



# Identifying a suitable location to build a Shopping Mall in City of Mangalore

Coursera Capstone Project

# About Mangalore

Mangalore known as port city of Karnataka located in the southern part of India. It has a beautiful coastline. Mangalore is known for its swaying coconut palms, beautiful beaches and temple architecture. It is also an important industrial, commercial, **educational** and **healthcare** hub.

- It is one of the **fastest growing** non metro in South India.
- Mangalore is the 2nd largest business centre in Karnataka.
- Around 75% of India's coffee, timber and cashew nuts exports are handled by the New Mangalore Port.
- Mangalore is one among the 5 cities in the country to have both a Major Port and an International Airport.
- Mangalore is selected as one of the hundred Indian cities to be developed as a **Smart City**

# Business Problem

Is to Identify a suitable location to build a Shopping Mall in Mangalore. Currently Mangalore has only **3 malls**. And out of them 1 is comparatively small also very old. People at Mangalore like Banded cloths accessories. And list of multinational bands in these malls are limited. So there is huge potential to open up Banded outlets. And eating out is also catching up. Mangalorians like movies too; and multiplex at Manglore play movies of different language English (Hollywood), Hindhi, Kannada, Tamil, Telugu, Tulu.

This project will try to come up with a solution by using the data science methodologies and machine learning techniques like clustering; the best suited location for a new Shopping mall that is close to crowded areas of the city that has essentially high residential areas. And it should be easily accessible/ well connected as most people depend on public transport.

# Business Stakeholders

This project is useful to **property developers** and also to the **investors** who are interested in investing in properties at Mangalore. According to *U.N Projections* population of Mangalore will grow from current **700,000** to around **1,000,000** in 2035. This steady growth in population will contribute to better business opportunities and Shopping Malls are one of the best investment options as more and more **people** (customers) like to visit malls as they are the one stop destination for Shopping, eating out, entertainment, socializing etc. This also gives better opportunity for the **Shopkeepers** to open up banded stores and ultimately **Government** will get more revenue and community too gets benefited.



# Data

Based on our business problem we need following data.

- We need a list of neighborhoods in Mangalore to identify locations with Residential buildings, Hotels, Colleges, parks, transportation etc.
- We need the latitude and longitude coordination of these neighborhoods for different analysis and visualization.
- Analyze the obtained data to identify the best locations for coming up with new Shopping Mall.

# Methodology

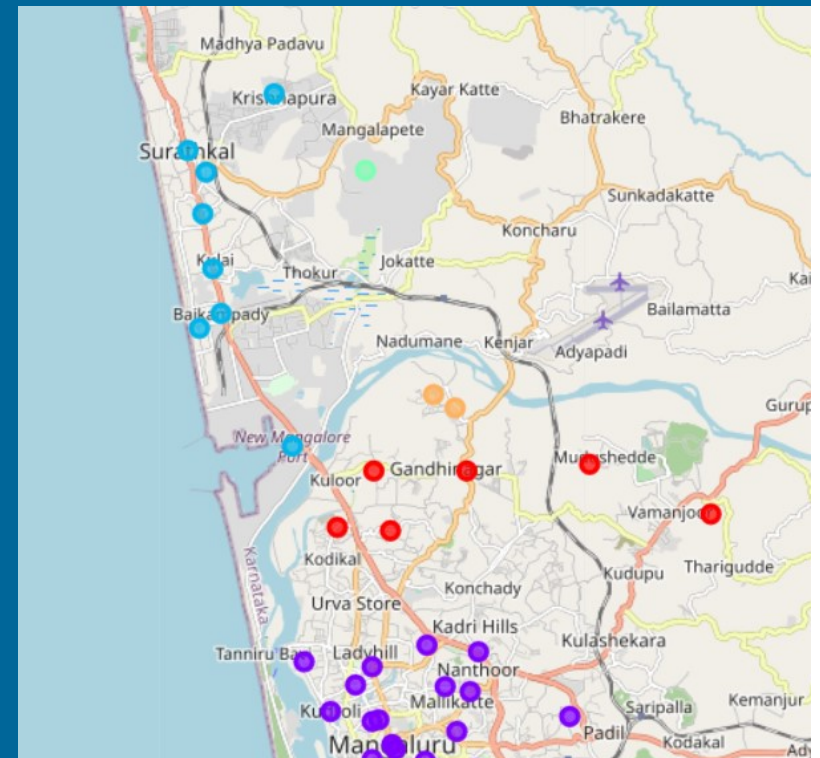
- We can begin our process by finding out the coordinates of Mangalore City using **Google Map**.
- Next We need to perform web scraping using **beautiful soup** on Wikipedia page of "Mangalore city corporation" and generate a list of different neighborhoods (wards) in Mangalore.
- Next use **Geopy Nominatim** to get the latitude and longitude of different neighborhoods /Wards.
- *Use **Pandas to clean up the data**.* Add/remove/fix coordinates of different locations/wards. And use Google Map and manually fill in the latitude and longitude of the wards with missing data.
- Gather information about the current Malls at Mangalore using the Google search/Map.

# Methodology

- Identify the categories that you will be using to collect information about venues using **Foursquare API's**.
- Perform One hot Encoding on the venues collected. And Group neighborhood by taking the mean of the frequency of occurrence of each category.
- Perform Clustering using **k-means** clustering. Visualize the clustered data using **Folium Map**
- Also analyze the different neighborhoods to find out the number of Residential building, Hotels, parks, travel facility etc. And come up with the location that is best suited for new Shopping Mall Project.

# Result

- **Cluster 0** has lots of colleges, schools, Residential area. And also many new housing colonies are being designed in Cluster 0.
- **Cluster 1** Majority of residential places are located in cluster 1, It also has lot's of Hotels. And it's well connected and also has some of the schools and collages.
- **Cluster 2** has most of the recreational activities; has Beaches, River front, Sports centers, Also has few collages and residential places and new housing colonies are coming up.



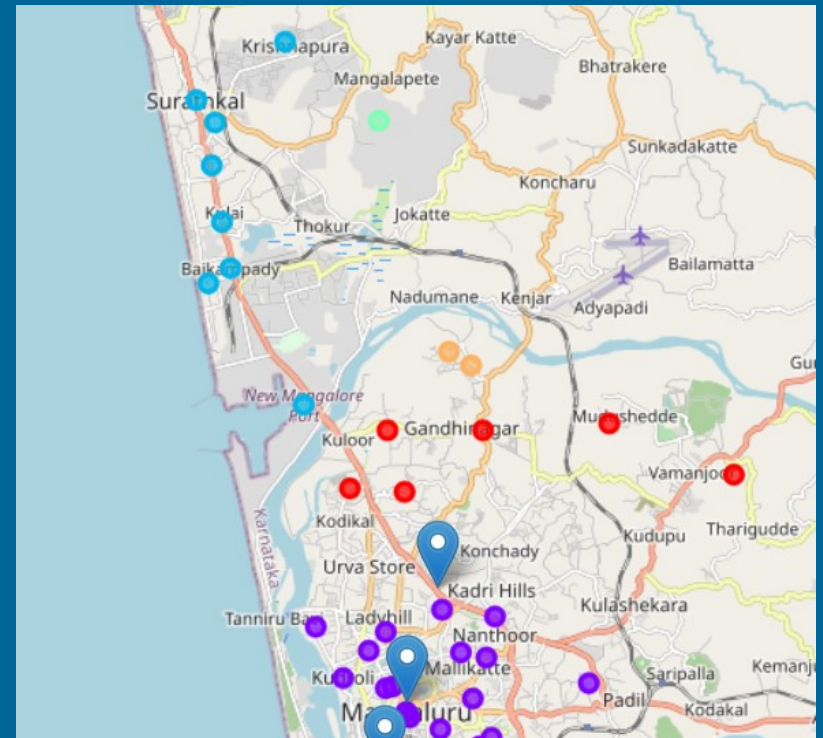


# Discussion

- For a shopping mall to become successful, it needs people. So, a good place would be somewhere in a residential area, with commercial activity and colleges within the vicinity. Even Recreational activities nearby could have a good contribution of people walking in to the mall. Not all of them would be buyers, but this could create a lot of walk-ins.
- And Mangalore is growing fast. It is very popular for education and health care destination. And as it is well connected; it has international air port, Sea port, also has Rail roads. So many industries are coming down to Mangalore. All these are increasing the population of Mangalore and according to UN survey there will be a study growth rate in the population in Mangalore.
- You will find new residential projects coming up in all the clusters but as cluster 1 is already crowded; cluster 0 and cluster 1 are becoming more popular places for new housing development activities. And New Collages and industries are also planed in cluster 0 and 2.

# Recommendations

- **Cluster 0** is a good option to come up with a new shopping mall as it has lots of colleges, schools, Residential area. And a number of new Housing projects are coming up in this cluster.
- **Cluster 2** is the other option as it has most of the recreational activities and also has few colleges and residential places. New housing colonies are coming up.
- **Cluster 1** would have been a better choice, as it is highly residential and well connected. But it already has 3 shopping malls within a 5km radius.



# Conclussion

- Purpose of this project was to identify a suitable location to come up with a new shopping mall. And after the analysis we can say neighborhoods in **cluster 0** are best suited for this project.
- We can consider **Cluster 2** as it has a combination of colleges, some industries and new housing projects are coming up and it is a growing part of Mangalore. And it is popular for recreational activities and beaches.

# Reference

- Link below is used to get the list of wards/neighborhoods of Mangalore
- [https://en.wikipedia.org/wiki/Mangalore\\_City\\_Corporation](https://en.wikipedia.org/wiki/Mangalore_City_Corporation)
- Population growth
- <https://www.macrotrends.net/cities/21328/mangalore/population>
- Foursquare API documentation
- <https://developer.foursquare.com/docs/places-api/>





Thank YOU