Capstone Project

Recommending the best location to open a restaurant

Introduction

- India have many popular tourist destinations . Tourism sector produces good revenue for Indian Government in a fiscal year. These places not only attracts tourists but also small and large business owners .These place provides them with lucrative opportunity to extend their business .There are many restaurants and hotels nearby famous tourist spots.

- We will recommend our client the best location to open a restaurant in one of two famous tourist destination i.e. either Taj Mahal in Agra or India Gate in New Delhi. To achieve a good start for any new business, it is important to accurately define market requirements. Business is most likely to succeed if there is less competition and more demand of product by consumer. Our target here is to calculate number of restaurants in 1km radius of both places and compare it to find best location.

Background on places to compare

Taj Mahal

- An immense mausoleum of white marble, built in Agra between 1631 and 1648 by order of the Mughal emperor Shah Jahan in memory of his favourite wife, the Taj Mahal is the jewel of Muslim art in India and one of the universally admired masterpieces of the world's heritage. The Taj Mahal is considered to be the greatest architectural achievement in the whole range of Indo-Islamic architecture.

India Gate

- India Gate, official name Delhi Memorial, originally called All-India War Memorial, monumental sandstone arch in New Delhi, dedicated to the troops of British India who died in wars fought between 1914 and 1919. India Gate, which is located at the eastern end of the Rajpath (formerly called the Kingsway), is about 138 feet (42 metres) in height.

Objective

- Calculate the number of restaurants in 1km radius of Taj Mahal and India Gate.

- Visualise the data.

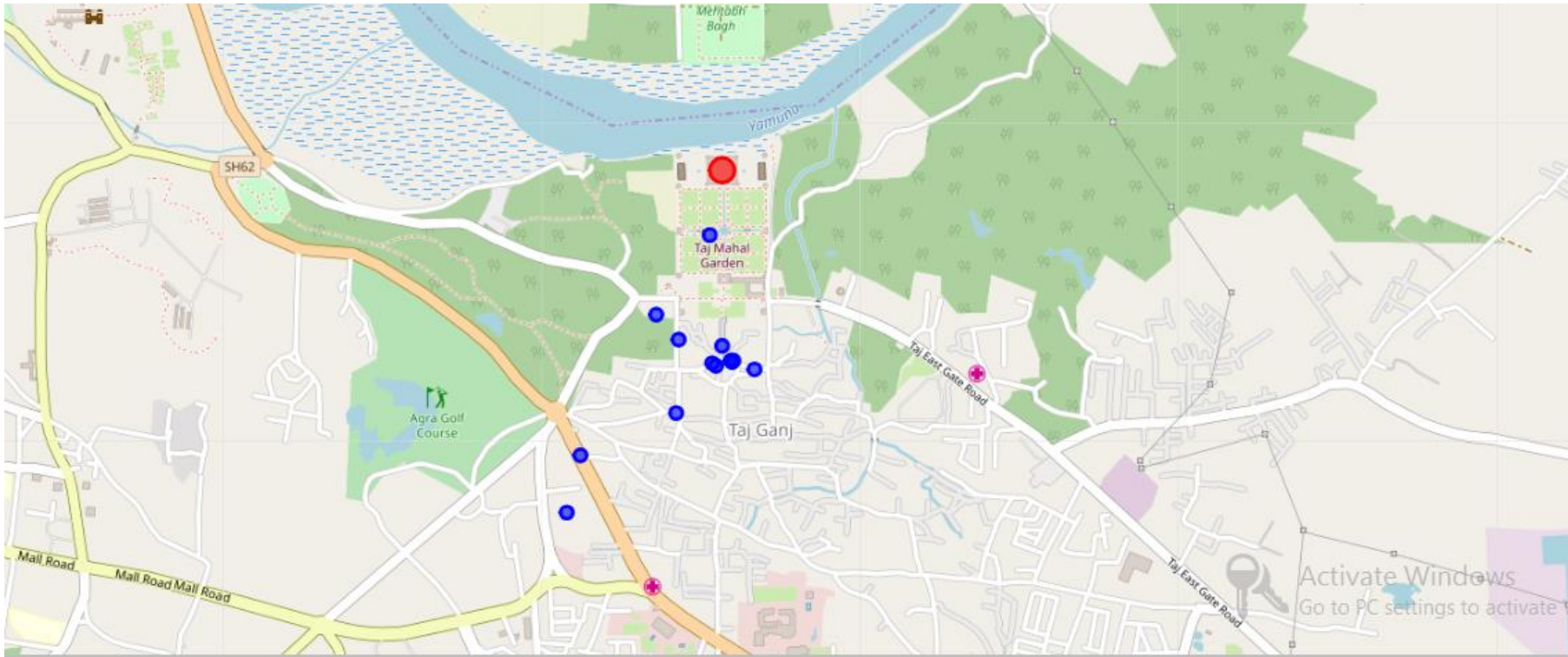- Compare data to recommend the best location to open a restaurant.

Data

- We will use Geocoders from Geopy to find the latitude and longitude coordinates of Taj Mahal and India Gate. We will use Foursquare API to solve the business problem.So we will call Foursquare API using CLIENT_ID and CLIENT_SECRET. We will use latitude and longitude coordinates of both places using Foursquare location data to find all the restaurants and their location in 1 km radius of these places. The response will be as a json file for each location and we will get the expected dataframes from the json file using json_normalize.

- We will filter the dataframe using various python libraries and visualise data.The json data is converted to a pandas dataframe.The data is then cleaned.

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- In this project we will be calculate this data to find the best location to start a restaurant. We use folium to viualise data.Finally Pandas Dataframe is created to compare data of both location. Example of Foursquare API we use here call-

- 'https://api.foursquare.com/v2/venues/search?client_id={}&client_secret={}&ll={},{}&v={}&query={}&radius={}&limit={}'
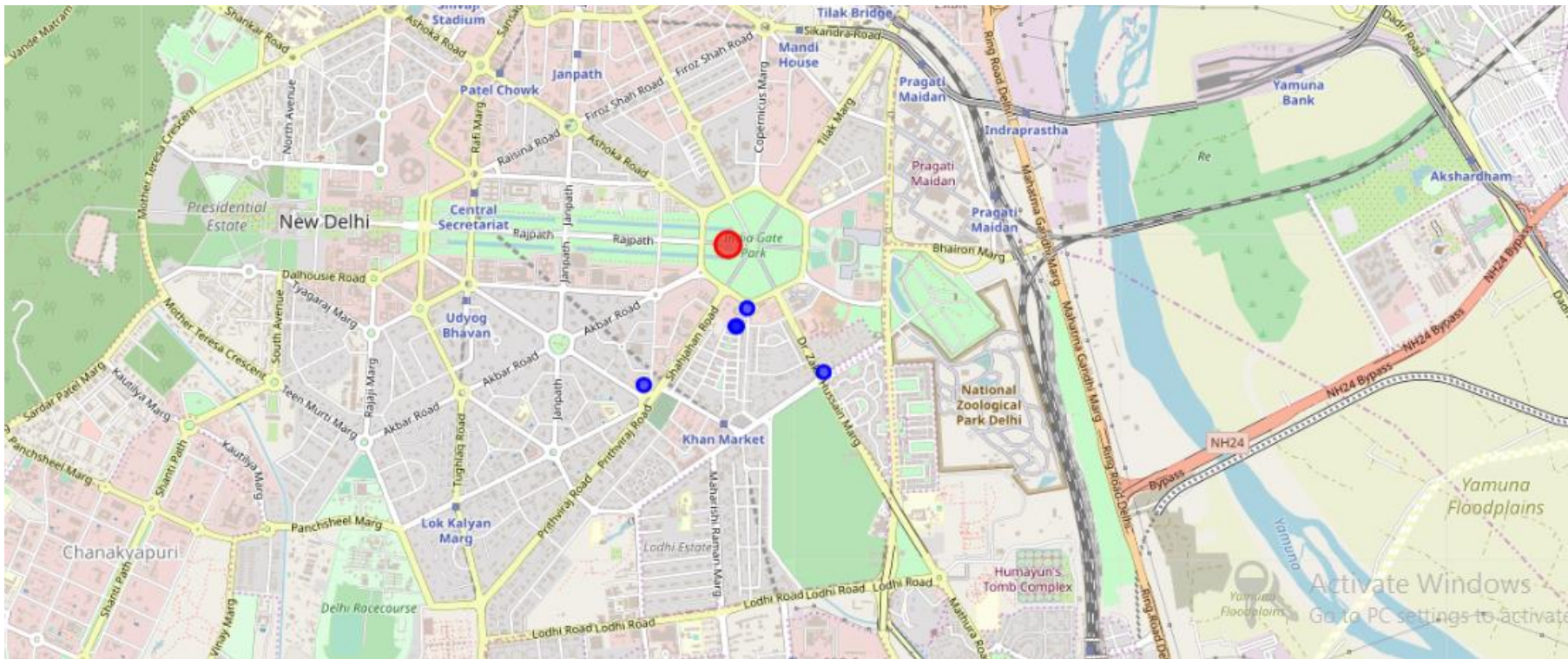
Methodology

- We imported several python libraries like python, folium,numpy etc.

- Geopy.geocoders was used to find Latitude and longitude coordinates of Taj Mahal.

- We call Foresquare API using Foursquare Credentials and Version, then we define search_query as Restaurants and use it to define corresponding url.

- Then we use Get Request to get result as json file which we normalise to get data in form of Pandas Dataframe.We then use Pandas to clean and analyse dataframe and drop the rows which are not restaurant.

- Now we have data frame containing all the restaurants near Taj Mahal in 1 km radius.

- We then calculate the number of restaurants near Taj Mahal in 1 km radius.

- Folium is then used to visualize data in which all restaurants are marked with blue color and Taj Mahal is marked in red color.

- Repeat all the steps for India Gate. Now we have data for both India Gate and Taj Mahal.

- Dataframe is created for final output showing number of Restaurants in 1km radius of both places.

Taj Mahal and various restaurants in its 1km radius

India Gate and various restaurants in its 1km radius

Result

- The number of Restaurants in 1km radius of Taj Mahal is 13.
- The number of Restaurants in 1km radius of India Gate is 5.

Hence, we can see that Taj Mahal has 2.6 times more Restaurants in its 1km radius than India Gate.

Discussion

We can see that Taj Mahal has significantly more Restaurants in its 1km radius than India Gate. Our goal is to recommend our client the best location to open a restaurant in one of two locations. Factors we have considered to determine best location to open restaurant are size of the competition and demand in the market. As both the places are famous tourist destination there is huge demand of restaurants in vicinity of these places. The number of Restaurants in 1km radius of Taj Mahal is 13.The number of Restaurants in 1km radius of India Gate is 5.Therefore competition to open restaurant near Taj Mahal is 2.6 times more than opening a restaurant near India Gate.

Conclusion

Our main aim was to recommend our client the best location to open a restaurant in one of two famous tourist destination i.e. either Taj Mahal in Agra or India Gate in New Delhi. We considered that business is most likely to succeed if there is less competition and more demand of product by consumer. After further analysis of data for both Taj Mahal and India Gate we found that the number of Restaurants in 1km radius of Taj Mahal is 13 and for India Gate is 5, which means competition to open restaurant near Taj Mahal is 2.6 times more than opening a restaurant near India Gate.

Our recommendation is to open restaurant near India Gate due to low competition as compared to Taj Mahal.