

Coursera Capstone Project Report

1. Problem

1.1 Description

Exploring venues in Dehradun, India using Foursquare and Zomato API

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Dehradun is a small city but it has a lot of good places to dine. Whenever a person moves to the city for a job, such a person searches for a venue in a new city, they're highly interested in the best places that the city has to offer. The person might want to know how good a given restaurant is or the price range it falls under. This extra information would help decide which venue to choose amongst the various venues in the city. Combining the location of the venues in the city with their price and rating information would surely help visitors in a city make better informed decisions about the places they should visit.

In Dehradun, there are various venues (especially restaurants, hotels and cafes) which can be explored. This project explores various venues in Dehradun and attributes the data based on user ratings and average price. To explore this information, this project involves the data from both the Foursquare API and the Zomato API to fetch complete information of various venues (including name, address, category, rating, and price). Further, a map of the venues with specific colour attributes will be plotted to highlight their position, and information about these venues. Such plots imbibe bountiful information in the form of their coloured representations and location on the map. This enables any visitor to take a quick glance and decide what place to visit.

1.2 Interested audience

The target audience for such a project is twofold. Firstly, any person who is visiting Dehradun, India can use the plots and maps from this project to quickly select places that suit their budget and rating preferences. Secondly, a company can use this information to create a website or a mobile application, which is updated on a regular basis, to allow individuals to the city or even expand same functionality to other places.

2. Data

2.1 Data Sources

To get location and other information about various venues in the city of Dehradun, a combination of data from the 2 API sources will be used together. Using the Four square's explore API (which gives venues recommendations), I fetched venues up to a range of 5 kilometres from the centre of Dehradun, i.e. the clock tower, categories and locations (latitude and longitude) will be collected. Using the name, latitude and longitude values, Zomato search API will be used to fetch venues from its database. This API allows us to find venues based on search criteria (usually the name), latitude and longitude values and more.

2.2 Data Cleaning

Data collected from the 2 data sources, will be cleaned to extract the following vital information and then be used to solve the problem.

From Foursquare API (<https://developers.foursquare.com/api>), we will retrieve the following information for each venue:

- Name: The name of the venue.
- Category: The category type as defined by the API.
- Latitude: The latitude value of the venue.
- Longitude: The longitude value of the venue.

From Zomato API (<https://developers.zomato.com/api>), we will retrieve the following for each venue:

- Name: The name of the venue.
- Address: The complete address of the venue.
- Rating: The ratings as provided by many users.
- Price range: The price range the venue belongs to as defined by Zomato.
- Price for two: The average cost for two people dining at the place.
- Latitude: The latitude value of the venue.
- Longitude: The longitude value of the venue.

3. Methodology

This project aims at identifying the venues in Dehradun based on their rating and average costs. This would enable any visitor to identify the venues he/she wants to visit based on their rating and cost preference.

As a first step, we retrieved the data from two APIs (Foursquare and Zomato). We extract venue information from the centre of Dehradun, up to a distance of 5 Km. The latitude and longitude values are then used to fetch venue rating and price from Zomato.

Secondly, we explore the data retrieved from the two APIs on the map and identify the top category types. The data from the two sources is carefully combined based on the name, latitude and longitude values from the two sources. The final dataset would include the rating and price values for each venue.

Next, we'll analyse the data that we created based on the ratings and price of each venue. We'll identify places where many venues are located so that any visitor can go to one place and enjoy the option to choose amongst many venue options. We'll also explore areas that are high rated and those that are low rated while also plotting the map of high- and low-priced venues.

Lastly, we'll cluster the venues based on the available information of each venue. This will allow us to clearly identify which venues can be recommended and with what characteristics.

Finally, we'll discuss and conclude which venues to be explored based on visitor's requirement of rating and cost.

4. Results

Based on our analysis above, we can draw a number of conclusions that will be useful to aid any visitor visiting the city of Dehradun, India.

After collecting data from the Foursquare and Zomato APIs, we got a list of 30 different venues. However, not all venues from the two APIs were identical. Hence, we had to inspect their latitude and longitude values as well as names to combine them and remove all the outliers. This resulted in a total venue count of 15.

We identified that from the total set of venues, majority of them were Pizza Places, Cafes and Indian Restaurants. A visitor who loves Cafes, Indian Restaurants or Pizza would surely benefit from coming to Dehradun.

Typically, a person can have food at a place with a decent rating on the Rajpur Mussorie Road venues while if an individual is willing to spend a bit more, he/she can enjoy the best food that the city has to offer in the venues along the junction of Chakrata-Gandhi Road.

5. Discussion

Finally, through clusters we identified that there are many venues which are relatively lower priced but have an average rating of 3.71. On the other hand, there are few venues which are high priced and have average rating of 4.16.

A company can use this information to build up an online website/mobile application, to provide users with up to date information about various venues in the city based on the search criteria (name, rating and price).

6. Conclusion

The purpose of this project was to explore the places that a person visiting Dehradun could visit. The venues have been identified using Foursquare and Zomato API and have been plotted on the map. The map reveals that there are two major areas a person can visit: Chakrata-Gandhi Road junction & Rajpur Mussorie Road. Based on the visitor's venue rating and price requirements, he/she can choose amongst the three places.