

Capstone Project - The Battle of Neighborhoods (Part-1)

Data Section:

Dhaka has a huge population and very dense business services. For this project we will use two different APIs.

To generate places names and according longitude and latitudes, we will use **Google Maps Geocoding API**.

Example:

Code

```
import json
from pandas.io.json import json_normalize

latitudes = [] # Initializing the latitude array
longitudes = [] # Initializing the longitude array

for nbd in df["Neighbourhood"] :
    place_name = nbd + ",Dhaka,Bangladesh" # Formats the place name
    url = 'https://maps.googleapis.com/maps/api/geocode/json?address={}&key={}'.format(place_name,
API_KEY) # Gets the proper url to make the API call
    obj = json.loads(requests.get(url).text) # Loads the JSON file in the form of a python dictionary

    results = obj['results'] # Extracts the results information out of the JSON file
    lat = results[0]['geometry']['location']['lat'] # Extracts the latitude value
    lng = results[0]['geometry']['location']['lng'] # Extracts the longitude value

    latitudes.append(lat) # Appending to the list of latitudes
    longitudes.append(lng) # Appending to the list of longitudes
```

Which gives us a table like this.

In [31]: `df.head()`

Out[31]:

	Neighbourhood	Latitude	Longitude
0	Bailey Road, Dhaka	23.741785	90.405797
1	Banani DOHS	23.793263	90.398972
2	Banasree	23.761935	90.433141
3	Bangla Bazar	23.706556	90.411265
4	Baridhara	23.799898	90.420766

And then on next phase, we will use this location data to get venues using FourSquare API.

Code

```
explore_df_list = []

for i, nbd_name in enumerate(df['Neighbourhood']):

    try :
        ### Getting the data of neighbourhood
        nbd_name = df.loc[i, 'Neighbourhood']
        nbd_lat = df.loc[i, 'Latitude']
        nbd_lng = df.loc[i, 'Longitude']

        radius = 500 # Setting the radius as 500 metres
        LIMIT = 30 # Getting the top 30 venues

        url =
'https://api.foursquare.com/v2/venues/explore?&client_id={}&client_secret={}&v={}&ll={},{}&radius={}&limit={}'.format(
            CLIENT_ID,
            CLIENT_SECRET,
            VERSION,
            nbd_lat,
            nbd_lng,
            radius,
            LIMIT)

        results = json.loads(requests.get(url).text)
        results = results['response']['groups'][0]['items']

        nearby = io.json.json_normalize(results) # Flattens JSON

        # Filtering the columns
        filtered_columns = ['venue.name', 'venue.categories', 'venue.location.lat', 'venue.location.lng']
        nearby = nearby.loc[:, filtered_columns]

        # Renaming the columns
        columns = ['Name', 'Category', 'Latitude', 'Longitude']
        nearby.columns = columns

        # Gets the categories
        nearby['Category'] = nearby.apply(get_category_type, axis=1)

        # Gets the data required
        for i, name in enumerate(nearby['Name']):
            s_list = nearby.loc[i, :].values.tolist() # Converts the numpy array to a python list
            f_list = [nbd_name, nbd_lat, nbd_lng] + s_list
            explore_df_list.append(f_list)

    except Exception as e:
        pass
```

This will give us the desired information in a data frame

	Neighbourhood	Neighbourhood Latitude	Neighbourhood Longitude	Venue Name	Venue Category	Venue Latitude	Venue Longitude
0	Bailey Road, Dhaka	23.741785	90.405797	Baily Road	Other Great Outdoors	23.741915	90.409120
1	Bailey Road, Dhaka	23.741785	90.405797	Boomers	Fast Food Restaurant	23.741932	90.409975
2	Bailey Road, Dhaka	23.741785	90.405797	Baily Road Officer's Club	Plaza	23.742332	90.405257
3	Bailey Road, Dhaka	23.741785	90.405797	Dosa Express	Indian Restaurant	23.742223	90.410003
4	Bailey Road, Dhaka	23.741785	90.405797	Pizza Hut	Fast Food Restaurant	23.741845	90.409812

At this point we can use these data sets and explore data and proceed with our final goal.