

Capstone Project

Introduction

I would like to open a hotel/restaurant near beach side. As it is a famous tourist spot, there is already lots of attention towards it. I know there will be many competitors in terms of hotel and restaurant. But keeping them in mind, need to locate my hotel in place where more people are attracted and comfortable for a stay and a good meal. I want to bring foreign and local people's attention towards my new hotel. I would like to flavor my restaurant recipe with Italian, American, typical south & north Indian foods to grab their taste.

The challenge is to find a suitable location for opening a new hotel / restaurant attracted to all local and foreign people in the center of all famous venues.

Data

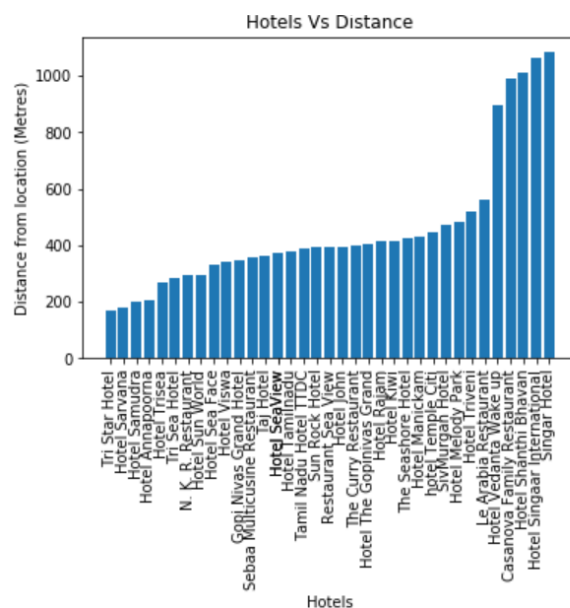
We will be completely working on Foursquare data to explore and try to locate our new hotel where more venues like church, temples, beach, museums, memorials that are present nearby.

We will looking for midpoint area of venues to locate our new hotel. Before that our major focus will be on all venues present in and around the core place of Kanyakumari. We will perform some EDA on hotels & restaurants present in the tourist spot. On further notebook we will use Foursquare data to determine other venues as well.

Methodology

In this section we will perform some data analysis and EDA to find insight from data. We try to understand the current stats of all given data. Probably clustering or centroid of all venues will help us to locate new hotel.

- Identify how far are hotels from the core location

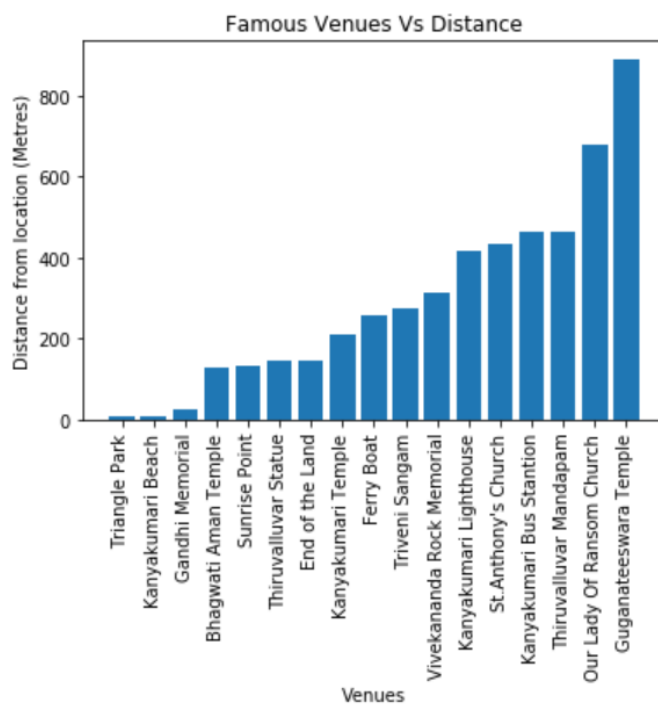


Average distance between hotels and core location is 454 metres

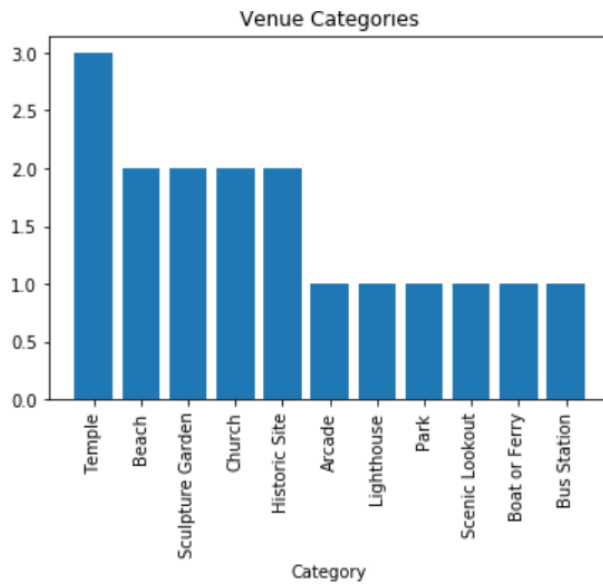
- Explore for other venues around Kanyakumari

	name	categories	distance	lat	Ing
0	Bhagwati Aman Temple	Temple	127	8.079735	77.550979
1	Kanyakumari Temple	Temple	209	8.080701	77.551147
2	hotel Temple Citi	Hotel	448	8.083273	77.549709
3	Guganateeswara Temple	Temple	891	8.087151	77.548584
0	St.Anthony's Church	Church	435	8.082916	77.551320
1	Our Lady Of Ransom Church	Church	680	8.085158	77.551544
0	Triangle Park	Park	8	8.079332	77.549930
1	Hotel Melody Park	Hotel	482	8.083571	77.549568

- Extract Venues using Search Queries¶
- Get location of all venues and store data in a dataframe
- How far are venues from the core location



- Visualizing venue categories



- Show rating of all venues

	Venue	Rating	distance
0	Sunrise Point	8.5	135
1	Vivekananda Rock Memorial	8.2	312
2	End of the Land	7.5	148
3	Kanyakumari Beach	6.9	10
4	Triveni Sangam	6.9	277
5	Thiruvalluvar Statue	No Rating Yet	147
6	Ferry Boat	No Rating Yet	259
7	Gandhi Memorial	5.4	26
8	Kanyakumari Lighthouse	No Rating Yet	417
9	Thiruvalluvar Mandapam	No Rating Yet	466
10	Kanyakumari Bus Stantion	No Rating Yet	465
11	Bhagwati Aman Temple	No Rating Yet	127
12	Kanyakumari Temple	No Rating Yet	209
13	Guganateeswara Temple	No Rating Yet	891
14	St.Anthony's Church	No Rating Yet	435
15	Our Lady Of Ransom Church	No Rating Yet	680
16	Triangle Park	No Rating Yet	8

- Get number of tips for all venues

	Venue	Tips	distance
1	Vivekananda Rock Memorial	16	312
0	Sunrise Point	4	135
3	Kanyakumari Beach	3	10
6	Ferry Boat	3	259
7	Gandhi Memorial	2	26
2	End of the Land	2	148
10	Kanyakumari Bus Stantion	1	465
8	Kanyakumari Lighthouse	1	417
4	Triveni Sangam	1	277
5	Thiruvalluvar Statue	0	147
9	Thiruvalluvar Mandapam	0	466
11	Bhagwati Aman Temple	0	127
12	Kanyakumari Temple	0	209
13	Guganateswara Temple	0	891
14	St.Anthony's Church	0	435
15	Our Lady Of Ransom Church	0	680

- Extract rated and tips venues

	Venue	Rating	distance	Tips
0	Sunrise Point	8.5	135	4
1	Vivekananda Rock Memorial	8.2	312	16
2	End of the Land	7.5	148	2
3	Kanyakumari Beach	6.9	10	3
4	Triveni Sangam	6.9	277	1
5	Ferry Boat	No Rating Yet	259	3
6	Gandhi Memorial	5.4	26	2
7	Kanyakumari Lighthouse	No Rating Yet	417	1
8	Kanyakumari Bus Stantion	No Rating Yet	465	1

- Construct a final list of venues

	index	categories	distance	id	lat
0	0	Beach	135	4f21fd64e4b0717a65eeddc3	8.0
1	1	Sculpture Garden	312	4b9cbc7ef964a520e37836e3	8.0
2	2	Arcade	148	4f22babfe4b0ed339695e61e	8.0
3	3	Beach	10	4e8d9f944fc653e47d1afef1	8.0
4	4	Historic Site	277	4eb57ae40cd688257829927c	8.0
5	10	Boat or Ferry	259	4c71df7857b6a1436f4ec4cc	8.0
6	11	Historic Site	26	4e8d8fc94fc653e47d19524a	8.0
7	12	Lighthouse	417	4c711c4334443704e6f5255f	8.0
8	15	Bus Station	465	4edc1b4846907c1b44ba0ed8	8.0

- Final clustering based on venues

	name	Arcade	Beach	Boat or Ferry	Bus Station	Historic Site	Lighth
0	Sunrise Point	0	1	0	0	0	0
1	Vivekananda Rock Memorial	0	0	0	0	0	0
2	End of the Land	1	0	0	0	0	0
3	Kanyakumari Beach	0	1	0	0	0	0
4	Triveni Sangam	0	0	0	0	1	0

- Center of all clusters and midpoint of all venues\

Result

My hotel location

- Final location is pointed at **8.07985,77.54973**
- This location is **at Beach Road opposite to Gandhi Memorial and Kumari Temple.**
- Located at exact junction of two cross roads which can give more attention to people who passby.

Top rated venues

- Sunrise Point
- Vivekananda Rock Memorial
- End of the Land
- Kanyakumari Beach
- Triveni Sangam
- Gandhi Memorial

All these venues are rated well than other and also they have more tips and located within 320 meters to core location of kanyakumari. So tourists may like to visit these places.

Discussion

From above reports, we could get an idea why the predicted one is pointed/clustered on the given spot. First, most thing could be the center of attraction for the place.

K-Means have figured out the most common place for all the venues. This output was very adjacent to the core location. This proves the accurate spotting of our predicted algorithm.

Despite of the findings, there were some lack in data. Tips and ratings were missing for most of the venues. Also when I compared foursquare data with google map ,i could see there were many hotels and venues found missing in foursquare.

Conclusion

As a business person, one would be able to set up a hotel/restaurant on given spot. This will bring revenue automatically as we have located in very near to core one. We proved this with K-means.