

# **COURSERA CAPSTONE**

IBM Applied Data Science Capstone

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**Opening a new shopping mall in Kampala Uganda**

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# BUSINESS PROBLEM

- Location of a shopping mall is one of the most important decisions to determine the success or failure of the venture.
  - Objective: To analyze and select the best location in the city of Kampala, Uganda to open a new shopping mall.
  - Business question : What is the best location to open up a shopping mall in the city of Kampala by a property developer.
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# DATA

- **Data required.**

- List of suburbs in Kampala city.
- Latitudes and longitude coordinates of suburbs.
- Venue data particularly that related to shopping malls

- **Source of data**

- Wikipedia page for suburbs

[https://en.wikipedia.org/wiki/Category:Neighborhoods\\_of\\_Kampala](https://en.wikipedia.org/wiki/Category:Neighborhoods_of_Kampala)

- Geocoder package for latitudes and longitudes plus coordinate sites such as

[www.latlong.net](http://www.latlong.net)

- Foursquare API for venue data



# Methodology

- Web scraping Wikipedia and other websites to obtain list of suburbs
- Get latitude and longitude coordinates using Geocoder and other websites such as

[www.latlong.net](http://www.latlong.net)

- Use Foursquare API to get venue data.
- Group data by suburb taking the mean of frequency of occurrence of each venue category.
- Filter venue category by shopping mall and average rental charges per suburb.
- Perform clustering on data by using K means clustering.
- Visualize the clusters in a map using folium.

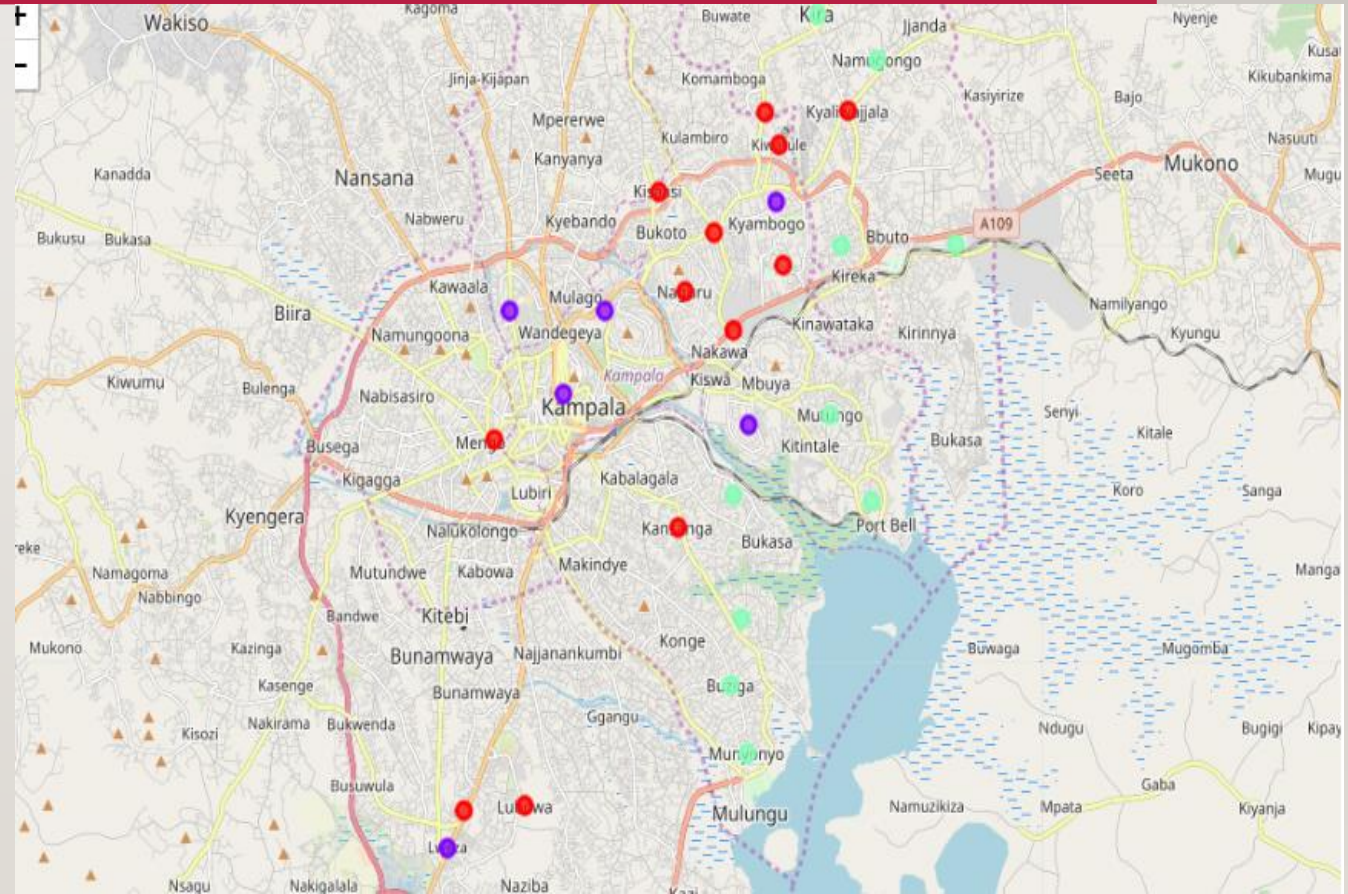




## RESULTS

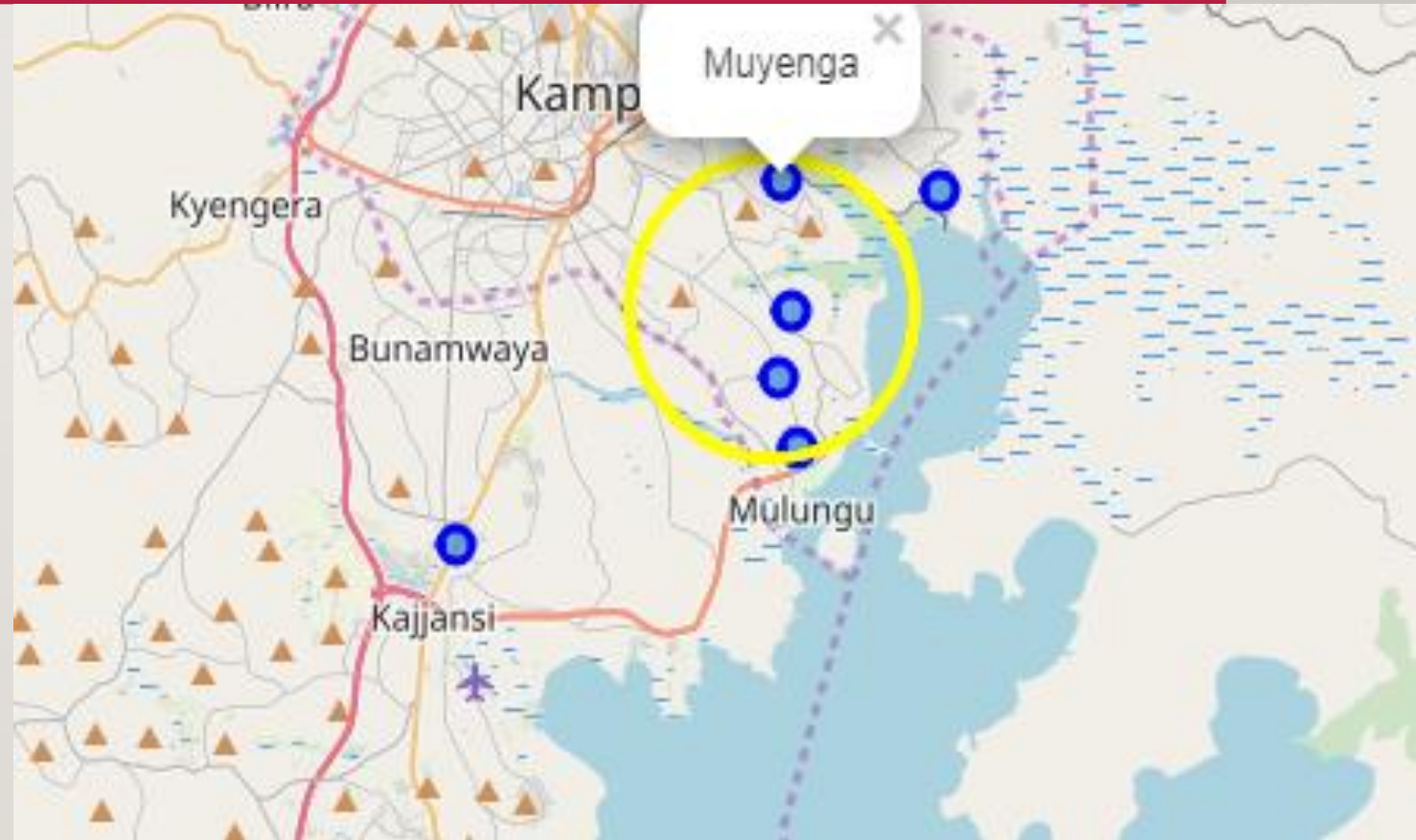
# CLUSTERING

- Cluster 0 (red): Suburbs with high concentration of shopping malls.
- Cluster 1 (purple): Suburbs with moderate number of shopping malls.
- Cluster 2 (mint green): Suburbs with no shopping malls within.



### ***Further analysis***

Filtering out the suburbs with already existing shopping mall venues and those with rental charges below 1,000,000 Ugandan shillings left me with 7 suburbs namely Bukoto, Bunga, Buziga, Luzira, Lweza, Munyonyo and Muyenga.





# DISCUSSION

- Most of the shopping malls are concentrated in the central region of the city.
- Highest number in cluster 0 and no shopping mall in cluster 2.
- The suburbs in the central region have a higher concentration of shopping malls compared to those on the outskirts.



# RECOMMENDATION

- Open shopping mall in suburbs found in cluster 2 where there is no competition.
- Avoid opening in cluster 0 where there are already a number of shopping malls.
- Further analysis indicate the areas of Bunga, Buziga, Muyenga and Munyonyo to be the most ideal considering average rental charges and shopping mall concentration.





# CONCLUSION

## *Answer to business question*

- The suburbs in cluster 2 are the most ideal to open up a shopping mall in Kampala.
- The location within the vicinity of the suburbs of Muyenga, Munyonyo, Bunga and Buziga were found to be the most preferred.
- Findings of this project will help the relevant stake holders to capitalize on opportunities on high potential locations while avoiding over crowded areas in their decision to open a new shopping mall in Kampala, Uganda

