

IBM APPLIED DATA SCIENCE CAPSTONE

**Generating Area-based recommendations regarding the
category of Restaurants to open in Mumbai**

Kaustav Sadhukhan

Introduction:-

Nowadays since the market is very competitive it is very important to analyze a particular area very carefully and find out the taste of the local people, their preferences and their inclination towards a particular cuisine before starting a new business venture, to open a particular restaurant, in this case. This project is aimed towards generating Area-based recommendations regarding the category of Restaurants to open in Mumbai.

Business Problem:-

Opening the right-type of restaurant serving the particular category of cuisine is very important for anyone who wants to start a new business venture in terms of restaurants. The decision to open a restaurant which specializes in a particular cuisine depends on many important factors, few of which are listed below:-

1. The taste of the local people staying in that particular Area, their preferences and inclinations towards a particular food item/category/cuisine.
2. The number of similar type of restaurants serving the same kind of food in the nearby locations of that Area.

The target audience for this project includes any **new food chain** who is interested in starting a **new business venture** in the **city of Mumbai** and wishes to have recommendations regarding **which particular cuisine or which particular food item** they should serve **in their outlets** based on the **particular Area in Mumbai** where they are planning **to set up their new outlets**.

Here the project scope is limited to **South of Mumbai**, this scope can be extended to other Locations/Sectors of Mumbai by similar kind of Analytics.

Data Anatomization

To tackle the above mentioned problem, we need to have the dataset that contains:-

1. All the Areas and Locations in the City Of Mumbai.
 2. Latitude and longitudes of all the Areas.
 3. The most common venues and their categories in a particular Location of Mumbai (eg :- South Mumbai, Andheri; Western Suburbs; Bandra, Western Suburbs etc.)
- The Wikipedia page https://en.wikipedia.org/wiki/List_of_neighbourhoods_in_Mumbai is the major source of data that is being used to obtain all the Areas and Locations of Mumbai. We then use **beautifulsoup4** package, a **Python module that helps to scrape** information from the web Pages to extract all the tables from this Wikipedia page and convert it into a pandas Data frame.
 - Then we use **Python's geopy** package to obtain the latitude and longitude of all the Areas present in the Data frame.
 - Finally we use **Four Square API** to generate **nearby venues and their categories** for a particular Area of Mumbai.

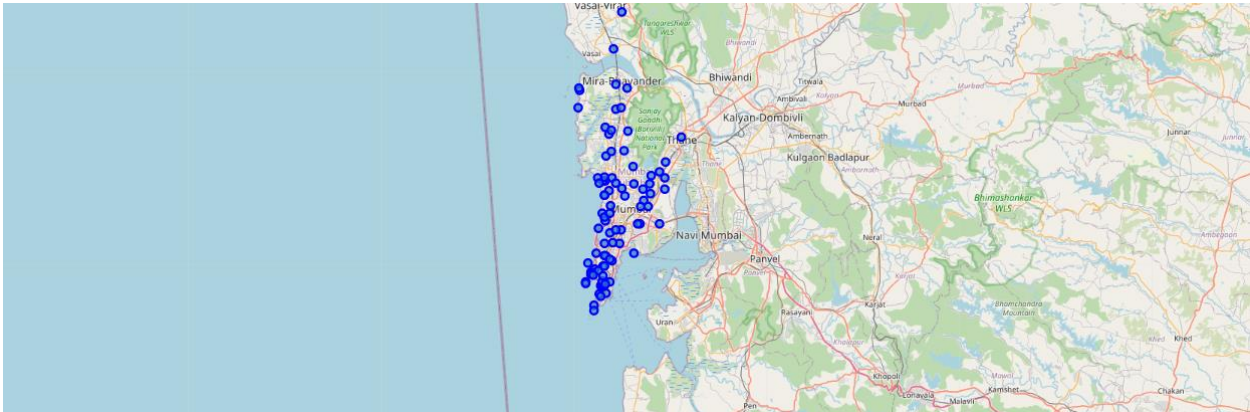
Description of the data -

The output shows the different datasets used to complete the project. Description of each processed dataset is given at the top of the Dataframe.

- Data scraped from https://en.wikipedia.org/wiki/List_of_neighbourhoods_in_Mumbai showing the Area, locations and Latitude/Longitude values.

<title>List of neighbourhoods in Mumbai - wikipedia</title>				
Area	Location	Latitude	Longitude	
Amboli	Andheri,Western Suburbs	19.1293	72.8434	
Chakala, Andheri	Western Suburbs	19.111388	72.860833	
D.N. Nagar	Andheri,Western Suburbs	19.124085	72.831373	
Four Bungalows	Andheri,Western Suburbs	19.124714	72.82721	
Lokhandwala	Andheri,Western Suburbs	19.130815	72.82927	
Marol	Andheri,Western Suburbs	19.119219	72.882743	
Sahar	Andheri,Western Suburbs	19.098889	72.867222	
Seven Bungalows	Andheri,Western Suburbs	19.129052	72.817018	
Versova	Andheri,Western Suburbs	19.12	72.82	
Mira Road	Mira-Bhayandar,Western Suburbs	19.284167	72.871111	
Bhayandar	Mira-Bhayandar,Western Suburbs	19.29	72.85	
Uttan	Mira-Bhayandar,Western Suburbs	19.28	72.785	
Bandstand Promenade	Bandra,Western Suburbs	19.042718	72.819132	
Kherwadi	Bandra,Western Suburbs	19.0553	72.8314	
Pali Hill	Bandra,Western Suburbs	19.068	72.826	
I.C. Colony	Borivali (West),Western Suburbs	19.247039	72.84983	
Gorai	Borivali (West),Western Suburbs	19.250057	72.782021	
Dahisa	Western Suburbs	19.250069	72.859347	
Aarey Milk Colony	Goregaon,Western Suburbs	19.148483	72.881756	
Bangur Nagar	Goregaon,Western Suburbs	19.167362	72.832252	
Jogeshwari West	Western Suburbs	19.12	72.85	
Juhu	Western Suburbs	19.1	72.83	
Charkop	Kandivali West,Western Suburbs	19.216182	72.830575	
Poisar	Kandivali West,Western Suburbs	19.204511	72.837639	
Mahavir Nagar	Kandivali West,Western Suburbs	19.211319	72.842737	
Thakur village	Kandivali East,Western Suburbs	19.210206	72.87298	
Pali Naka	Khar,Western Suburbs	19.062742	72.829396	

- Location Map of Mumbai obtained from geopy library.



- Processed data obtained from Four Square API showing the different Areas and the 10 most common venues for each Area corresponding to **South Mumbai**.

	Area	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue
0	Agripada	Bakery	Indian Restaurant	Coffee Shop	Gym	Restaurant	Food Court	Diner	Donut Shop	Dumpling Restaurant
1	Altamont Road	Café	Indian Restaurant	Coffee Shop	Bakery	Theater	Sandwich Place	Food	Diner	Donut Shop
2	Bhuleshwar	Indian Restaurant	Restaurant	Cheese Shop	Fast Food Restaurant	Food	Ice Cream Shop	Market	American Restaurant	Donut Shop
3	Breach Candy	Café	Coffee Shop	Bakery	Sandwich Place	Fast Food Restaurant	Department Store	Dessert Shop	Men's Store	Japanese Restaurant
4	Carmichael Road	Ice Cream Shop	Chinese Restaurant	Fast Food Restaurant	Food Truck	Snack Place	Outlet Mall	Café	Sandwich Place	Shop