



# Restaurant Recommendation in Mumbai, India

# Introduction

- ▶ Mumbai is the gastronomic hub of India
- ▶ Wide variety of cuisines
- ▶ One can have Pocket friendly meals or Lavish dining experience
- ▶ Many people are unaware of famous restaurants in a specific locality
- ▶ Aim: Recommend restaurants based on location of user

# Data Acquisition and cleaning

- ▶ Mumbai Neighbourhood, suburb, coordinates scraped from [https://en.wikipedia.org/wiki/List\\_of\\_neighbourhoods\\_in\\_Mumbai](https://en.wikipedia.org/wiki/List_of_neighbourhoods_in_Mumbai)
- ▶ Restaurant Name, Rating, Cost scraped from <https://www.zomato.com/mumbai/restaurants>
- ▶ Restaurant Name. Category. Coordinates obtained from FourSquare Api
- ▶ Unnecessary Data from Zomato dataset was dropped

# Methodology

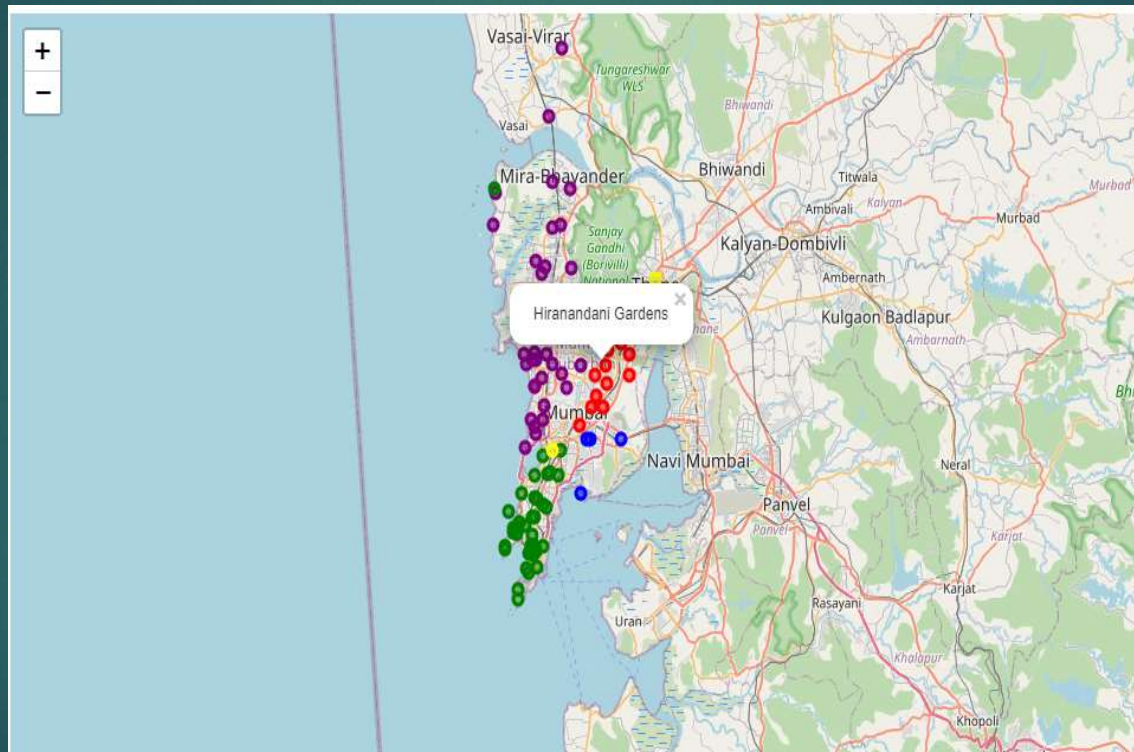
- ▶ Web scraping Wikipedia page for Mumbai neighbourhoods list

|   | Area             | Location        | Latitude  | Longitude |
|---|------------------|-----------------|-----------|-----------|
| 0 | Amboli           | Western Suburbs | 19.129300 | 72.843400 |
| 1 | Chakala, Andheri | Western Suburbs | 19.111388 | 72.860833 |
| 2 | D.N. Nagar       | Western Suburbs | 19.124085 | 72.831373 |
| 3 | Four Bungalows   | Western Suburbs | 19.124714 | 72.827210 |
| 4 | Lokhandwala      | Western Suburbs | 19.130815 | 72.829270 |

- ▶ Web scraping Zomato to get a list of all the restaurants in Mumbai

|   | Name             | Cost for 2 | Dining_rating | Dining_votes | Delivery_rating | Delivery_votes |
|---|------------------|------------|---------------|--------------|-----------------|----------------|
| 0 | Yasin's Food Inn | 700.0      | 4.1           | 2182.0       | 3.8             | 99400.0        |
| 1 | McDonald's       | 400.0      | 4.0           | 948.0        | 4.1             | 11400.0        |
| 2 | Joey's Pizza     | 800.0      | 4.8           | 8922.0       | 4.2             | 4081.0         |
| 3 | Guru Kripa       | 300.0      | 4.6           | 3671.0       | 4.2             | 21500.0        |
| 4 | Cafe Safar       | 450.0      | 4.1           | 2174.0       | 3.9             | 89100.0        |

- ▶ Coordinates of Mumbai were obtained using geocoder
- ▶ The Neighbourhoods of Mumbai were plotted on Map



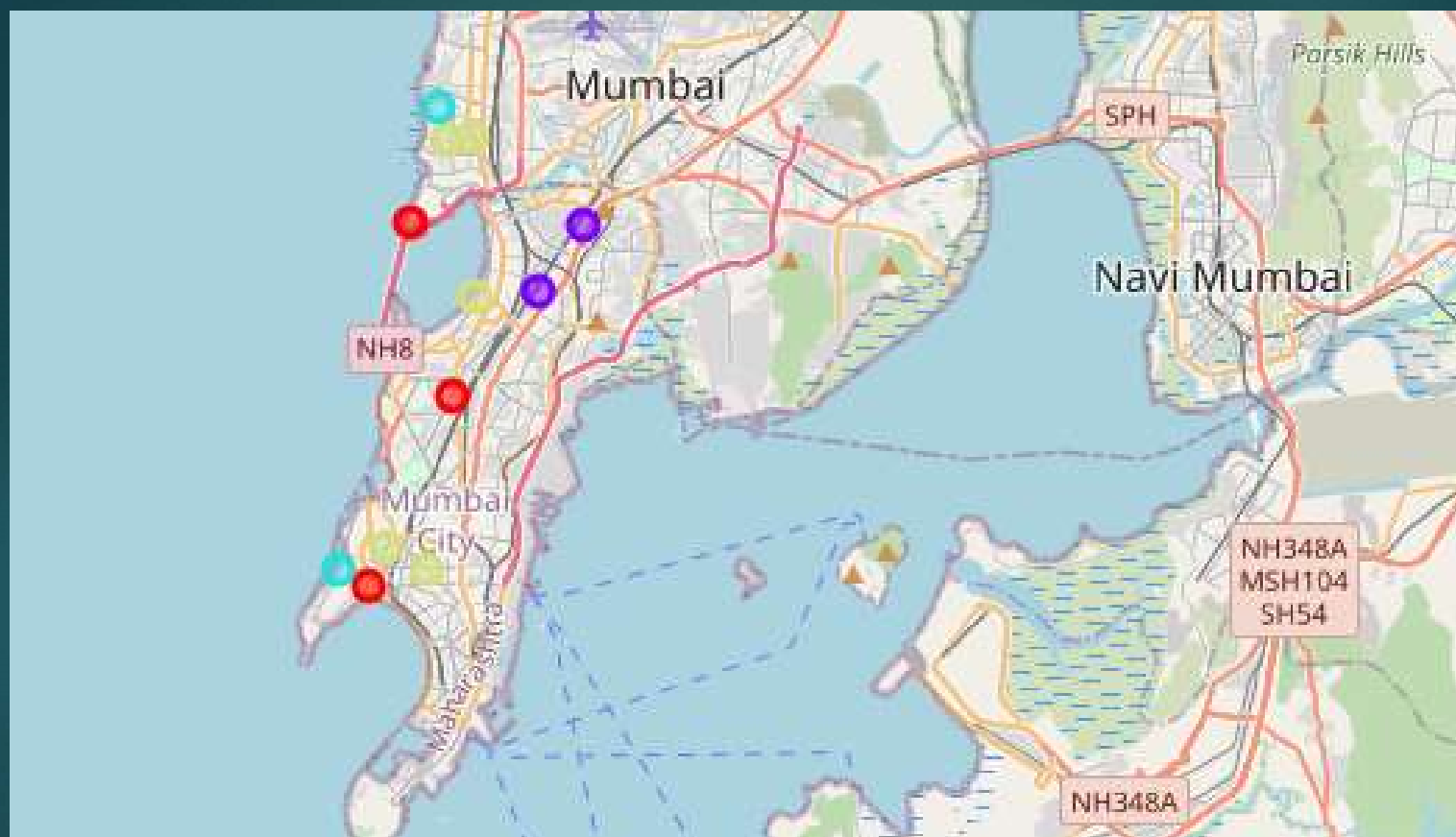
- ▶ Foursquare API was used to get the nearby restaurants data of the selected location.
- ▶ Restaurant data obtained from Foursquare was merged with Zomato dataset

|   | Name                | Category           | Address1                               | Address2                                      | Distance(m) | Latitude  | Longitude | Id                       | Cost for 2 | Dining_rating | Dining_votes | Del |
|---|---------------------|--------------------|--|---|-------------|-----------|-----------|--------------------------|------------|---------------|--------------|-----|
| 0 | Sharda Bhavan       | Indian Restaurant  | Lakhamshi Nappu Rd., Matunga           | NaN   | 1170        | 19.026783 | 72.850841 | 4b87b1f8f964a52084c731e3 | 200.000000 | 4.1           | 441.0        |     |
| 1 | Terttulia           | Italian Restaurant | Ground Floor, Hotel Parkway            | Near Natural Ice Cream, Ranade Road Extension | 1301        | 19.025638 | 72.835416 | 50d801d6e4b09e2e64f6f437 | 388.557387 | 4.4           | 2191.0       |     |
| 2 | Jai Hind Lunch Home | Seafood Restaurant | Tulsipipe Road                         | Dadar West                                    | 2380        | 19.002183 | 72.829512 | 4bfe4e1855539c7488d2bcf3 | 850.000000 | 4.4           | 1180.0       |     |
| 3 | Guru Kripa          | Indian Restaurant  | Guru Kripa Building, Near SIES College | Rd No 24                                      | 3307        | 19.042955 | 72.861796 | 4b0587d8f964a52008a422e3 | 300.000000 | 4.6           | 3671.0       |     |
| 4 | Ming Yang           | Chinese Restaurant | Taj Lands End                          | Bandra Lands End                              | 3919        | 19.043582 | 72.819199 | 4b5dc6e6f964a520166b29e3 | 800.000000 | 4.3           | 1087.0       |     |



# Results and Discussion

- ▶ KMeans clustering was used to cluster restaurants
- ▶ 4 clusters were considered
- ▶ Following clusters were obtained after thorough analysis
  - ▶ Cluster 0: High cost, Excellent Score ( Red )
  - ▶ Cluster 1: Low cost, Average Score ( Purple )
  - ▶ Cluster 2: Moderate cost, Good Score ( Cyan )
  - ▶ Cluster 3: Moderate cost, Excellent Score ( Yellow )





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- ▶ The restaurants of cluster 0 are recommended if the person wants to have a lavish dining experience in a highly rated restaurant.
  - ▶ The restaurants of cluster 1 are recommended if the person wants to have a low cost pocket friendly meal in an average rated restaurant
  - ▶ The restaurants of cluster 2 and 3 are recommended if the person wants to have a good dining experience.

# Conclusion

- ▶ Concepts of Data Science like problem definition, data collection, data cleaning and preparation, exploratory analysis, visualizations, machine learning were used
- ▶ Various neighbourhoods of Mumbai were explored
- ▶ Data obtained from FourSquare Api, Wikipedia and Zomato was used to cluster the neighbourhoods (number of clusters = 4)