

IBM Capstone Project

TOP three RESTAURENT FINDER SYSTEM IN CHENNAI

Introduction:

Problem Background:

Chennai is the capital of the Indian state of Tamil Nadu. Located on the Coromandel Coast off the Bay of Bengal, it is the biggest cultural, economic and educational center of south India. According to the 2011 Indian census, it is the sixth-most populous city and fourth-most populous urban agglomeration in India. The city together with the adjoining regions constitute the Chennai Metropolitan Area, which is the 36th-largest urban area by population in the world. Chennai is among the most-visited Indian cities by foreign tourists. It was ranked the 43rd-most visited city in the world for the year 2015.

Problem Description:

Being one of the best tourist place, people from inside and outside country. Sometimes, it is difficult to decide which place to visit since there are number of places. This project will help the tourists inside and outside Chennai to visit the areas and find the restaurants easily.

Target Audience:

Target audiences for this project does not limit to a person who keeps travelling but everyone. Therefore, target for this project is everyone who is exploring different places or similar places.

Success Rate:

With increasing number of tourists every year, we need a system that helps to access many places. It is impossible for a person to ask each one about his or her visit to a particular place and not everyone remembers everything. With Machine learning, its high time technology will by our personal guidance and help us personally based on our likes and dislikes. Therefore, people would care about this project as their personal assistance and success rate could certainly increase with time.

Data:

Data Requirements:

To find a solution to the questions and build a recommender model, we need many data. Data can answer question, which are unimaginable and non-answerable by humans because humans do not have the tendency to analyze such large dataset and produce analytics to find a solutions.

Data Collection:

Data collection is important for the project, as we need more data. Below is the full dataset used for this project.

1) The geographical coordinates data of Chennai City.

	Unnamed: 0	Borough	Neighborhoods	Latitude	Longitude	Population	Average Income	Unnamed: 7
0	0	North Chennai	Red Hills	13.1865	80.1999	743186	56837.022200	NaN
1	1	North Chennai	Ayanavaram	13.0979	80.2306	474289	41991.817440	NaN
2	2	North Chennai	Royapuram	13.1137	80.2954	527874	6667.447632	NaN
3	3	North Chennai	Korukkupet	13.1186	80.2780	893629	53270.063890	NaN
4	4	North Chennai	Vyasarpadi	13.1184	80.2594	730999	50712.430220	NaN

2) Population Data of Chennai

	Unnamed: 0	Borough	Neighborhoods	Population
0	0	North Chennai	Red Hills	743186
1	1	North Chennai	Ayanavaram	474289
2	2	North Chennai	Royapuram	527874
3	3	North Chennai	Korukkupet	893629
4	4	North Chennai	Vyasarpadi	730999

3) Income Data of Chennai

	Unnamed: 0	Borough	Neighborhoods	Average Income
0	0	North Chennai	Red Hills	56837.022200
1	1	North Chennai	Ayanavaram	41991.817440
2	2	North Chennai	Royapuram	6667.447632
3	3	North Chennai	Korukkupet	53270.063890
4	4	North Chennai	Vyasarpadi	50712.430220

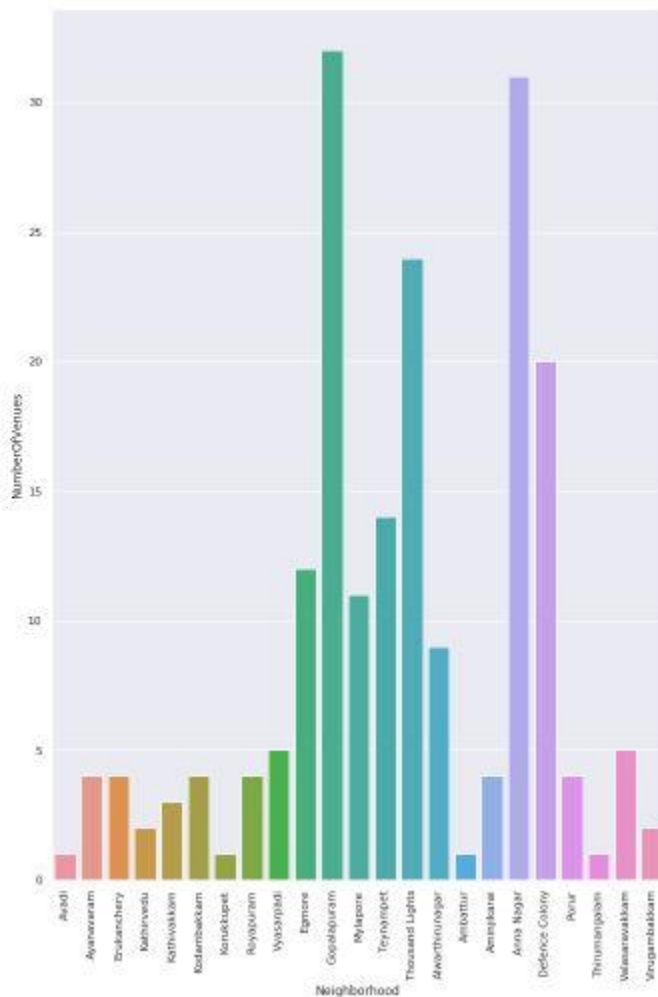
4) Foursquare API Data:

	Neighborhood	Borough	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Ayanavaram	North Chennai	13.0979	80.2306	Railway Officers Shuttle court	13.100031	80.229858	Tennis Court
1	Ayanavaram	North Chennai	13.0979	80.2306	Noor hotel bus stand	13.098520	80.234302	Diner
2	Ayanavaram	North Chennai	13.0979	80.2306	Noor Hotel	13.094934	80.233038	Restaurant
3	Ayanavaram	North Chennai	13.0979	80.2306	Shri Gopikrishna Theatre	13.095079	80.227423	Indie Movie Theater
4	Royapuram	North Chennai	13.1137	80.2954	Ibaco	13.115612	80.294837	Dessert Shop
5	Royapuram	North Chennai	13.1137	80.2954	Bakers Spring	13.113837	80.292560	Bakery
6	Royapuram	North Chennai	13.1137	80.2954	IDREAM Theater	13.116094	80.293191	Movie Theater
7	Royapuram	North Chennai	13.1137	80.2954	Pizza Corner	13.115437	80.292601	Pizza Place
8	Korukkupet	North Chennai	13.1186	80.2780	Korukkupettai rail station	13.120303	80.278466	Train Station
9	Vyasarpadi	North Chennai	13.1184	80.2594	M.k.B nagar Bus Depo	13.118100	80.261200	Bus Station

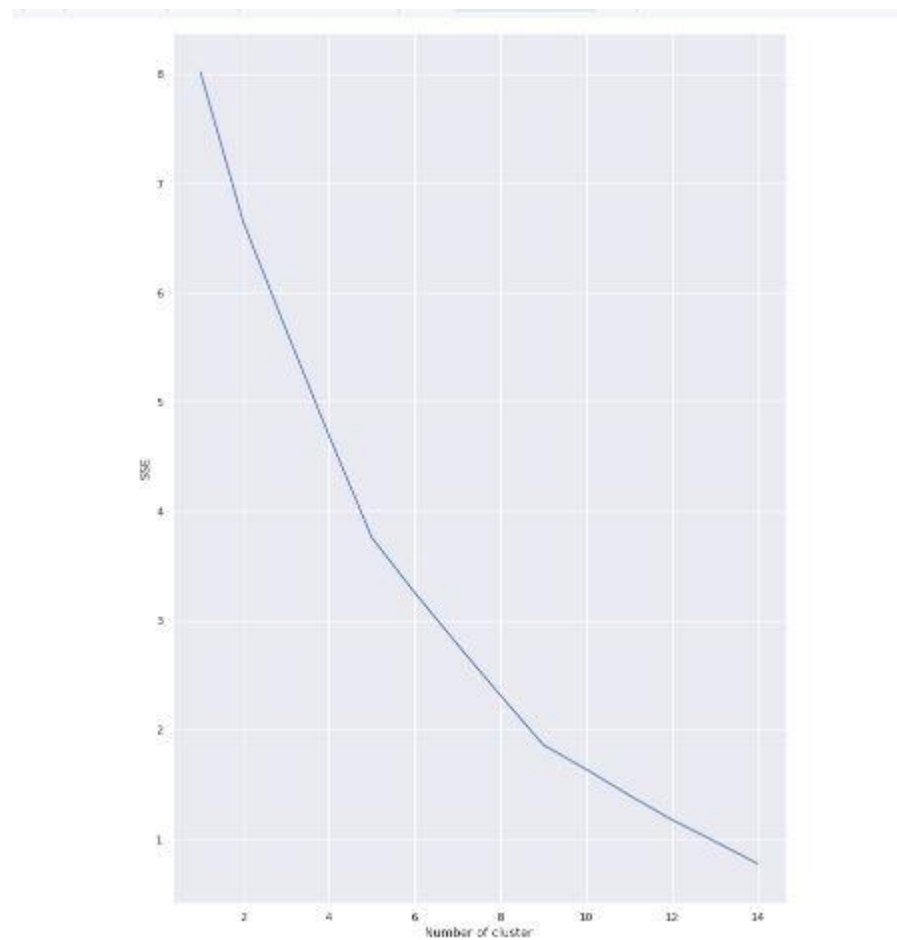
Methodology:

Exploratory Analysis:

The exploratory analysis is given below.



Graph for number of Cluster



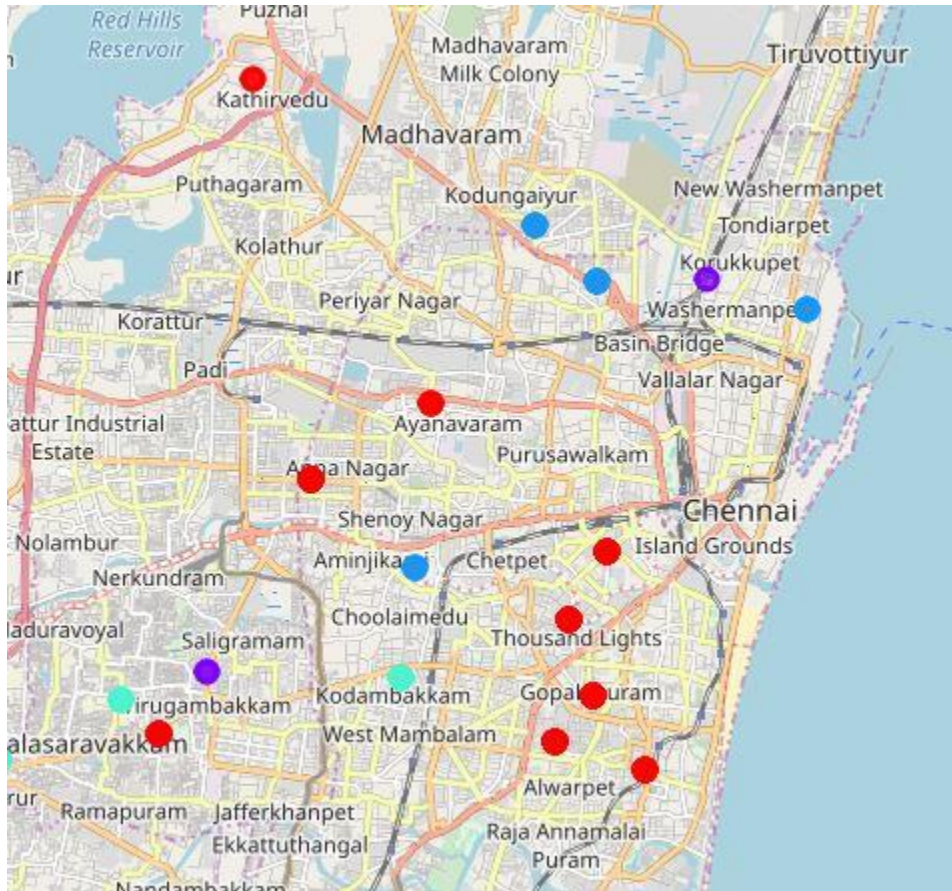
Result:

The result produces the list of top restaurants in Chennai and the common food item available around the neighborhood. The below image shows the result.

	Neighborhoods	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	Ranking
0	Alwarthirunagar	Venue Category_Fast Food Restaurant	Venue Category_Ice Cream Shop	Venue Category_Café	[0.5124969581324629]
1	Anna Nagar	Venue Category_Indian Restaurant	Venue Category_Ice Cream Shop	Venue Category_Vegetarian / Vegan Restaurant	[0.6817262721270358]
2	Ayanavaram	Venue Category_Indie Movie Theater	Venue Category_Tennis Court	Venue Category_Restaurant	[0.5827132937277733]

Discussion:

The below images show the cluster showing the non-linear relationship between income and population.



Conclusion:

Thus, the recommender system will help to find the top restaurants for people inside and outside Chennai easily. It will save time and money since we can choose restaurants based on our distance and cost.