

Capstone Project Report

Introduction and Business Problem

- A customer, Nikhil, wants to open a new gym in Mumbai, India.
- Due to Mumbai's high population density and very large size, he asked me for help in order to find the best spot to place the gym.
- Mumbai has 35 large neighbourhoods and we aim to find the best one.
- We need to choose a Neighbourhood that has good amount of customers and low amount of competition.

Data

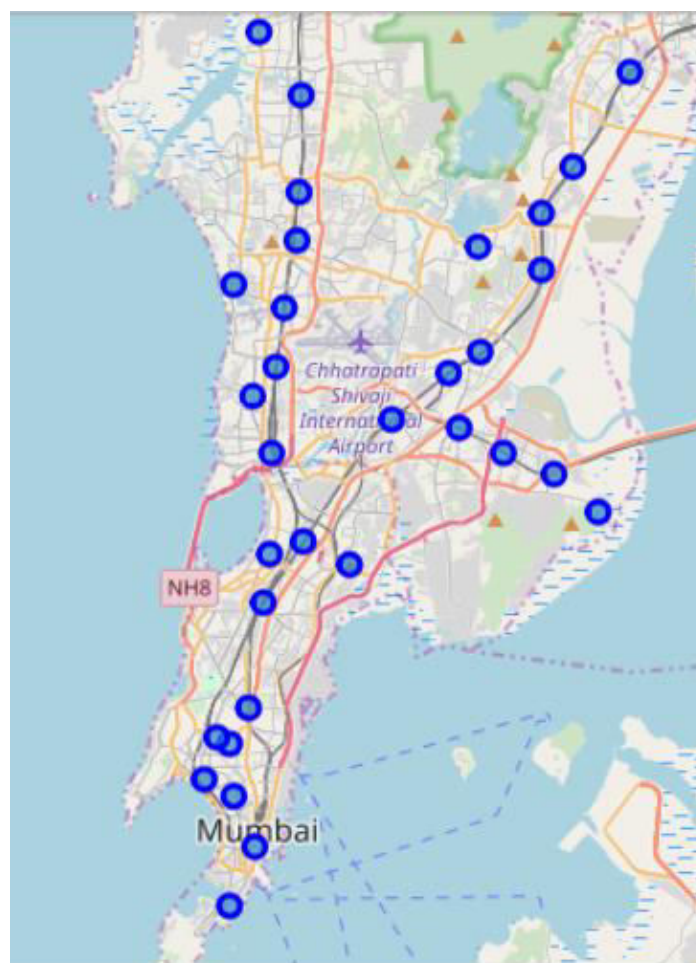
- To help Nikhil in his search we will need to access following data:
- The Neighbourhoods of Mumbai, India from Wikipedia:
https://en.wikipedia.org/wiki/List_of_neighbourhoods_in_Mumbai
- The coordinates (latitude, longitude) of these Neighbourhoods of Mumbai from Open Street Map APIs.
- From Foursquare we will need the following venues data:
 - the gym venues of the Neighbourhoods.
 - the offices venues of the Neighbourhoods.
 - the high schools venues of the Neighbourhoods.
 - the universities venues of the Neighbourhoods.
- We will then leverage the data in order to determine which neighbourhood is the most appropriate in order to locate the gym.

Methodology

- For each neighbourhood, all offices, schools, universities and gyms venues data have been collected from Foursquare.
- Then for each locality, the sums of the offices, schools, universities and gyms were computed.

- For each of these 4 categories, a weight (or penalty) has been defined according to what Nikhil considers the most important.
- Gyms have been weighted with -1, since we want to avoid concurrence.
- Schools have been weighted with 1, since students are good customers.
- Universities have been weighted with 1.5, since adult students are better customers.
- Offices have been weighted with 2, since employees are even better customers.
- Note that the weights can be modified according to the importance of each category.
- Lastly, a score was computed for each locality as the weighted sum of the number of venues in each of the 4 categories (school, university, office, gym).

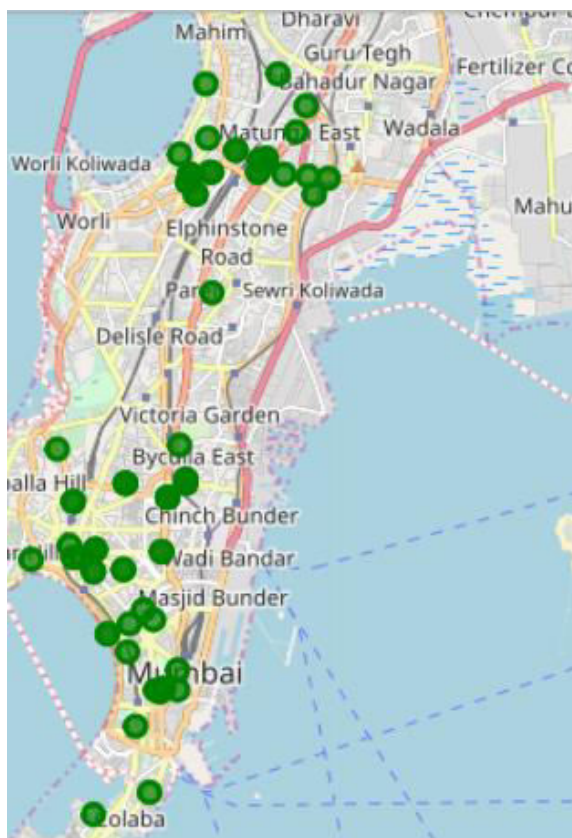
Neighbourhoods of Mumbai, India.



Gyms in Mumbai



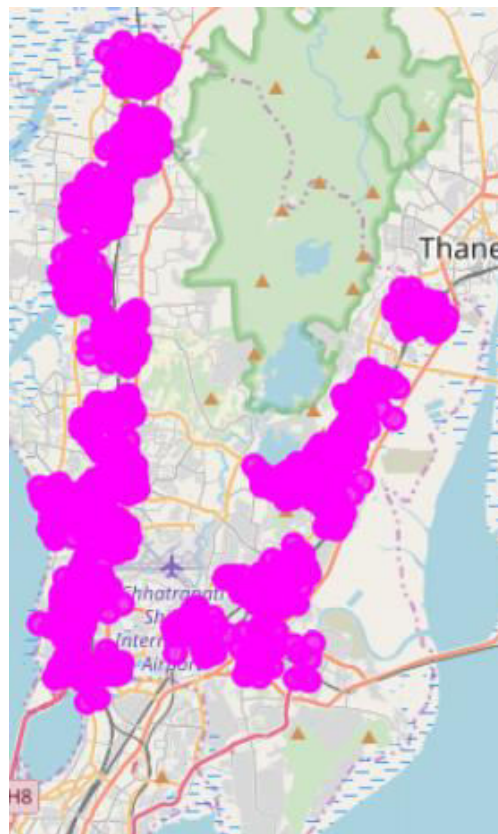
High Schools in Mumbai



Universities in Mumbai



Offices in Mumbai



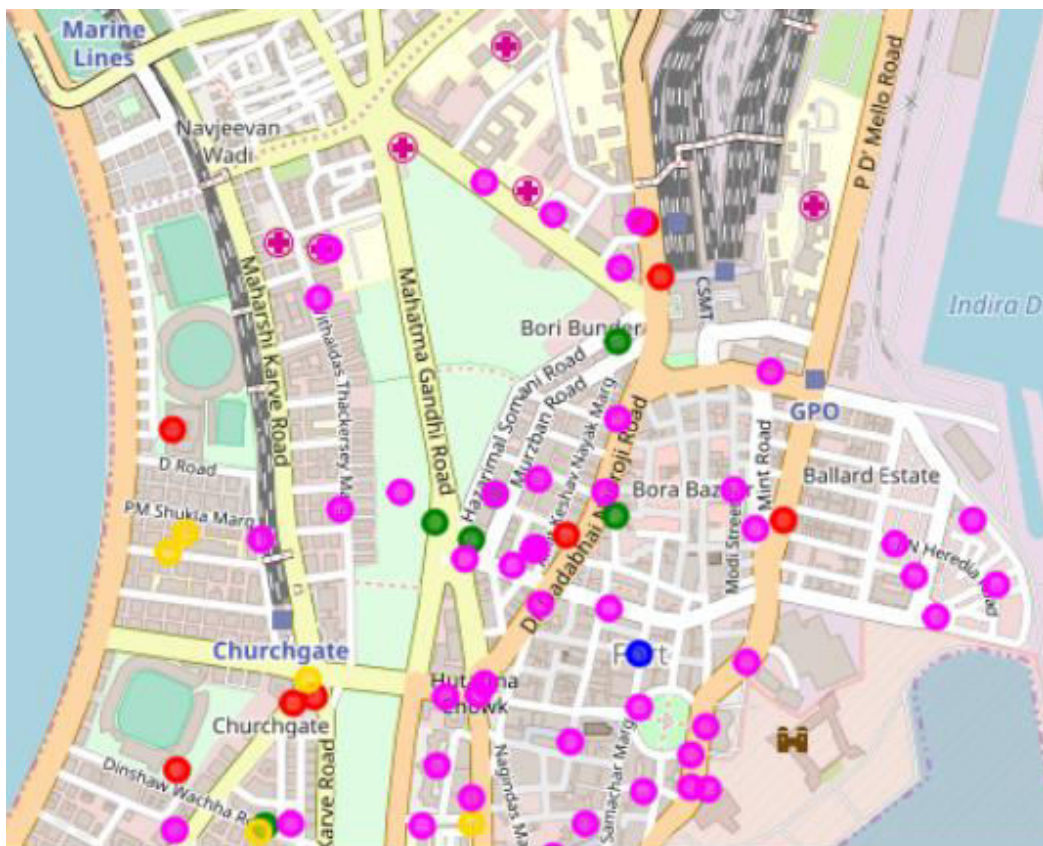
Results

- The Neighbourhood with the best score is “Fort” with 103.0, being the best option.

	Neighborhood	Score
28	Fort	103.0
27	Dadar	102.5
25	Byculla	99.0
30	Kalbadevi	98.5
19	Vikhroli	98.0

- Followed closely by “Dadar” with 102.5. These options maximize number of potential customers from offices and universities and at the same time have little competition from other gyms.

Best Place for nikhil’s gym in Mumbai is “Fort”



Recommendation

The following analysis can be improved with following extensions:

- Consider more categories. For example like "Sports Complexes" which are also a good source for customers. But also like "Martial arts", which even if not gyms may be some concurrence if too many.
- In the Neighbourhood itself, it can also be computed the distance between all the venues in order to find a place with the most number of potential customers.
- Using smaller geographical areas like Streets could improve the accuracy for the scores.