

# PROJECT REPORT

## RESTAURANT RECOMMENDATION SYSTEM PUNE

### INTRODUCTION

To make a restaurant recommendation system for a stakeholder to invest a new food business in Pune using the insights of best place to invest and market depending on college that is student centric crowd.

### Problem Background

Pune, also known as Poona, is a city in the Indian State of Maharashtra and the eighth most populous city in India, with an estimated population of about 7.4 million as of 2020. It has been ranked as "The most livable city in India" several times, Pune is one of the cleanest and greenest city in the country. It is known for various architecture build during the Marathas and Peshwas Empire, surrounded by hills. Not just this but the most important aspect Pune is a city of students coming from all over the world to learn various disciplines from most prestigious colleges. That is why, it's also known as the **Oxford of East**.

### Problem Description

So keeping this points in mind, Pune becomes a large market for food industry, as it is surrounded more by the youth population making it easy for Restaurants to make a good profit. As youngsters love to explore new corners of city and restaurants too. We would be able to answer the following questions from this recommendation:

1. Which location around a college will be best to invest business according to clustering results?
2. Which locations around a college will be best to market and pull the crowd?
3. Which are some top niche colleges of Pune?
4. What are the different categories of food being served?

### Target Audience

Entrepreneurs and small-scale businessmen/women interested in the food/snacks industry, aiming at the student demographic.

## TABLE OF CONTENT

Introduction

Problem  
Background

Problem  
Description

Target Audience

Data

Methodology

Results

## Data

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

1. We need a list of the most popular institutes in Pune. Their latitude and longitude will be calculated using Geopy Nominatim (a Python Library). This data can be found on Wikipedia. For instance: [https://en.wikipedia.org/wiki/List\\_of\\_educational\\_institutions\\_in\\_Pune](https://en.wikipedia.org/wiki/List_of_educational_institutions_in_Pune)
2. Then we can use the FourSquare API to find the number of eateries in a 1km radius around each institute. The API will provide us with Postal Code, Neighborhood, Venue, Venue Summary and Venue Category.
3. We can also use the FourSquare API to find all food-related categories that we will filter.
4. Selecting relevant venues (food-related only). The institutes with the least number of eateries around them would be the best places to start a food stall/restaurant. (supply and demand)
5. Clustering the eateries to find the colleges with the least competition around them.
6. Using clustering results to find which place will be best for marketing and advertisement

## Methodology:

1. Collect a list of educational institutes in Pune.
2. Using Nominatim library and Open Map tool to get latitudes and longitudes of Institutes.
3. Use of Foursquare API to filter required food categories.
4. Devised a function to get categories of given venue data.
5. Analyzed the no. of eateries near a particular institute.
6. Using clustering in order to get more clear data.
7. Thereby clustering institutes and then integrating eateries clustering data.
8. Using random function to get a better differentiation in clusters
9. Using itertools library to get cluster size and counts
10. Find the smallest and largest cluster to get the required analysis.

## RESULTS

### 1 st result

Cluster 4: **College of Engineering Pune** has very few eateries around it. It is a well-reputed college in Pune, in fact the top college and has a large student population.

A good eatery aimed at students, or even at the general public as it connects to the most premium sector of Pune that is JM Road. Thereby, would do well here due to sheer lack of competition in the vicinity.

**Hence we find that the best place for a food shop aimed at student crowd in general will be near College of Engineering COEP, Shivaji Nagar, Pune**

### 2 nd result

We also find that 3 clusters have more than 50 eateries near them.

These could be great localities to **advertise** an upcoming new fast food shop or restaurant.

That is :

1. **Maharashtra Institute of Technology ,Kothrud, Pune**
2. **Fergusson College, FC Road, Pune**
3. **Modern College of Engineering, Model Colony, Pune**

### **3 rd result**

Thereby this area would be the best sectors for marketing as it consists of the most cream crowd well established colleges and restuarant there by will be helpful to attract new customers.

### **Recommendation and Conclusion**

According to this analysis I would recommend that COEP will be the best place to start a new restaurant as it is a centric pint of Pune. Then there is less competition in that area . While for marketing your business you should focus on places like MIT, FC College as it involves the cream crowd who would love to try your restaurant.