Capstone Project - The Battle of Neighborhoods

Introduction

Cost of living is constantly increasing as time progress and in bay area, California it is even more competitive to find a cost-efficient residence because of increasing demand and so-called tag of Silicon Valley.

I am planning to move to California as I got an internship at Tesla Inc. and looking for apartments which are cost-efficient and not far away from the Tesla factory. It is very crucial not only for me but anyone who is migrating to some other location to find a good apartment for a better lifestyle and peaceful living. Myriad of resources on internet makes it difficult for individuals to look for apartments of their choice and finally ends up making some bad decisions.

 To enhance this process, I applied data science principles to get all the apartments near Tesla factory and then filter out apartments that relates to my needs on the basis of distance from the factory, commute methods, nearby grocery stores, standard of living, etc. so it is easy for person to choose the place which fits in best to their needs. The needs change from individual to individual and so this in this project I have specified criteria according to my preferences. Preferences changes from person to person and so the code could be modified slightly in order to get apartments of their interest. The ultimate goal of the project is to narrow down the list of apartments to such a extent that it is both easy and feasible for a person to filter out apartments by hassle free process.

The target audience for this project would be mostly students who get an internship at Tesla or some other companies nearby and are looking for an economical & cost-efficient way of living around it.
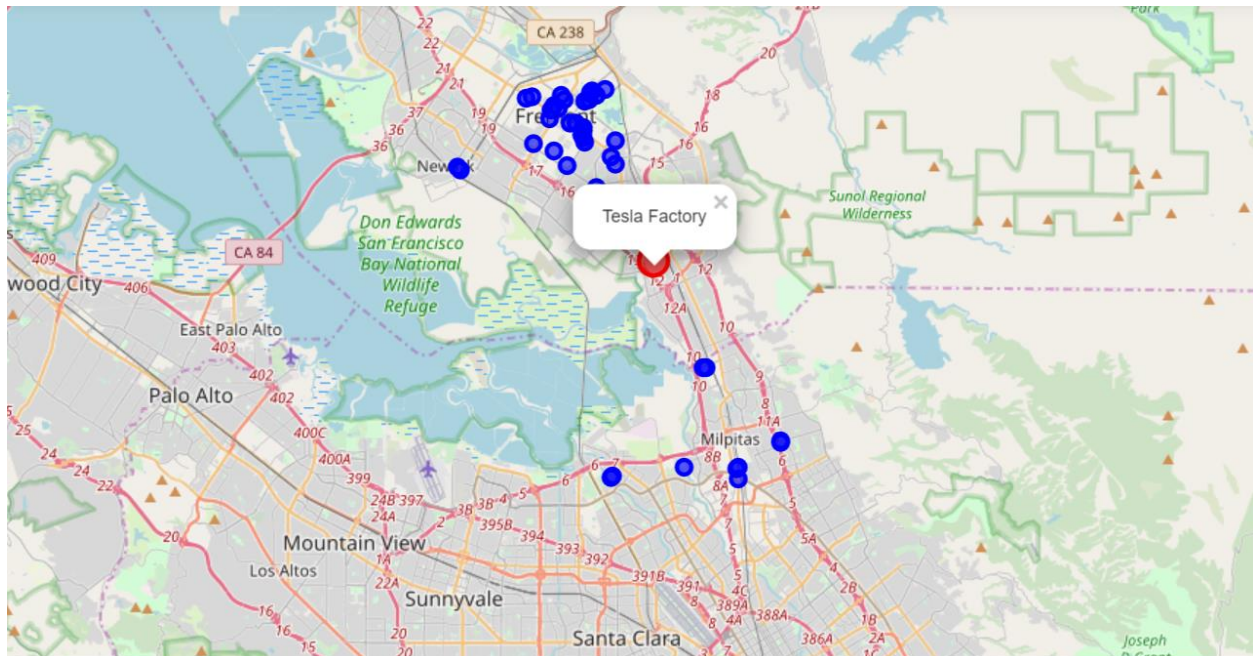
Data Description

The data I used for this analysis is obtained by Foursquare API. Foursquare API is a social network service which helps us exploring the world around us and so contains most of our neighborhood data. I have used this API to get the location of the Tesla Factory and all the apartments which are within 5 miles from the factory. I pulled out the data for various apartments and their neighborhoods and then analyzed it to filter out the apartment of mine choice.

Methodology

With the help of Foursquare API, I got the location coordinates of Tesla factory and performed apartment search within 5 miles from the factory. User could change the distance according to

their needs. I set limit to 50 but it returned to me list of 41 apartments which were scattered in either Fremont or Milpitas area as shown below:

Majority of apartments are in Fremont and after some reviews from fellow interns at the company I identified Fremont as ideal place for living for interns. So, on doing so my search list got narrower from 41 to 29.

```
:  0                     Aya Apartments
   1         Pathfinder Village Apartments
   2                Alborada Apartments
   3            The Presidio Apartments
   4                Presidio Apartments
   5    Archstone Fremont Center Apartments
   6                Presidio Apartments
   7         Colonial Gardens Apartments
   8               Bridgeway Apartments
   9                 Sundale Apartments
   10             Ramblewood Apartments
   11            Pennsylvania Apartments
   12                  Mosaic Apartments
   13               Boulevard Apartments
   14            Lincoln Glen apartments
   15    Archstone Fremont Center Apartments
   16             Rancho Luna Apartments
   17                Lakeview Apartments
   18              Waterfront Apartments
   19    Waterstone Apartments Leasing Office
   20             Carrington Apartments
   21                  Stevenson Place
   22                        The Woods
   23                Parkwood Apartments
   24            Mission Peaks Apartment
   25                    Fitness Center
   26        Sycamore Commons Apartments
   27               Pentagon Apartments
   28              Peppertree Apartments
Name: name, dtype: object
```

After getting the list of apartments I started filtering out apartments.

1. Based on distance from BART (Bay Area Rapid Transit) Stations.

2. Based on neighborhood like grocery stores, park, supermarkets, etc.

There are two Bart Station near to Tesla on Fremont side:

a. Warm Springs Bart – Only 0.5 miles away from Tesla factory

b. Fremont Bart Station - 4-5 miles from factory

a) Get the location coordinates of warm spring bart

```
address_warmsprings = '45193 Warm Springs Blvd, Fremont, CA'

geolocator_warmsprings = Nominatim(user_agent="on_explorer")
location_warmsprings = geolocator_warmsprings.geocode(address_warmsprings)
latitude_warmsprings = location_warmsprings.latitude
longitude_warmsprings = location_warmsprings.longitude
print('The geograpical coordinate of Warm Springs South Fremont station  are {}, {}.'.format(latitude_warmsprings, longitude_
```

The geograpical coordinate of Warm Springs South Fremont station are 37.5024209288, -121.936624341.

b) Get the location coordinates of fremont bart

```
address_FremontBart = '2000 Bart Way, Fremont, CA'

geolocator_FremontBart = Nominatim(user_agent="on_explorer")
location_FremontBart = geolocator_FremontBart.geocode(address_FremontBart)
latitude_FremontBart = location_FremontBart.latitude
longitude_FremontBart = location_FremontBart.longitude
print('The geograpical coordinate of Fremont Bart station  are {}, {}.'.format(latitude_FremontBart, longitude_FremontBart))
```
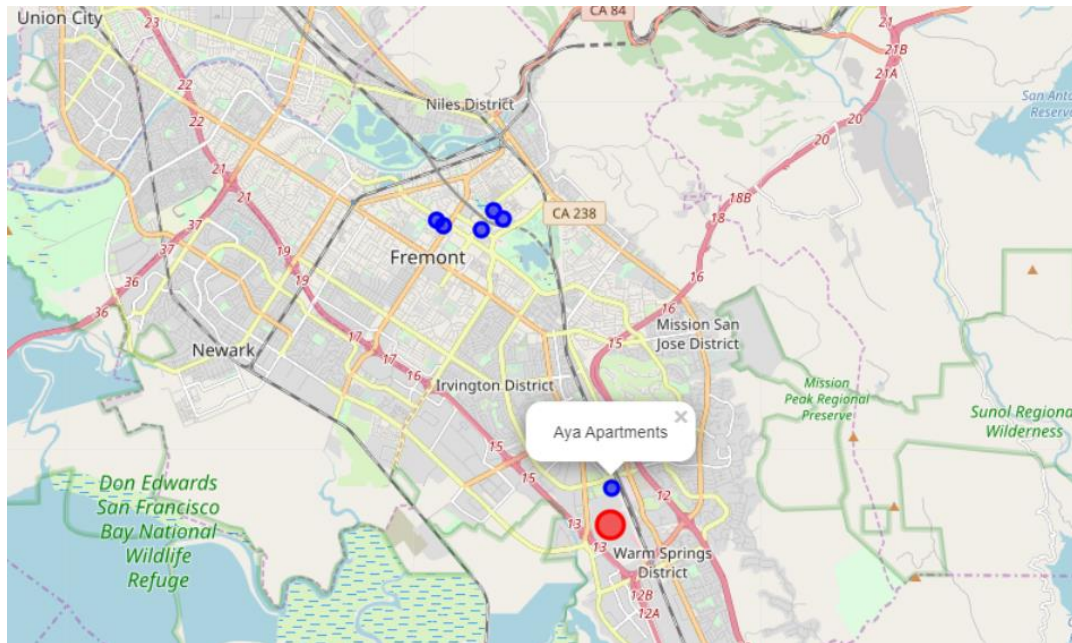
The geograpical coordinate of Fremont Bart station are 37.555547, -121.978232.

Tesla offer free shuttle commute to its employees to & from Warm Springs Bart Station. So, it would be convenient and cost effective in commuting if I could have my apartment located close to any of the station. Therefore, I started filtering out apartments which are 0.5 miles from the factory.

On doing so my list narrowed down to 9 apartments. In those I noticed some duplicates which the Foursquare API was not able to identify as one single record. So I removed this duplicate records and was left with a list of 6 apartments

```
0                    Aya Apartments
1           The Presidio Apartments
2            Mission Peaks Apartment
3        Sycamore Commons Apartments
4   Archstone Fremont Center Apartments
5             Ramblewood Apartments
Name: name, dtype: object
```

Visualizing these apartments on map I found that 'Aya Apartments' are near to Warm Springs Bart and also very close to Tesla so one of the potential choice while all others are near Fremont Bart station.

So I have two options to look for- first is Aya Apartments and second is near Fremont Bart Station where all other apartments are located. Aya being close to Tesla is potential choice but when we explore about neighborhoods contradicting results are obtained.

Neighborhood around Aya Apartments

	name	categories	lat	lng	distance
0	Sala Thai #2	Thai Restaurant	37.503043	-121.947844	513
1	REI	Sporting Goods Shop	37.510488	-121.947589	1050
2	Warm Springs/South Fremont BART Station	Metro Station	37.503871	-121.938264	396
3	DasBrew	Brewery	37.502824	-121.954864	1124
4	Sharks Ice	Skating Rink	37.507154	-121.943545	576
5	Campo Di Bocce of Fremont	Italian Restaurant	37.510507	-121.950808	1208
6	California Badminton Academy	Gym	37.493146	-121.933701	1244
7	Lemans Karting	Racetrack	37.495430	-121.930550	1265
8	Chipotle Mexican Grill	Mexican Restaurant	37.511046	-121.940705	1005
9	Chef Cho	Taiwanese Restaurant	37.496724	-121.935772	821
10	Fremont Marriott Silicon Valley	Hotel	37.489187	-121.946079	1477
11	Starbucks	Coffee Shop	37.504709	-121.933987	778
12	American Swim Academy (new building)	Athletics & Sports	37.510438	-121.953245	1349
13	The Peak climbing gym (The Peak of Fremont)	Climbing Gym	37.510575	-121.950936	1221
14	Starbucks	Coffee Shop	37.511258	-121.948051	1145

Neighborhood around all other Apartments

	name	categories	lat	lng	distance
0	Fremont Dog Park	Dog Run	37.552481	-121.967071	453
1	Fremont Main Library	Library	37.550895	-121.971139	594
2	Fremont Central Park	Park	37.552258	-121.963812	657
3	Pet Food Express	Pet Store	37.554575	-121.981105	1038
4	Lake Elizabeth	Lake	37.547288	-121.964561	1070
5	Philz Coffee	Coffee Shop	37.553565	-121.980273	991
6	Miki Bistro	Japanese Restaurant	37.553858	-121.979723	935
7	Raley's	Supermarket	37.553608	-121.979078	889
8	Fremont Tennis Center	Tennis Court	37.556750	-121.960167	826
9	The Counter	Burger Joint	37.552377	-121.977946	851
10	Frodo Joe's Petite Cafe	Café	37.553124	-121.978217	836
11	Always Dream Play Park	Playground	37.562575	-121.967226	751
12	Sala Thai	Thai Restaurant	37.550522	-121.979365	1068
13	Peet's Coffee & Tea	Coffee Shop	37.554296	-121.981846	1107
14	Massage Envy - Fremont	Spa	37.554554	-121.980857	1016

There is nothing much around the Aya apartments apart from variety of different restaurants which does not matter much since occasionally someone eats outside. While near Fremont Bart there is lot to do like library, park, lake, dog run, supermarket, Tennis/Soccer courts, etc. which makes it much better community and so even it is a little far, it is worth living around this community.

So, I excluded Aya Apartments and got my final list of 5 apartments which I can go through and select the best according to cost, floor plan and availability. I have pulled out all the contact details available in Foursquare API to quickly explore the apartment and finalize the one which is in your best interest.

	name	address	website	contact	canonicalUrl
1	The Presidio Apartments	2000 Walnut Ave	http://www.livingatpresidioapts.com	(510) 744-1200	https://foursquare.com/v/the-presidio-apartmen...
2	Mission Peaks Apartment	1401 Red Hawk Cir	No url found	(877) 837-2643	https://foursquare.com/v/mission-peaks-apartme...
3	Archstone Fremont Center Apartments	39410 Civic Center Dr	http://www.equityapartments.com/san-francisco-...	(510) 792-1299	https://foursquare.com/v/archstone-fremont-cen...
4	Sycamore Commons Apartments	NaN	No url found	Phone no. not available	https://foursquare.com/v/sycamore-commons-apar...
5	Ramblewood Apartments	38800 Hastings St	No url found	Phone no. not available	https://foursquare.com/v/ramblewood-apartments...

Results

Based on the above analysis with the help of Foursquare data, I was able to narrow down the list of apartments and now did investigation for each of them. The apartments which I finalized included:

1. Presidio Apartments

2. Mission Peaks Apartments

3. Arch stone Fremont Center Apartments

4. Sycamore Commons Apartment

5. Ramble wood Apartments

On investigating to each of them I decided to move forward with mission peaks which is primarily based on cost, floor plan and mine custom lease tenure.

Discussion

The whole methodology of the project was based on neighborhood data and Foursquare location API. Even though apartments like Aya which are walking distance from the work location were not in the top 5 shortlisted ones. This shows us the importance of neighborhood and the role it can play in some crucial decision-making process.

I also tried to get reviews about each apartment since it is much more helpful in determining the culture of the community and their empathy towards the residents. But because of limited data available the analysis could not be performed.

And since the project was based on Battle of Neighborhoods, I only considered factors such as distance and local community around apartments to filter out some specific one. In general, one can dig more further by web scrapping the data for all the short listed apartments and compare the floor plans, cost, availability, lease tenure etc. directly on python instead of manually reaching out to each of the specific one.

Conclusion

Apartment search though might seem easy but is very tedious and time-consuming task and so it is necessary to have a tool which can help you filter the search list based on your preferences. I have taken in account some of such factors which not only helps in getting the list of apartments but also provide a comprehensive view of the locality and the community around them. Thus I am glad to complete my apartment search with minimum effort and in future look forward to enhance it better and better.