Capstone Project: Entertainment Facility Recommendations in London

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1. Introduction

Description of the problem

- Entertainment place recommendation is a challenging task
- The preference of entertainment varies in different time intervals or period
- Entertainment preference also varies from culture to culture

1. Introduction

Background

- London is one of the most attractive locations in the world
- London is one of the most diverse cities in the world
- Places that are convenient, high-rated, and affordable should be given priority
- An efficient recommendation system should be considered
- This can give reasonable suggestions for people to find the right place

2. Methodology

Data

- https://en.wikipedia.org/wiki/ListofareasofLondon
- Many of the world's largest tech companies rely on Foursquare data to add location intotheir apps and services
- This project will take benefits from the FoursquareAPI application to access available data for the investigation.

2. Methodology

Data Handling

- BeautifulSoup library in Python is usedto read the HTML content of data
- obtained data will be fed into dataframe to extractthe most informative attributes
- A map of theselocations should be displayed to facilitate the visualization for custumers

3. Data Acquisition and Processing

Data Acquisition

- Data collected from London postal district database includes several important attribute:
  - Location
  - Borough
  - Post town
  - Postal code
  - Dial code
  - OS grid ref

3. Data Acquisition and Processing

Feature Extraction

	Location	Borough	Postcode
0	Abbey Wood	Bexley, Greenwich	SE2
1	Acton	Ealing, Hammersmith and Fulham	W3
2	Acton	Ealing, Hammersmith and Fulham	W4
3	Angel	Islington	EC1
4	Angel	Islington	N1

3. Data Acquisition and Processing

Geographical Location Mapping

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Bexley, Greenwich	51.49245	0.12127	Sainsbury's	51.492824	0.120724	Supermarket
1	Bexley, Greenwich	51.49245	0.12127	Lesnes Abbey	51.489526	0.125839	Historic Site
2	Bexley, Greenwich	51.49245	0.12127	Lidl	51.496152	0.118417	Supermarket
3	Bexley, Greenwich	51.49245	0.12127	Abbey Wood Railway Station (ABW)	51.490825	0.123432	Train Station
4	Bexley, Greenwich	51.49245	0.12127	The Abbey Arms	51.490693	0.121182	Pub

3. Data Acquisition and Processing

Feature Representation

In [19]:
```
df_cluster = df_onehot.groupby('Neighborhood').mean().reset_index()
df_cluster.head()
```

Out[19]:

	Neighborhood	Accessories Store	Afghan Restaurant	African Restaurant	American Restaurant	Argentinian Restaurant	Art Gallery	Art Museum	Arts & Crafts Store	Arts & Entertainment	...	Turkish Restaurant	Veg Res
0	Barking and Dagenham	0.0	0.0	0.009950	0.000000	0.0	0.029851	0.019900	0.000000	0.0	...	0.000000	0.0
1	Barnet	0.0	0.0	0.000000	0.010989	0.0	0.000000	0.000000	0.010989	0.0	...	0.032967	0.0
2	Barnet, Brent, Camden	0.0	0.0	0.000000	0.000000	0.0	0.000000	0.000000	0.000000	0.0	...	0.000000	0.0
3	Barnet, Enfield	0.0	0.0	0.010204	0.000000	0.0	0.030612	0.020408	0.000000	0.0	...	0.000000	0.0
4	Bexley	0.0	0.0	0.009967	0.000000	0.0	0.029900	0.019934	0.000000	0.0	...	0.000000	0.0

5 rows × 194 columns

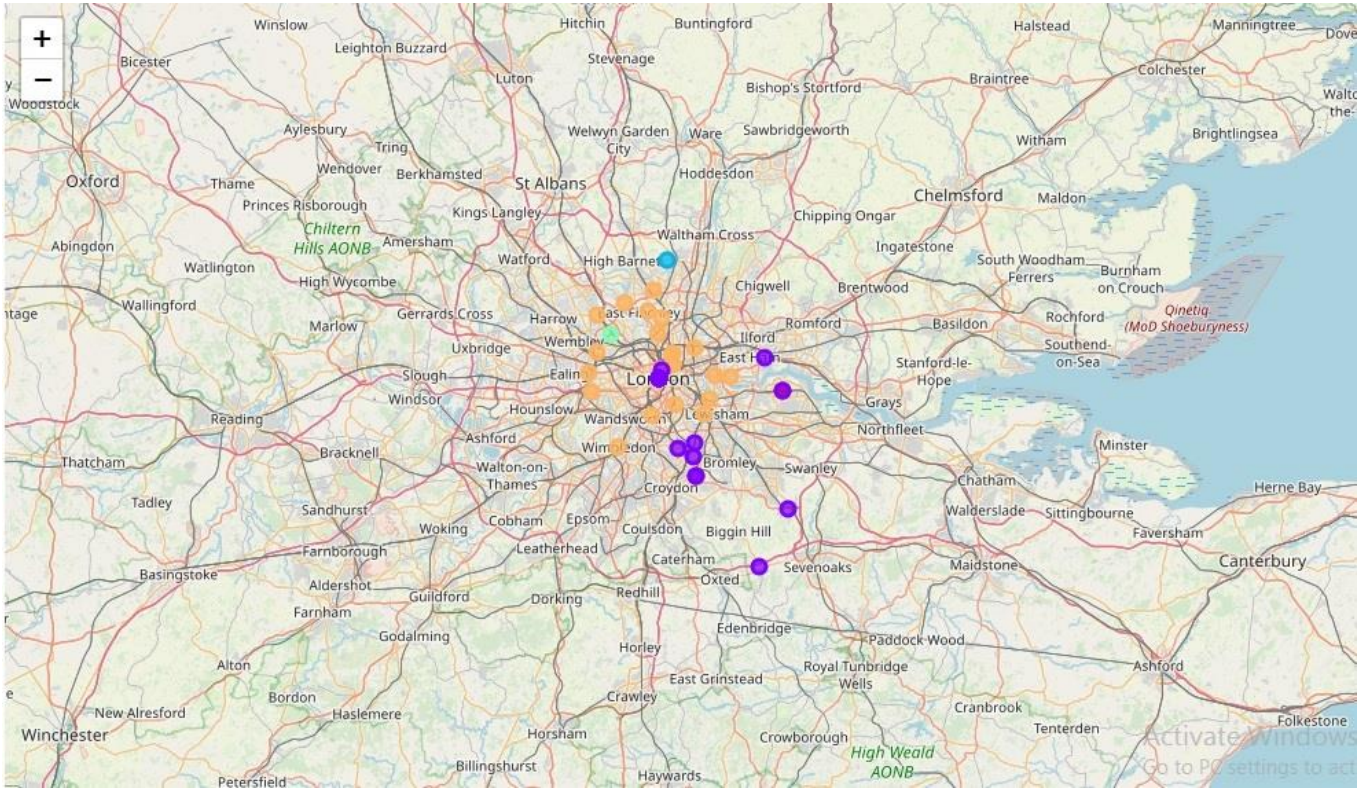
4. Results

Common venues by cluster labels

	Location	Borough	Postcode	Latitude	Longitude	Cluster Labels	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 I Com Ve
0	Abbey Wood	Bexley, Greenwich	SE2	51.49245	0.12127	2	Hotel	Monument / Landmark	Theater	Wine Bar	Plaza	Cocktail Bar	Garden	Pub
1	Acton	Ealing, Hammersmith and Fulham	W3	51.51324	-0.26746	2	Hotel	Monument / Landmark	Theater	Wine Bar	Plaza	Cocktail Bar	Garden	Pub
2	Acton	Ealing, Hammersmith and Fulham	W4	51.48944	-0.26194	2	Hotel	Monument / Landmark	Theater	Wine Bar	Plaza	Cocktail Bar	Garden	Pub
3	Angel	Islington	EC1	51.52361	-0.09877	2	Hotel	Monument / Landmark	Theater	Wine Bar	Plaza	Cocktail Bar	Garden	Pub
4	Angel	Islington	N1	51.53792	-0.09983	2	Hotel	Monument / Landmark	Theater	Wine Bar	Plaza	Cocktail Bar	Garden	Pub

4. Results

Folium map of common venues in London



5. Discussion

Through results and analysis in the previous section, it can be seen that London offers one of the planet's greatest concentrations of cultural attractions. From accommodation palaces such as Hotel to the people's entertainment needs, from Theater and Plaza to Monument/Landmark for breathtaking views. Moreover, tourists could spend endless days exploring London's night life facilities like Wine/Cocktail Bar or Art without ever running out of unique things to see and do.

5. Conclusion

The key idea was to use user data from Foursquare and recommend individuals to venues. The primary conclusion I reached to after trying several recommendation models was: The concept of geographic distance is as important as the user's taste in all venue categories. In simpler terms, this means that the likelihood of a person visiting a restaurant depends a lot on the geographic location of the restaurant and not just the users taste alone! So how could this conclusion help a data engineer come up with an answer to the venue commendation problem? This project will help users to use data and data models to come up with an answer for queries like: Given a venue (e.g. an Indian Restaurant), select individuals who are likely to visit it. These kinds of queries come under the broad purview of "venue recommendation".

Thank you!