The Battle of Neighbourhoods, Exploring San Francisco's Restaurant Market

Introduction

San Francisco is home to the famous 'Silicon Valley'. Here is where one can find a bunch of technology companies with HQ's and offices in the Bay area.
Noe lets says someone wants to start a restaurant business in the Bay Area of SF, near the tech offices, how do we address that.

Problem at Hand

- Analyse the restaurant chains in the Bay Area near the tech companies and to look for the areas where a successful restaurant business can be started.
- The other objective of the project is to pay special attention to the restaurant cuisine. Some neighbourhoods might already have a large number of same cuisines restaurants. Starting a restaurant in such an area won't be much profitable.

So, to explain the project in an abstract, it aims at analysing the restaurants and in particular the cuisine of the restaurant near the Bay Area and to find out the best possible neighbourhood for opening a restaurant.

Who is the target audience?

Anyone looking to set up a new restaurant in the San Francisco's Bay area.
The project is beneficial to anyone who is looking to start a new restaurant business
in the Bay Area. The audience would compose of the big food chain's such as the Cheesecake Factory, McDonalds and more. Restaurants that are currently operating in the area could use this to see whether they need to shift to a new cuisine.

Data Description

The data requirements include:
A List of all the tech companies in the Bay Area
The coordinates of the offices in the Bay Area
The list of all the restaurants near the offices using Foursquare API

How the data will be used to solve the problem?

We clean the data to get a list of companies in the area.
We the use the list of offices to look for space/venues near the offices within a radius of 1000 in relation to the Foursquare API. Then filter the venue/space to obtain a list of restaurants in the region.
With the use of KMeans clustering and data visualisation using Folium, we can narrow down the area's on where to start the next restaurant business. The evaluation will describe the best possible regions to open which particular cuisine restaurants.

Data acquisition source
The Bay Area companies list is an open source list made by Mr. Connor Leech (https://github.com/connor11528) and is available on Github.
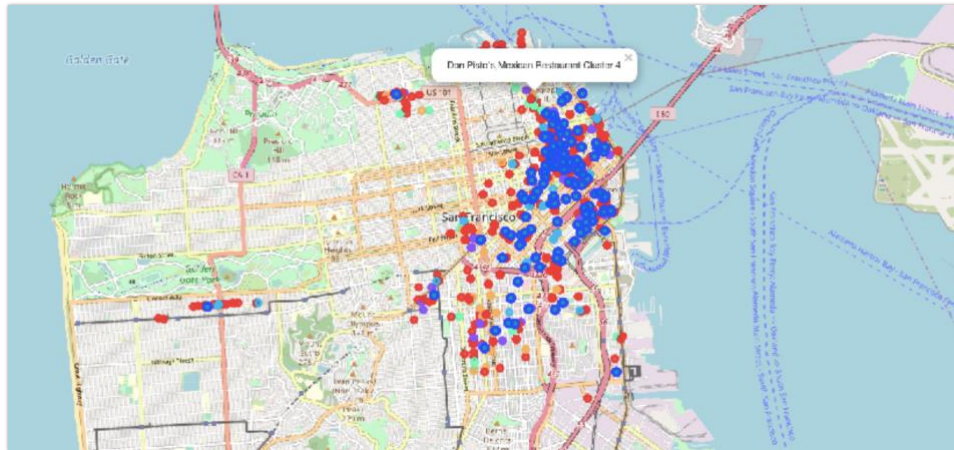
https://github.com/namanmanchanda09/tech-companies-bay-area/blob/master/Bay-Area-Companies-List.csv .

- The data consisted of 750+ rows. The first 200 rows were extracted from the datasource.
- Feature Selection and cleaning was carried out on the data.
- Foursquare API was used to find the restaurants near the offices.
- OneHotEncoding was used to create dummy variables for the venue category as it is a categorical variable.
- The restaurants were classified using KMeans ML algorithm.

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• The plot of all the classified Restaurants and the Offices was made on the map of Bay Area.

Results;

Observations and Discussions

- ❖ The Mexican and New American cuisine restaurants are very less near the Cadre Talent office.
- ❖ In the East Bay region, there is neither an Italian nor a new American restaurant.
- ❖ In the San Leandro region, there is no New American restaurant, so opening one might be a good idea.
- ❖ Many other observations can be made before starting a restaurant business from the analysis performed

Conclusion

After analysis we can confirm that the restaurants have been clustered accordingly to office & cuisine and can help anyone looking forward to starting a restaurant business in Bay Area.