End to End Deployment of ML model for Predicting Zomato Restaurant Rating

(Prediction case study)

Main Objective:

The main agenda of this project are as follows:

1. Perform extensive EDA on the dataset.
2. Build ML model that will evaluate the ratings of listed restaurants.
3. Deploy the ML model via flask to make live predictions of restaurants ratings.

Introduction:

Online food delivery services are expanding their footprints all over the world. These services acts as a bridge between the consumers and restaurant owners, thereby increasing their reach and eventually leading to business growth. On the other hand, customers get the benefit of multiple food options at attractive discounts. Therefore, it's a win-win situation for both. In addition to delivery of food, these online services can analyse the customer data to study their food habits and suggest them items according to their lifestyle, diet, age etc. Thereby, helping ensuring customers are retained for a longer time period.

In this case study, we will be studying the list of restaurants that are listed on Zomato and how they perform when compare to their peers. This will help the restaurants to focus on their weak points and strive for improvement. We will be using a real time dataset to analyse various features that a consumer will be evaluating while placing the order. This study will also aid those who are planning to set up new restaurants as they need to serve something is like by consumers and is still not available in the market.

Various factors have been considered for analysis like,

a. What kind of a food is more popular in a locality?

b. Do the entire locality loves vegetarian food? If yes then is that locality populated by a particular sect of people for eg. Jain, Marwaris, Gujaratis who are mostly vegetarian.

c. Location of the restaurant

d. Approx. Price of food

e. Theme based restaurant or not

f. Which locality of that city serves that cuisines with maximum number of restaurants?

g. The needs of people who are striving to get the best cuisine of the neighborhood

h. Is a particular neighborhood famous for its own kind of food? "Just so that you have a good meal the next time you step out"

The data is accurate to that available on the zomato website until 15 March 2019. The data was scraped from Zomato in two phase.

After going through the structure of the website I found that for each neighborhood there are 6-7 category of restaurants viz. Buffet, Cafes, Delivery, Desserts, Dine-out, Drinks & nightlife, Pubs and bars.

I. In Phase I of extraction, URL, name and address of the restaurant were extracted which were visible on the front page. The URL's for each of the restaurants on the zomato were recorded in the csv file so that later the data can be extracted individually for each restaurant. This made the extraction process easier.

II. In Phase II, recorded data for each restaurant and each category was read and data for each restaurant was scraped individually. 15 variables were scraped in this phase. For each of the neighborhood and for each category their online order, book table, rate, votes, phone, location, rest type, dish liked, cuisines, approx. cost (for two people), reviews list, menu item was extracted. See section 5 for more details about the variables.

Steps:

A. ML Model Building
1. Load the dataset and perform the EDA in google colab.
2. Compare the performance of the developed model using evaluation metrics.
3. Save the final model using "Pickle".
4. Deploy the model to determine the ratings of each restaurant.

B. **Model Deployment**
1. In this project, we will be using Pycharm IDE (Integrated Development Environment).
2. Install Flask.
3. Files you need:
   a. Model.py file
   b. .csv file
   a. app.y file (This contains the Flask API's that receives restaurant details via a GUI/API calls, then make the prediction of restaurant ratings based on our model and returns the rate.)
   b. Template (contains documents for building our web app)
      i. .html file
      ii. .css file