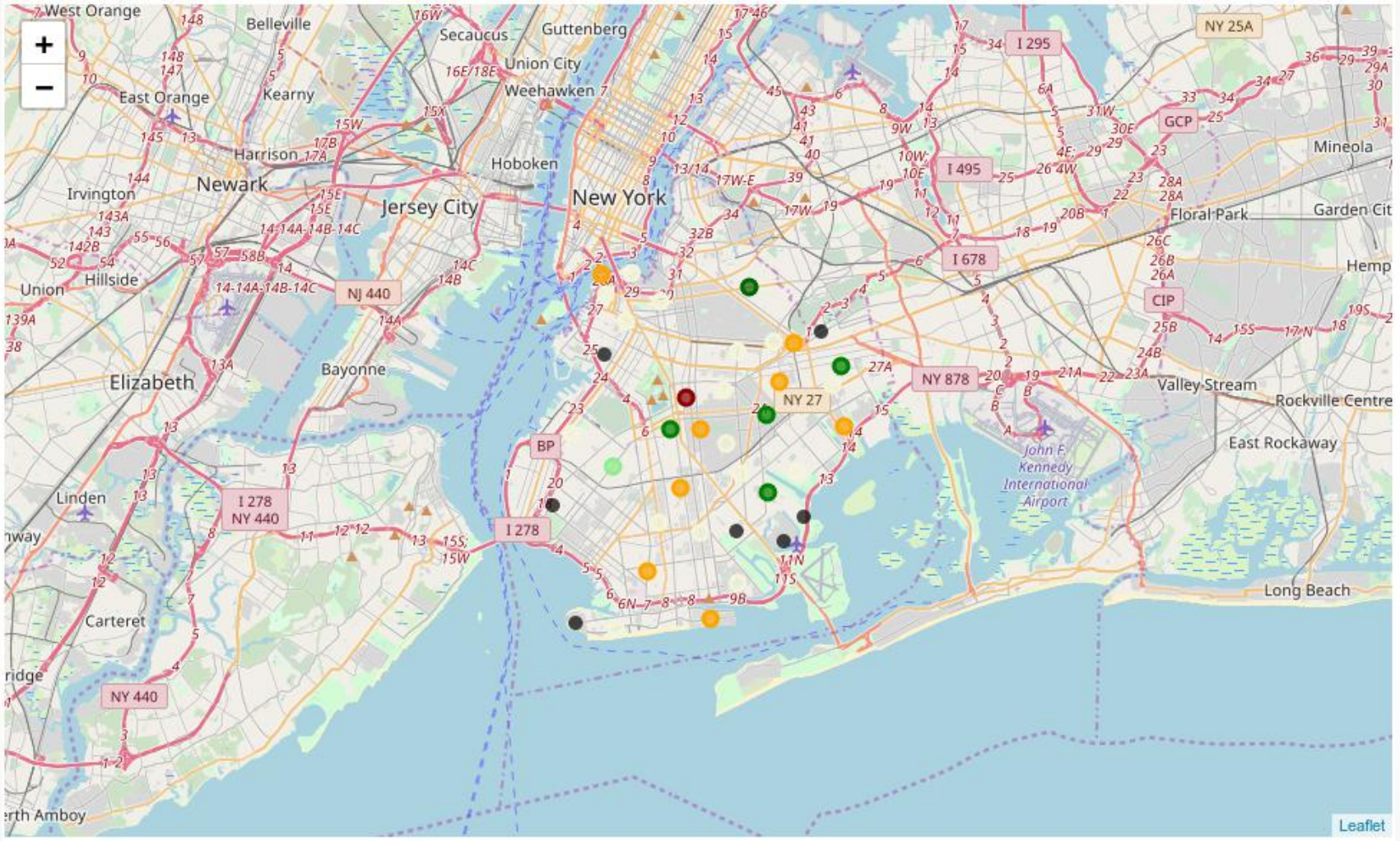
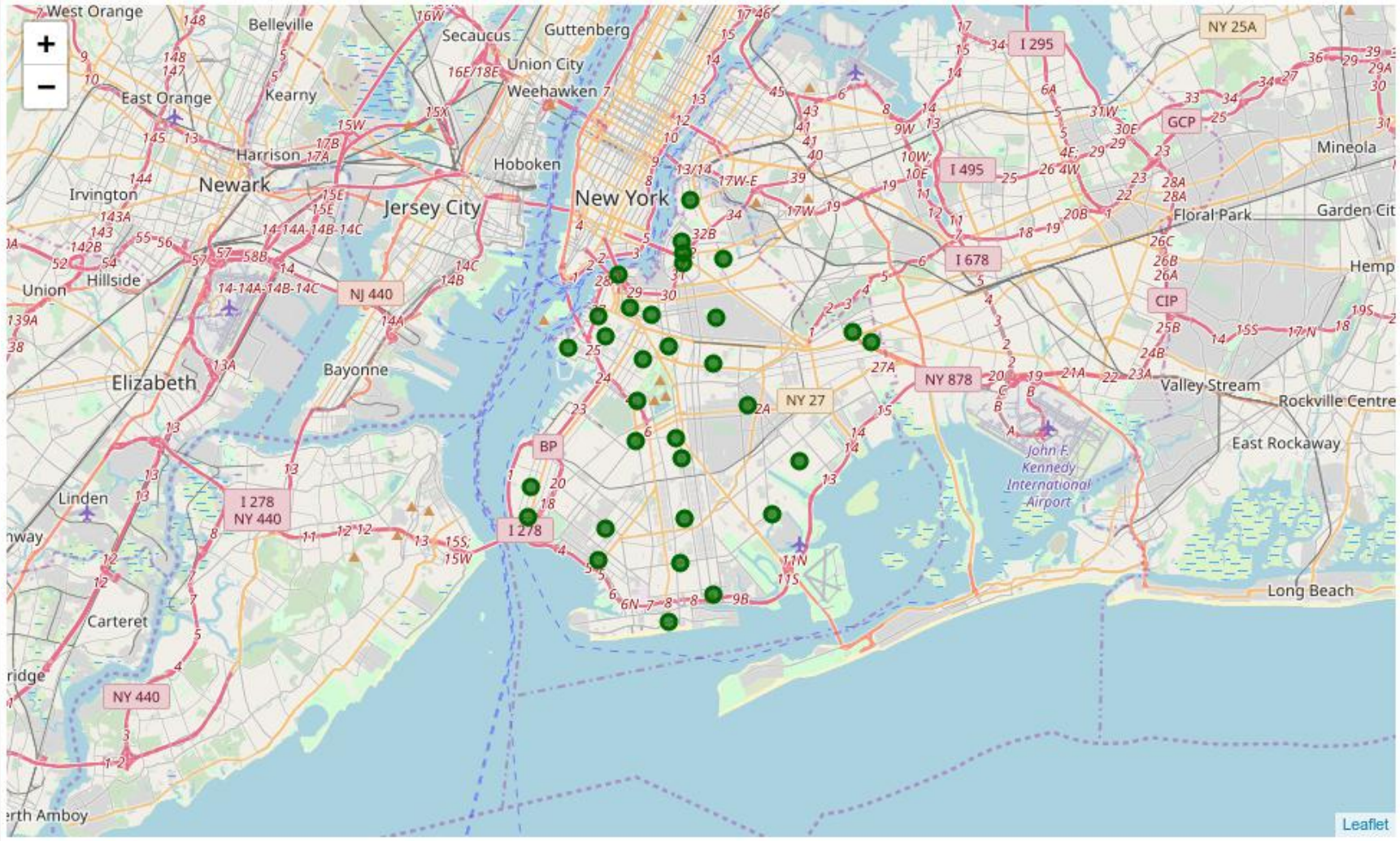
```
'Mexican Restaurant',
'Middle Eastern Restaurant',
'New American Restaurant',
'Pakistani Restaurant',
'Peruvian Restaurant',
'Pizza Place',
'Polish Restaurant',
'Ramen Restaurant',
'Restaurant',
'Russian Restaurant',
'Seafood Restaurant',
'Shabu-Shabu Restaurant',
'Shanghai Restaurant',
'South American Restaurant',
'Southern / Soul Food Restaurant',
'Spanish Restaurant',
'Sushi Restaurant',
'Taiwanese Restaurant',
'Tapas Restaurant',
'Thai Restaurant',
'Tibetan Restaurant',
'Turkish Restaurant',
'Vegetarian / Vegan Restaurant',
'Vietnamese Restaurant']
```

Assume if we want to open a Indian Restaurant



Location where Indian Restaurant is most commonly located

These are the place where Indian restaurants are NOT commonly located.



Result : Above mentioned locations are some of the area to start your restaurant.

Discussion

- The clustering provides an insight of the similarities in different neighborhoods in Brooklyn by analyzing different restaurants and other venues.

- This project finds the best location only by comparing the restaurant type which are already present in Brooklyn. But if some people wants to open a totally different restaurant type which is not already present in Brooklyn then as a business tactic any neighborhood would be a best choice to open the restaurant

Conclusion

With this analysis we can conclude that using the location data from Foresquare along with Machine Learning algorithms like K-means clustering we can design a system that will help to guide small business owners to make informative decision on which is the best neighborhood to a new restaurant.