

# Coursera Capstone

## IBM Applied Data Science Capstone

### ***Opening a New Shopping Mall in Mumbai, India***

By: Rohit Phadke

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# Business Problem

- Location of the shopping mall is one of the most important decisions that will determine whether the mall will be a success or a failure
- Objective: To analyse and select the best locations in the city of Mumbai, India to open a new shopping mall
- This project is timely as the city is currently suffering from oversupply of shopping malls in certain areas and thus facing shutdowns due to intense competition.
- Business question
  - In the city of Mumbai, India if a property developer is looking to open a new shopping mall, where would you recommend that they open it?

# Data

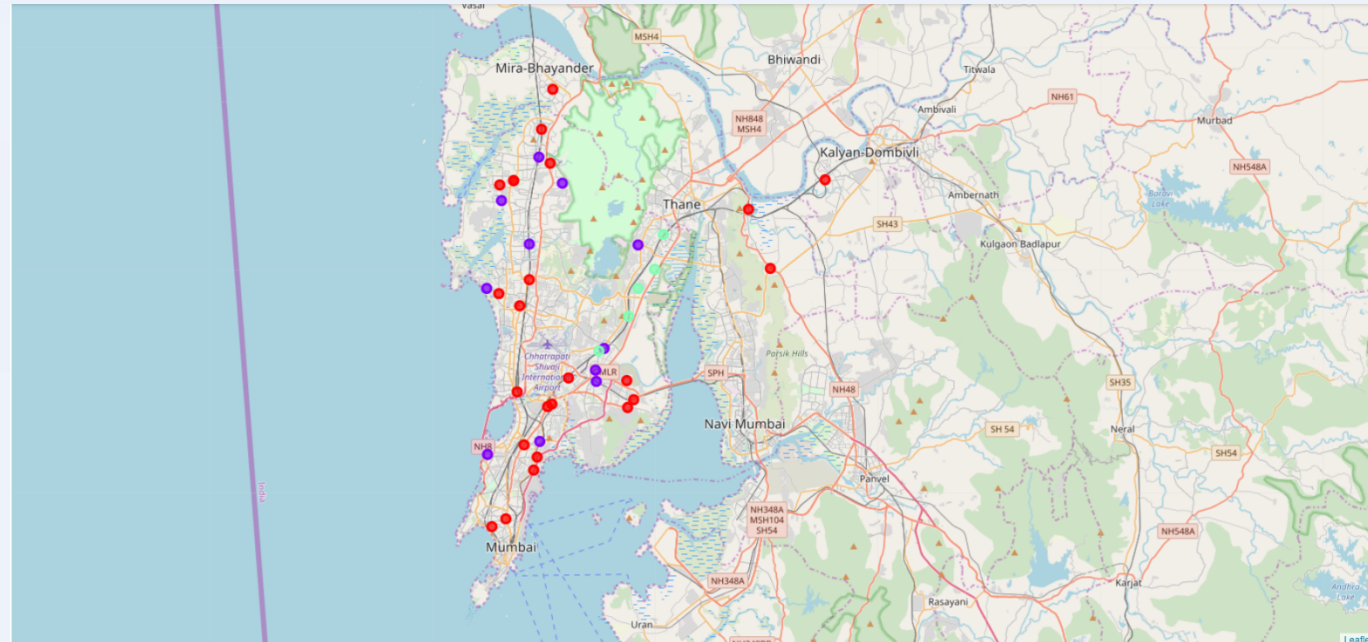
- Data required
  - List of neighbourhoods in Mumbai
  - Latitude and longitude coordinates of the neighbourhoods
  - Venue data, particularly data related to shopping malls
- Sources of data
  - Wikipedia page for neighbourhoods  
([https://en.wikipedia.org/wiki/Category:Suburbs\\_of\\_Mumbai](https://en.wikipedia.org/wiki/Category:Suburbs_of_Mumbai))
  - Geocoder package for latitude and longitude coordinates
  - Foursquare API for venue data

# Methodology

- Web scraping Wikipedia page for neighbourhoods list
- Get latitude and longitude coordinates using Geocoder
- Use Foursquare API to get venue data
- Group data by neighbourhood and taking the mean of the frequency of occurrence of each venue category
- Filter venue category by Shopping Mall
- Perform clustering on the data by using k-means clustering
- Visualize the clusters in a map using Folium

# Results

- Categorized the neighborhoods into 3 clusters :
  - Cluster 0: Neighborhoods with no shopping malls
  - Cluster 1: Neighborhoods with moderate concentration of shopping malls
  - Cluster 2: Neighborhoods with high concentration of shopping malls



# Discussion

- Most of the shopping malls are concentrated in the central area of the city
- Highest number in cluster 2 and moderate number in cluster 1
- Cluster 1 has very low number to no shopping mall in the neighbourhoods
- Oversupply of shopping malls mostly happened in the central area of the city, with the suburb area still have very few shopping malls



# Recommendations

- Open new shopping malls in neighbourhoods in cluster 0 with little to no competition
- Can also open in neighbourhoods in cluster 1 with moderate competition if have unique selling propositions to stand out from the competition
- Avoid neighbourhoods in cluster 2, already high concentration of shopping malls and intense competition

# Conclusion

- Answer to business question: The neighbourhoods in cluster 0 are the most preferred locations to open a new shopping mall
- Findings of this project will help the relevant stakeholders to capitalize on the opportunities on high potential locations while avoiding overcrowded areas in their decisions to open a new shopping mall



# Thank you!

