Predicting Location for opening New Hotel

IBM APPLIED DATA SCIENCE CAPSTONE

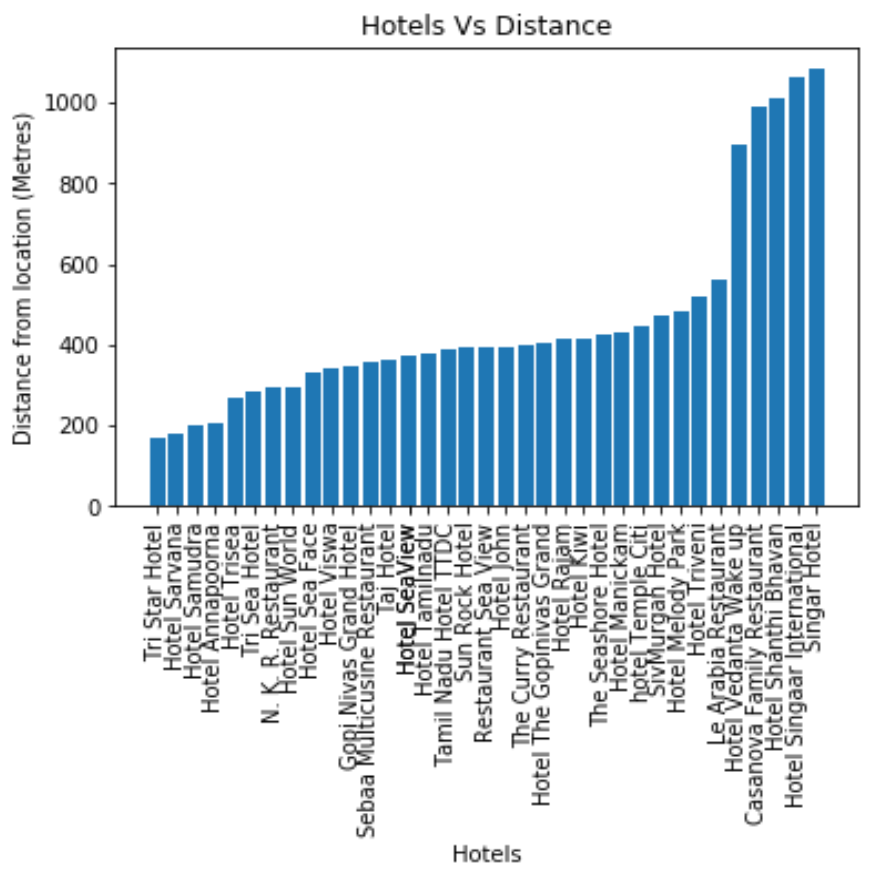
Beginning of New Hotel in Kanyakumari

- Coming down to business problem, 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.
- I want to bring foreign and local peoples attention towards my new hotel.
- The challenge is to find a suitable location for opening a new hotel / restaurant attracted to all local and foreign people in the centre of all famous venues.

Data Source and How will it be used?

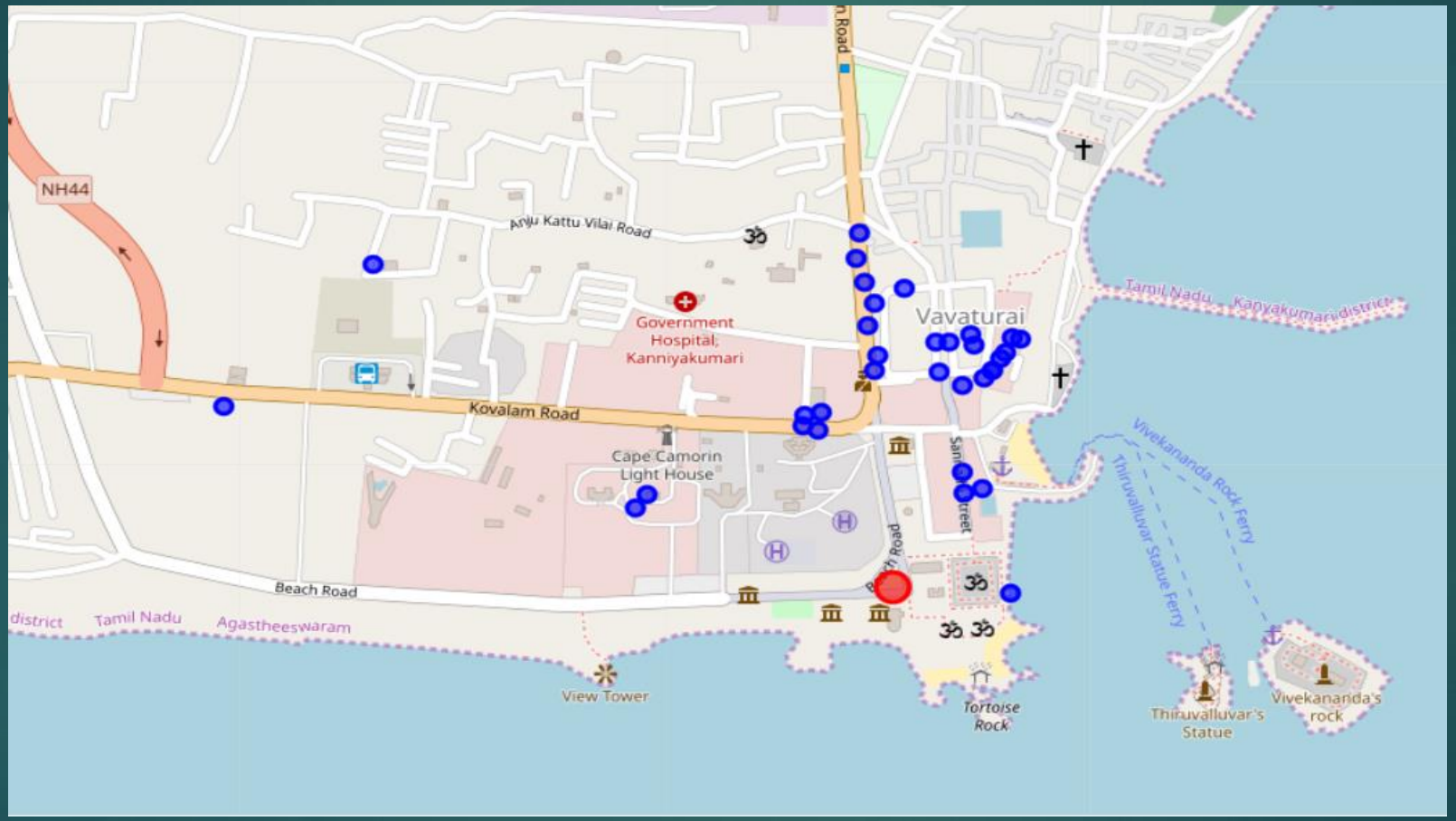
- We will be completely working on **Foursquare data** to explore and try to locate our new hotel where more venues like church, temples, beach, museums, memorials that are present nearby.
- We will looking for midpoint area of venues to locate our new hotel. Before that our major focus will be on all venues present in and around the core place of kanyakumari.
- Our core location of Kanyakumari is spotted at 8.079252,77.549933

Hotels

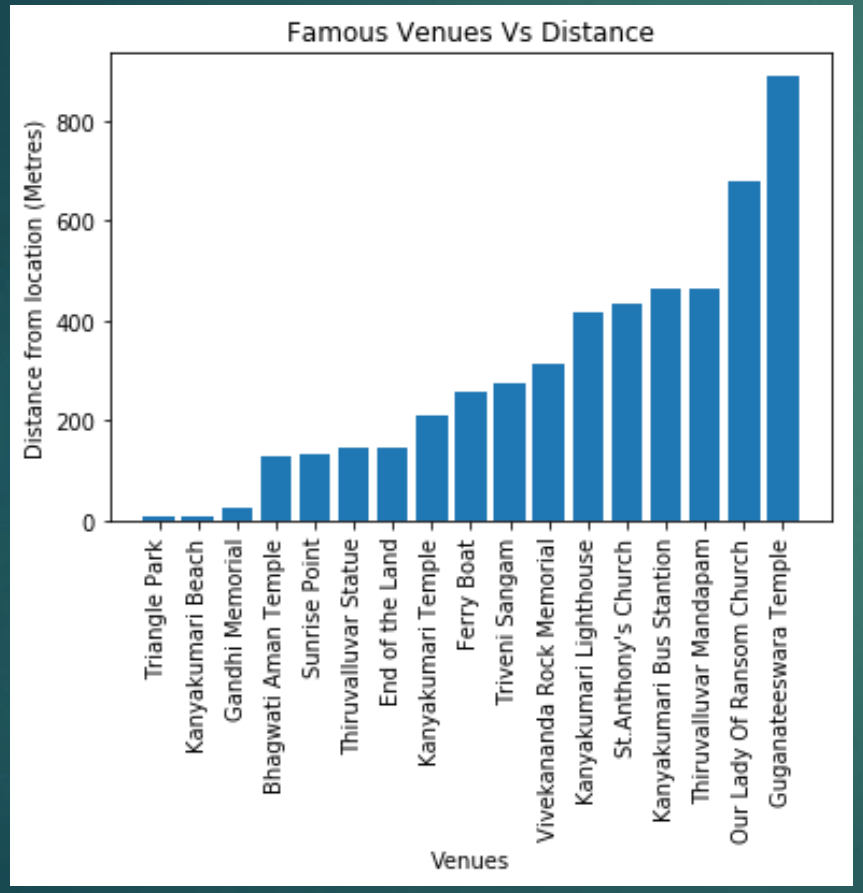


- There are 36 hotels/restaurants within 1 km radius captured through foursquare data.
- Tri Star hotel is closest of all other hotels.
- Singar hotel remains far comparative to rest of hotels/restaurants.
- Average distance between all hotels to core location is 454 metres

Map - Hotels

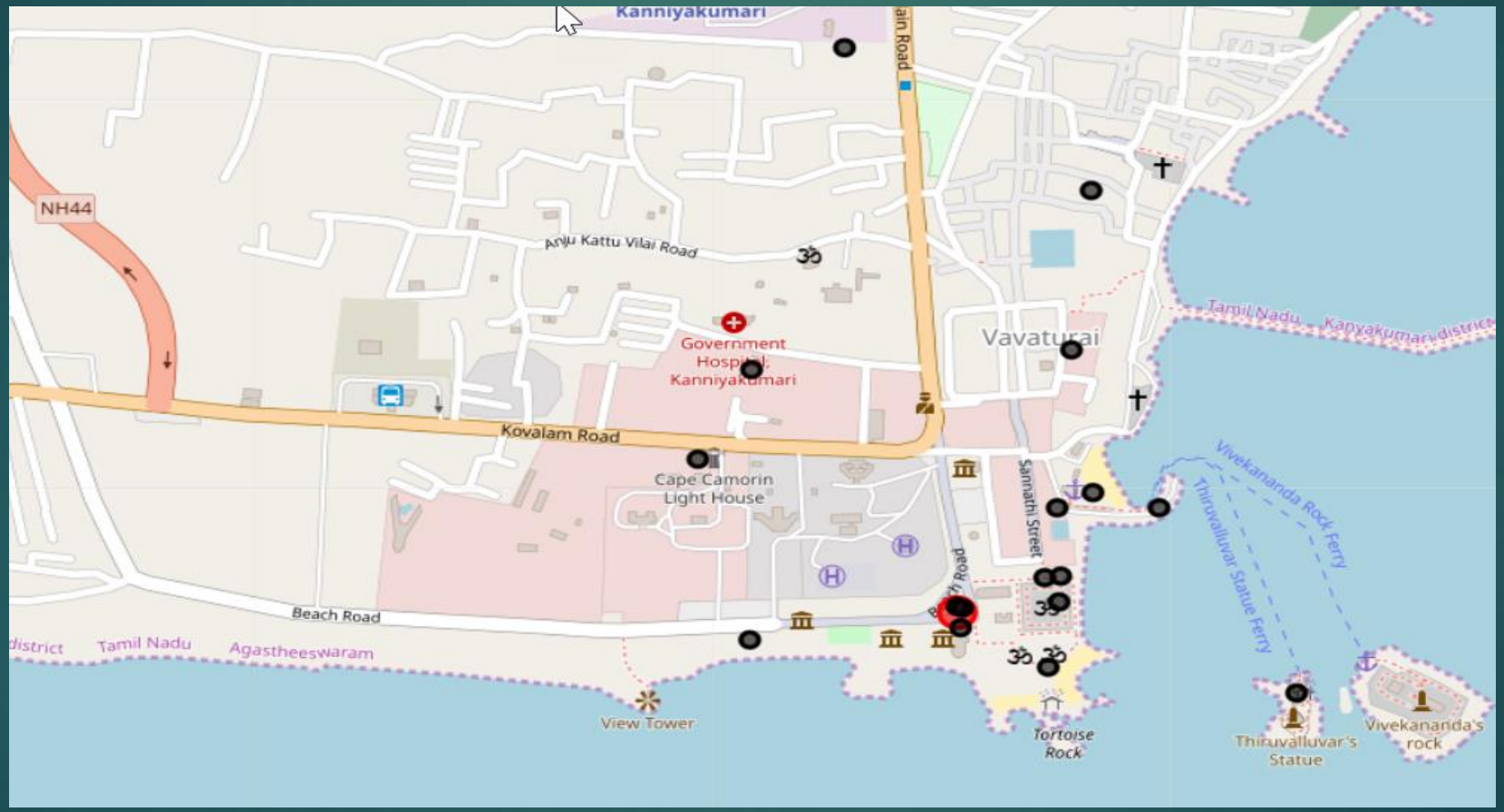

NH44
Anju Kattu Vilai Road
Government Hospital, Kanniyakumari
Vavaturai
Kovalam Road
Cape Camorin Light House
Beach Road
Tamil Nadu
Agastheeswaram
View Tower
Tortoise Rock
Thiruvalluvar's Statue
Vivekananda's rock
Vivekananda Rock Ferry
Thiruvalluvar Statue Ferry

Venues



- There are 17 venues within 1 km radius captured through foursquare data.
- We could see Kanyakumari beach, Gandhi Memorial, Triangle Park are more closer to our location.
- Guganateswara temple is far than rest of places.
- Bus station is also an important venue which is 465 metres from our location

Map - Venues


Kanniyakumari
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Vavaturai
Kovalam Road
Cape Camorin Light House
Samathi Street
Vivekananda Rock Ferry
Thiruvalluvar Statue Ferry
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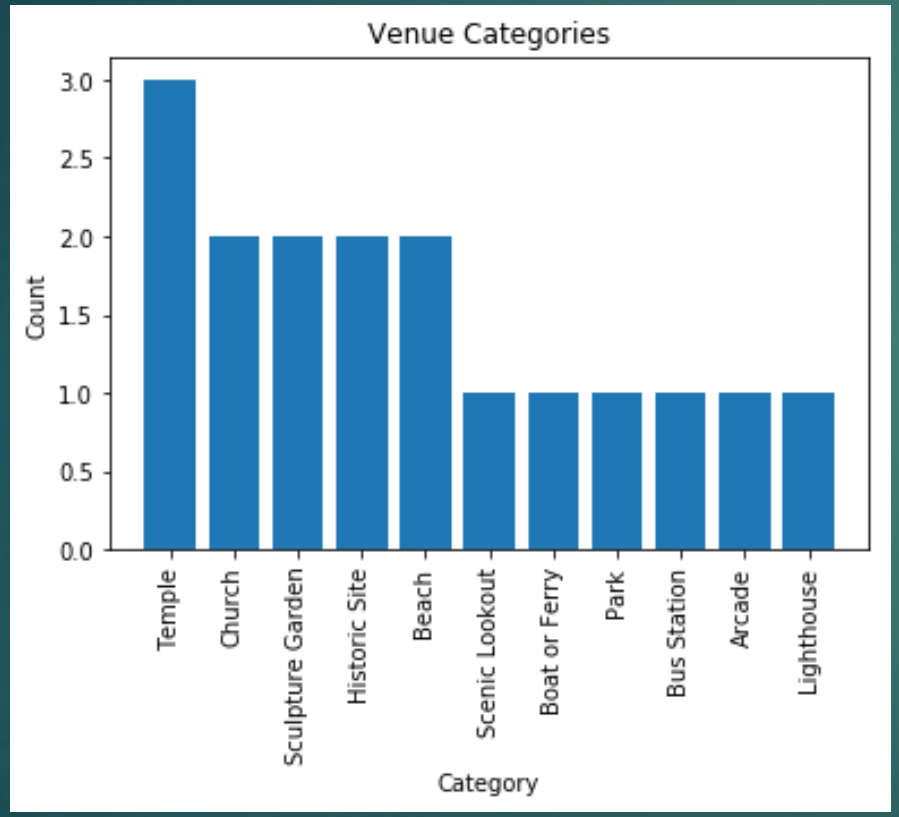
Agastheeswaram
View Tower
Tortoise Rock
Thiruvalluvar's Statue
Vivekananda's rock

Venue Categories



- There are 11 venue categories found in the data
- We could see that **Temple, Beach, Historic sites and Church** are more common venues.
- There is no venue with high variations.

Rating and Tips

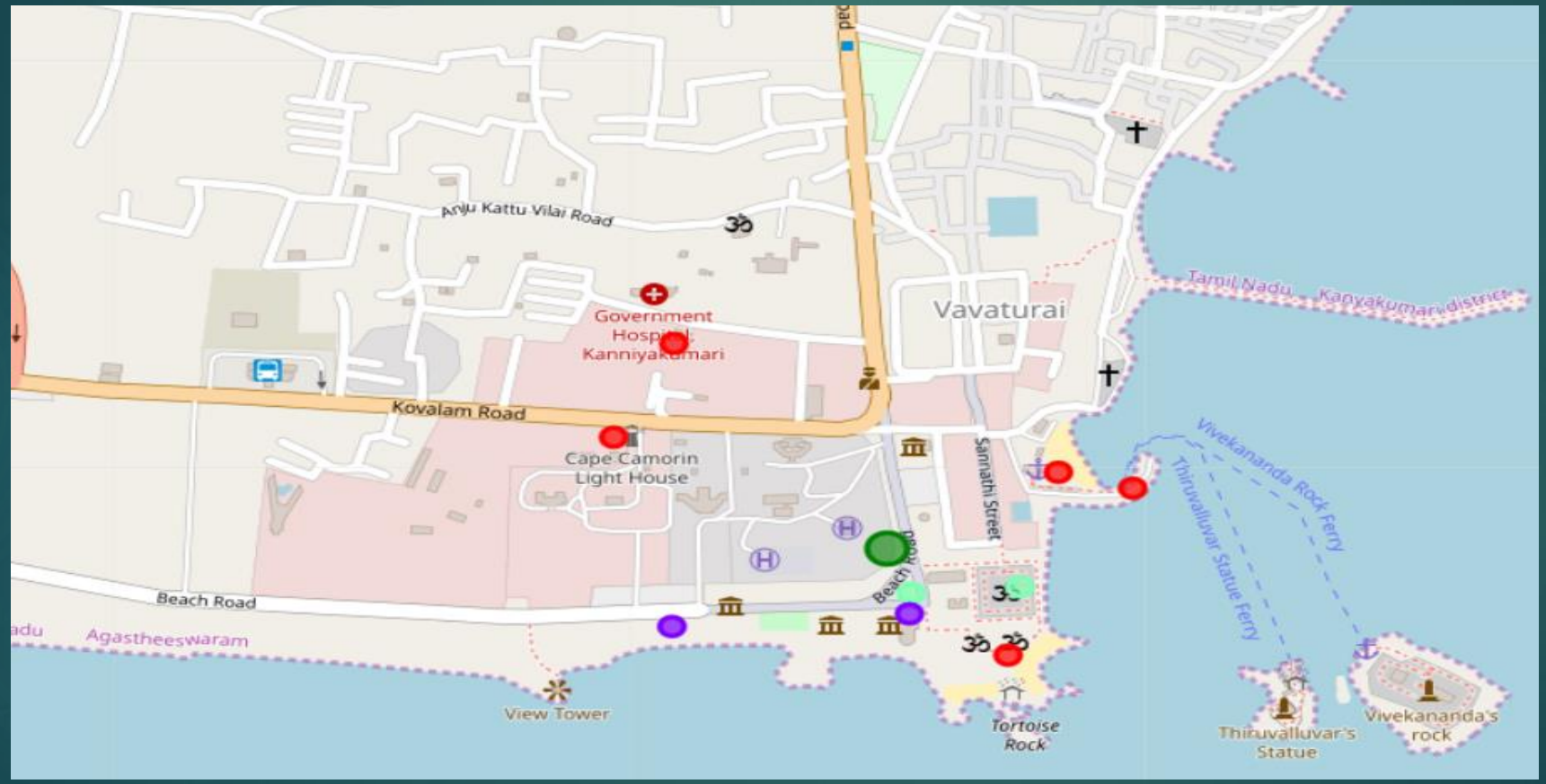
	Venue	Rating	distance	Tips
0	Sunrise Point	8.5	135	4
1	Vivekananda Rock Memorial	8.2	312	16
2	End of the Land	7.5	148	2
3	Kanyakumari Beach	6.9	10	3
4	Triveni Sangam	6.9	277	1
5	Ferry Boat	No Rating Yet	259	3
6	Gandhi Memorial	5.4	26	2
7	Kanyakumari Lighthouse	No Rating Yet	417	1
8	Kanyakumari Bus Stantion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

- Sunrise point has got highest rating.
- Vivekananda Rock memorial has got highest number of times.
- Other interested venues could be Kanyakumari beach, Gandhi memorial, light house
- Other venues which are not in the given list didn't receive any tips or rating.

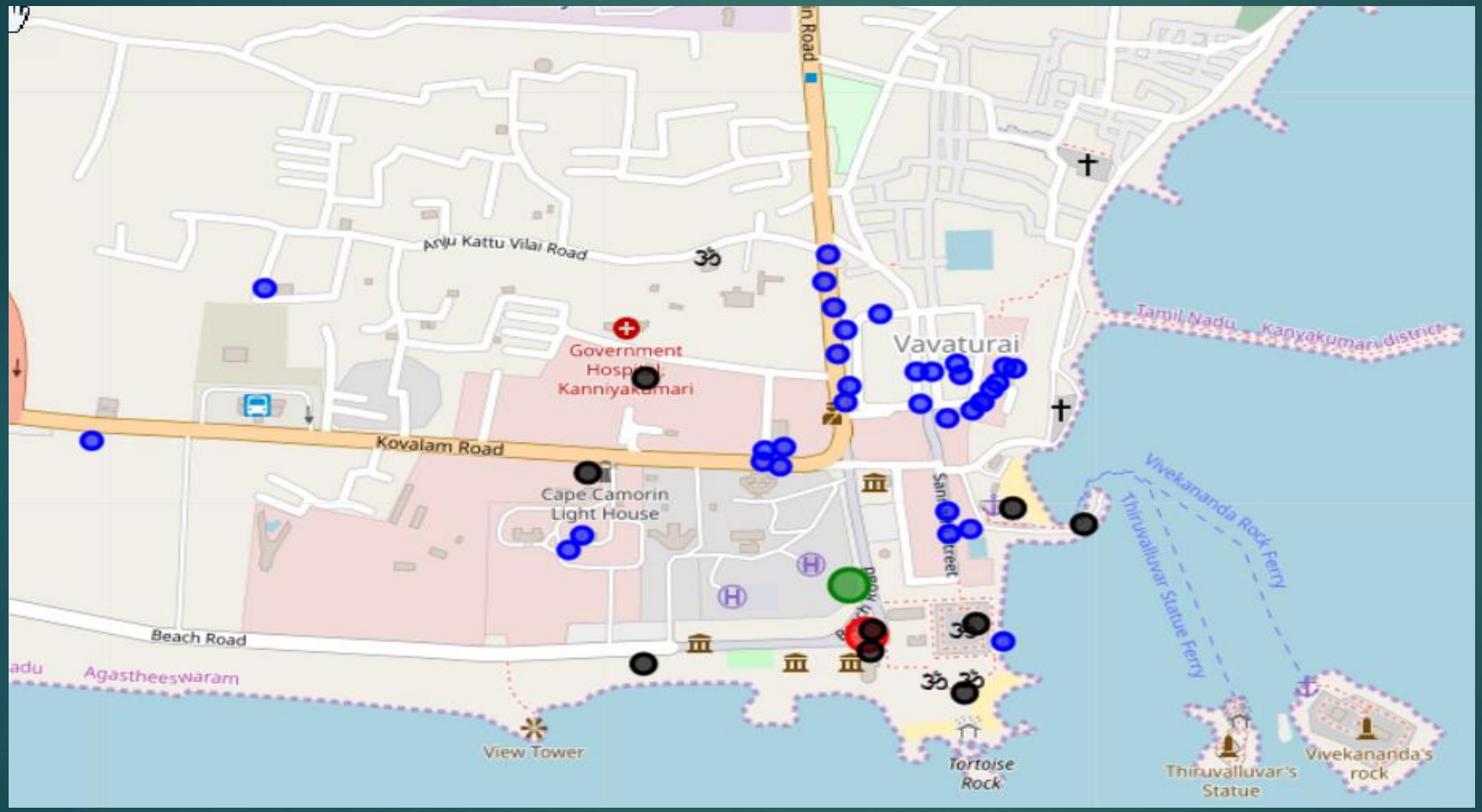
Clustering and Midpoint of venues

- The ideology behind this could be to produce the centre location of all famous top rated/tips venues.
- First we will find the clusters and based on it, we will take average of all centroids.
- Secondly, we will get midpoint of all shortlisted rated venues.
- Now we will get mean of both and decide our final location
- We looked for three clusters and they were sorted out as shown in map(next slide)

Clustered Map



Combined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My Predicted 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 pass by
- Main venues are Sunrise Point ,Vivekananda Rock Memorial ,End of the Land , Kanyakumari Beach.

Discussion & Conclusion

- The output which we achieved was very adjacent to the core location. This proves the accurate spotting of our predicted algorithm.
- 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 combination of Kmeans and midpoint of coordinates.
- 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.
- Anyways, I enjoyed learning and implementing this capstone