Exploring the beautiful city of Pune

Introduction

The aim of the project is to identify venues in Pune, India based on their rating and average prices. We will identify various venues in the city of Pune, India, using Foursquare API and Zomato API, to help visitors select the restaurants that suit them the best.

Whenever a user is visiting a city they start looking for places to visit during their stay. They primarily look for places based on the venue ratings across all venues and the average prices such that the locations fits in their budget.

Here, we'll identify places that are fit for various individuals based on the information collected from the two APIs and Data Science. Once we have the plot with the venues, any company can launch an application using the same data and suggest users such information.

Company can make recommendation app or if they want to open a restaurant or cafe, they can definitely see which neiborhood to target and decide the price range to start with.

Data Collection from APIs

To begin with, we will take a look at Pune on the Map using the folium library.

We will also fetch the data from two different APIs.

Foursquare API

We begin by fetching a total of all venues in Pune upto a range of 4 Kilometers using the Foursquare API. The Foursquare API has the explore API which allows us to find venue recommendations within a given radius from the given coordinates. We will use this API to find all the venues we need. Foursquare API will give us following information :

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- Name of venue
- Category of venue
- Latitude and Logitude
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Zomato API

The Zomato API allows using its search API to search for any given venue based on certain search filters such as query, latitude, longitude and more. Zomato also requires a Zomato user key which can be accessed with a developer account.

The Zomato API provides information about various venues including the complete address, user ratings, price for two people, price range and a lot more.

We'll use the name, lat, and lng values of various venues fetched from Foursquare API to use the search API and get more information regarding each venue.

Zomato API will provide us with following information :

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- Name of venue
- Latitude and Logitude
- Average cost for two
- Price range
- User ratings
- Address
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The data from multiple resources might not always align. Thus, it is important to combine the data retrieved from multiple resources properly.

We'll then try to combine data points that have their latitude and longitude values very close to one another. From the remaining selected venues, we will inspect the venues to ensure that any remaining mismatched venues are also removed from the final dataset of venues before we begin any analysis.

Methodology

This project aims at identifying the venues in Pune 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 center of Pune, up to a distance of 4 Km. The latitude and longitude values are then used to fetch venue rating and price from Zomato.

Secondly, we then explored the data retrieved from the two APIs on the map and identified 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 analyze 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 requirement of rating and cost.

Results and Discussion

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

After collecting data from the Foursquare and Zomato APIs, we got a list of 205 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 133.

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

While the complete range of ratings range from 1 to 5, the majority venues have ratings close to 4. This means that most restaurants provide good quality food which is liked by the people of the city, thus indicating the high rating. When we plot these venues on the map, we discover that there are clusters of venues around senapati bapat road, Koregaon park and FC road. These clusters also have very high ratings (more than 3).

When we take a look at the price values of each venue, we explore that many venues have prices which are in the range of Rs 1000 to Rs 2000 for two persons. However, the variation in prices is very large, given the complete range starts from Rs 100 and goes uptil Rs 4500. On plotting the venues based on their price range on the map, we discovered that venues located near Senapati Bapat road are relatively priced higher than other venues.

Finally, through clusters we identified that there are many venues which are relatively lower priced but have an average rating of 3.87. On the other hand, there are few venues which are high priced and have average rating of 4.19.

If you're looking for cheap places with relatively high rating, you should check JM road and FC road. If you're looking for the best places, with the highest rating but might also carry a high price tag, you should visit Senapati Bapat road. If you're looking to explore the city and have no specific criteria to decide upon the places you want to visit, you should try Koregaon park. 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).

Conclusion

The purpose of this project was to explore the places that a person visiting Pune 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 three major areas a person can visit: JM road & FC road, Senapati Bapat road and Koregaon park. Based on the visitor's venue rating and price requirements, he/she can choose amongst the three places.