# BATTLE OF NEIGHBORHOOD

SEVİL BAŞARIR

# INTRODUCTION

- Singapore is an economic hub though it is small in the size.
- Most modern city in Southeast Asia over a century.
- Became a flourishing country for trade & tourism due to efficient and determined Govt.
- Vast job opportunities in the country.
- Immigration to Singapore is the main source of population growth in the country.
- Immigration & immigration workers have been closely associated with Singapore's economic development.

# BUSINESS PROBLEM

- Finding the right accommodation in Singapore is a really tough.
- Depending upon the location & places to eat, people have different preferences.
- Some people prefer to live near work-place even with limited availability of resources.
- Some of the problems addressed by this project:
  - Finding the right accommodation for person who is moving to new location.
  - Finding the right location where there have the required facilities available.
  - Finding the neighborhood near to particular attractions such as parks, galleries & restaurants.

# DATA USED IN PROJECT

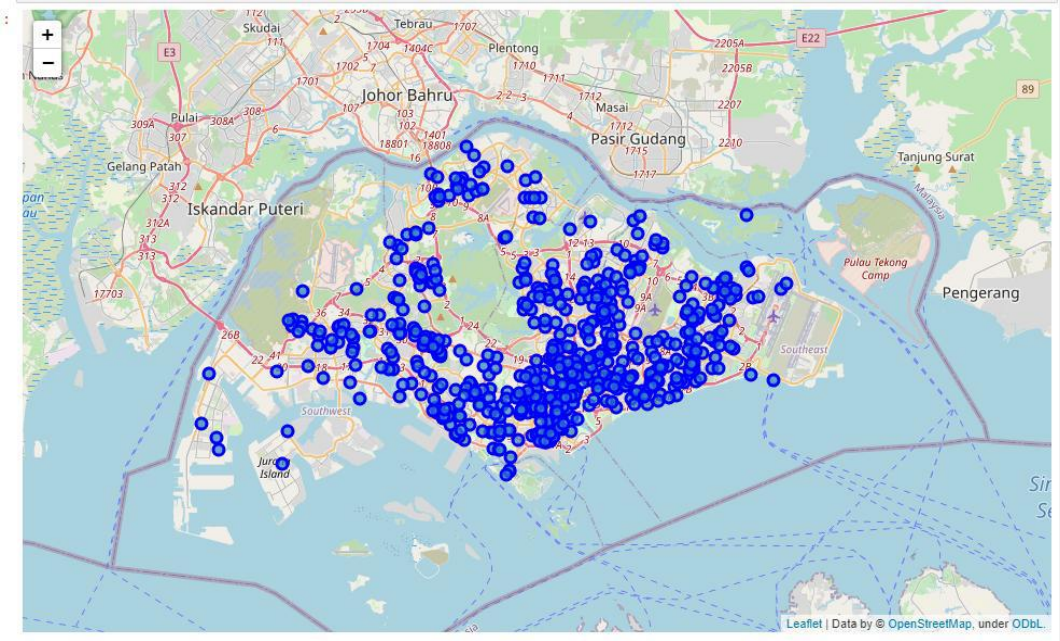
- Singapore Neighborhood data list
  - Important parameters –Building Names, latitudes & longitudes, postal code.
  - Data Source: Open Repository
- Venue Data: Exploring various neighborhood for each locality within radius of 500m.
  - Data Source: Foursquare API

# DATA CLEANING & PRE-PROCESSING

- Libraries used –pandas, numpy, geopy, sklearn, folium, requests, json
- Building Data from Jsonfile.
- Total 141726 samples with 11 columns.
- Only 4 are selected –postal code, building name, latitude & longitude.
- Building names with NIL is ignored.
- Duplicate building names are removed and only 1 entry is kept.
- Entries related to park are removed.
- Final dataset to be analyzed is of shape (16150,4)

# ANALYSIS

- Random 600 samples selected from the whole dataset.
- Selected samples are printed on Singapore Map using folium library.



# ANALYSIS

- Initially first building is selected and its near venues are fetched using foursquare API
- Building analyzed is TAMPINES GREENWOOD and total 7 unique venues are fetched for this building.

Out[41]:

| | name | categories | lat | lng |
|---|---|---|---|---|
| 0 | Tampines Central Park | Park | 1.354111 | 103.936393 |
| 1 | NTUC Fairprice | Supermarket | 1.355541 | 103.934758 |
| 2 | Playground @ Tampines Blk 869 | Playground | 1.354625 | 103.933893 |
| 3 | Madison's | Sandwich Place | 1.354242 | 103.933217 |
| 4 | Bus Stop 75139 (Blk 863) | Bus Station | 1.355861 | 103.936358 |

[42]:
```
print('{} venues were returned by Foursquare.'.format(nearby_venues.shape[0]))
```

```
7 venues were returned by Foursquare.
```

# ANALYSIS

- Now, venues for all 600 buildings are fetched and merged together in the dataset.
- There are total 373 unique venues for entire neighborhood.
- Further data is processed to created sorted venues dataset with top 10 venues for each neighborhood.

Out[56]:

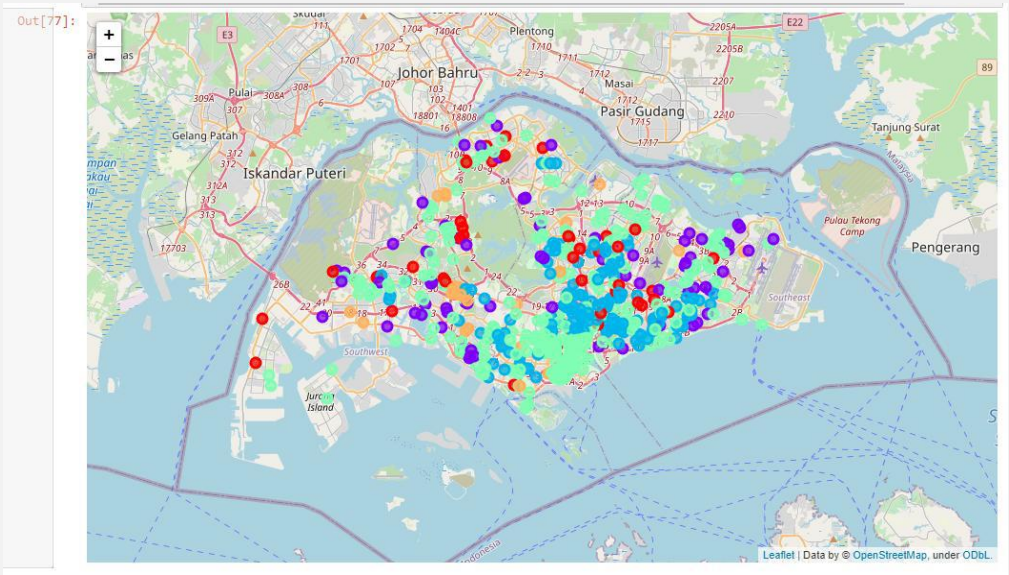
| | Neighborhood | 1st Most Common Venue | 2nd Most Common Venue | 3rd Most Common Venue | 4th Most Common Venue | 5th Most Common Venue | 6th Most Common Venue | 7th Most Common Venue | 8th Most Common Venue | 9th Most Common Venue | 10th Most Common Venue |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 57 @ KOVAN | Vegetarian / Vegan Restaurant | Food Court | Asian Restaurant | Noodle House | Indian Restaurant | Supermarket | Bar | Sandwich Place | Park | Furniture / Home Store |
| 1 | ACACIA WELFARE HOME | Bus Station | Harbor / Marina | Thai Restaurant | Baby Store | Café | Automotive Shop | Kids Store | Bus Stop | Asian Restaurant | Zoo Exhibit |
| 2 | AL - ISTIQAMAH MOSQUE KINDERGARTEN | Asian Restaurant | Pet Store | Coffee Shop | Supermarket | Playground | Noodle House | Chinese Restaurant | Breakfast Spot | Food Court | Electronics Store |
| 3 | ALJUNIED COMMUNITY CENTRE | Coffee Shop | Noodle House | Bakery | Food Court | Café | Cafeteria | Breakfast Spot | Gym | Bus Stop | Bus Station |
| 4 | ALKAFF MANSION | Bakery | Bus Station | Scenic Lookout | Trail | Bus Line | Karaoke Bar | Gym | Miscellaneous Shop | Clothing Store | Club House |

In [57]:
```
neighborhoods_venues_sorted.shape
```

Out[57]: (596, 11)

# MODELING

- K-Means Algorithm is used to create clusters.
- No of clusters selected = 5
- Clustered data is merged with neighborhood data and plotted on the map using folium library.



# USER CASES

- Case-1: Person coming to Singapore for first time –which place would be best to move in?
  - Cluster 3 is the one which has most number of neighborhood. Best place to settle down initially.
- Case-2: Person wants to move from place as it is expensive for me but likes the neighborhood so which would be best place for him similar to previous place?
  - Previous place “PAN PACIFIC SERVICED SUITES” belongs to cluster-3.
  - So he can move to FERNVALE FLORA which belongs to same cluster sharing similar neighborhood.

# THANK YOU