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Restaurant Rating Prediction

Problem statement: The main goal of this project is to perform extensive Exploratory Data Analysis(EDA) on the Zomato Dataset and build an appropriate Machine Learning Model that will help various Zomato Restaurants to predict their respective Ratings based on certain features.

Introduction: Zomato is the most reputed company in the field of food reviews. Founded in 2008, this company started in India and now is in 24 different countries. Its is so big that the people now use it as a verb. “Did you know about this restaurant? Zomato it”. The rating is the most important feature of any restaurant as it is the first parameter that people look into while searching for a place to eat. It portrays the quality, hygiene and the environment of the place. Higher ratings lead to higher profit margins. Notations of the ratings usually are stars or numbers scaling between 1 and 5. Zomato has changed the way people browse through restaurants. It has helped customers find good places with respect to their dining budget. Different machine learning algorithms like SVM, Linear regression, RandomForestRegressor, ExtraTreesRegressor

Approach: The classical machine learning tasks like Data Exploration, Data Cleaning, Feature Engineering, Model Building and Model Testing. Try out different machine learning algorithms that’s best fit for the above case.

Tools used:

1)Jupyter notebook

2)Python language

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Libraries used:

```
import numpy as np
import pandas as pd
pd.set_option('max_columns', None)

import matplotlib.pyplot as plt
import seaborn as sns

from sklearn.linear_model import LogisticRegression
from sklearn.linear_model import LinearRegression
from sklearn.ensemble import  ExtraTreesRegressor
from sklearn.model_selection import train_test_split
```

Design process and visualisation:

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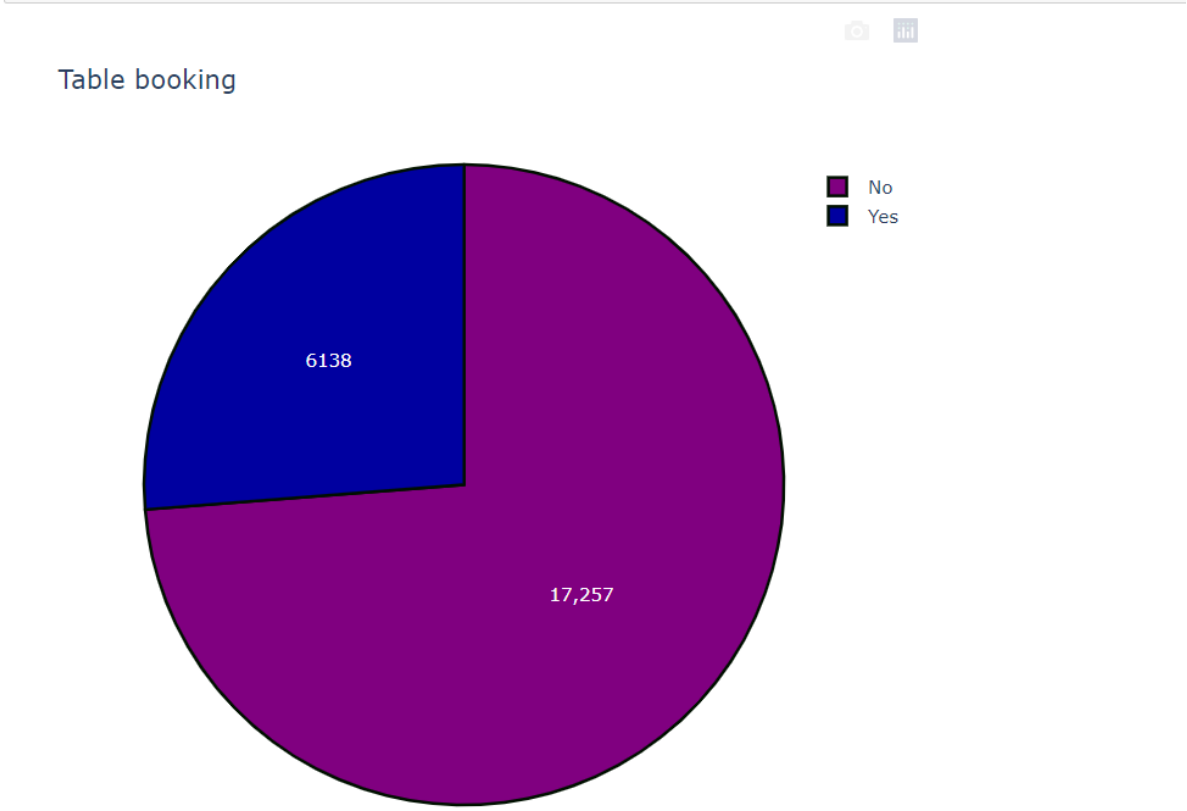

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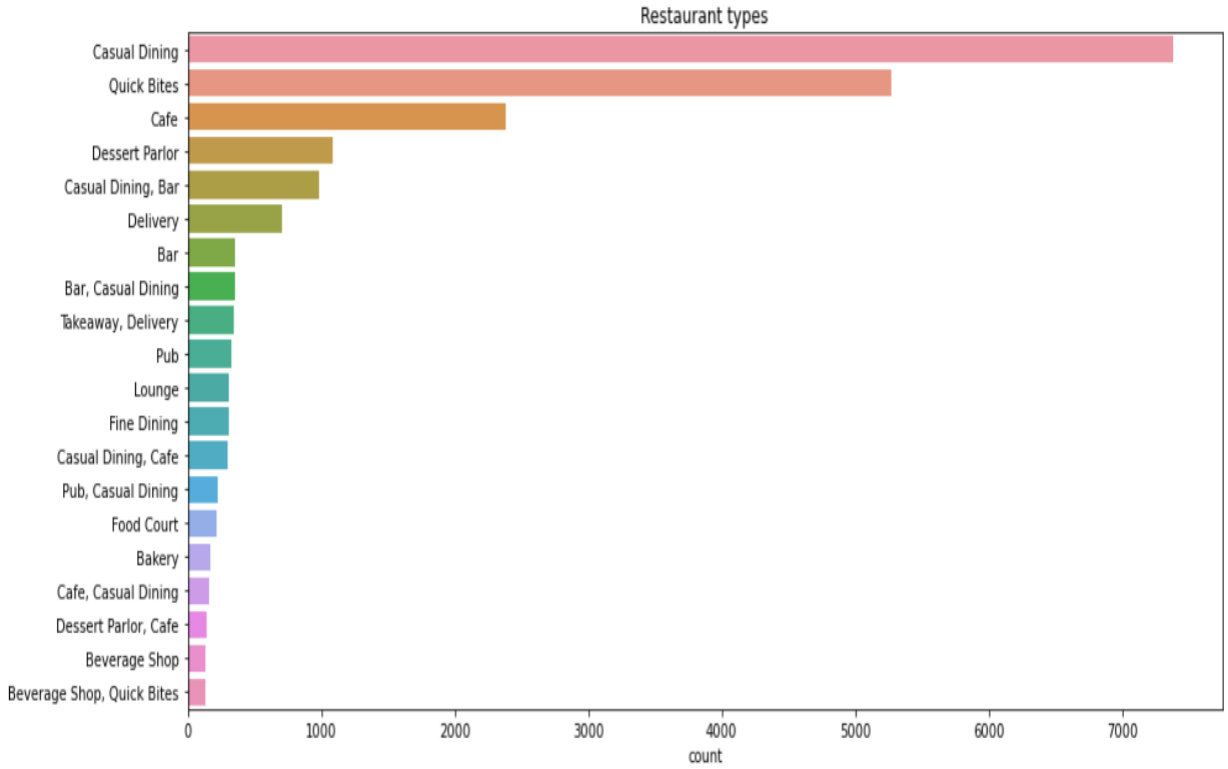

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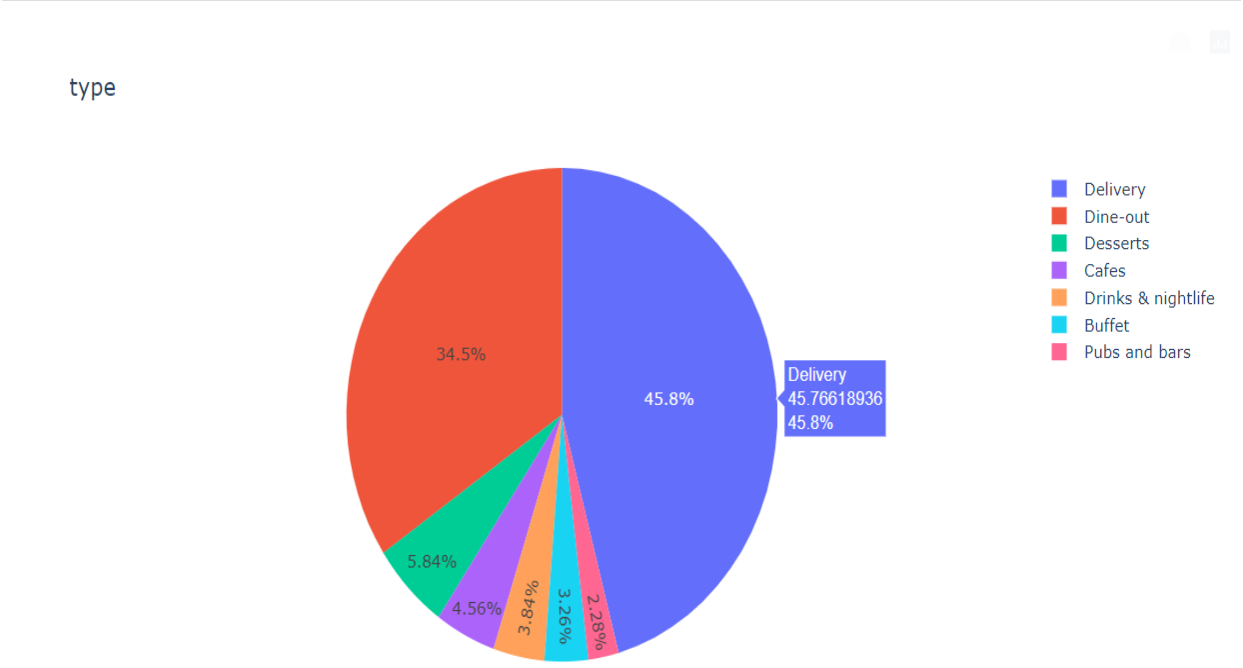

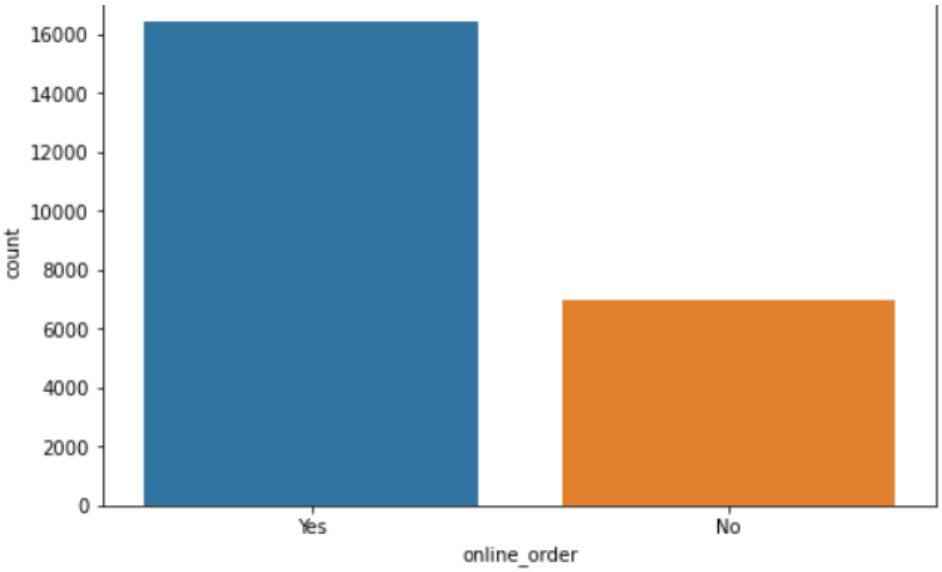

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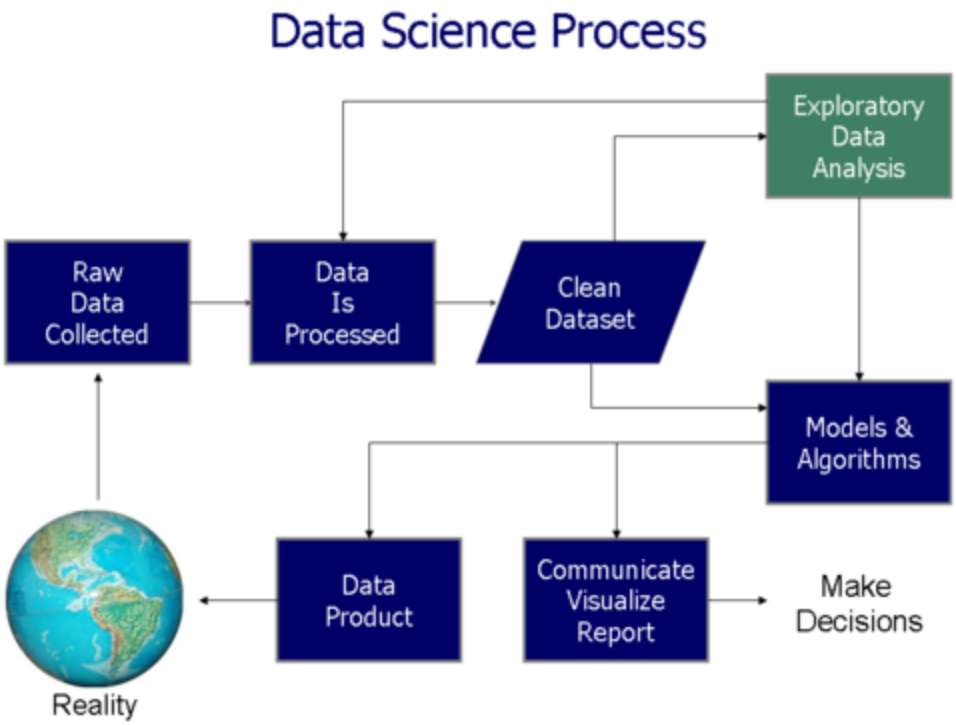

Performance:

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```
from sklearn.ensemble import RandomForestRegressor
RF_Model=RandomForestRegressor(n_estimators=650,random_state=245,min_samples_leaf=.0001)
RF_Model.fit(x_train,y_train)
y_predict=RF_Model.predict(x_test)
r2_score(y_test,y_predict)
```

```
0.8809706960047533
```

```
#Preparing Extra Tree Regression
from sklearn.ensemble import  ExtraTreesRegressor
ET_Model=ExtraTreesRegressor(n_estimators = 120)
ET_Model.fit(x_train,y_train)
y_predict=ET_Model.predict(x_test)


from sklearn.metrics import r2_score
r2_score(y_test,y_predict)
```

```
0.9323240658158621
```

A. EDA and Model Building Part
B. 1. Load the dataset and perform the necessary EDA in your Jupyter notebook or google colab 2. Build your Machine learning algorithm and save your model using “pickle”
C. B. Deployment

Part 1.

In this project we will be using “VS”, however, feel free to use any IDE that you are conformable with (e.g you can use sublime text editor to achieve the same) NOTE: There several ways of using Flask to deploy your application including creating a virtual environment, which we will see in subsequent projects. In this project we will do it right from our base environment.

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5. Specifically, install Flask: Use: pip install flask OR follow this link: https://bit.ly/32pe8uL 6. Files you will need:

• Model.py file • .csv file • template • .html file • .css file • app.y file

Deployment:

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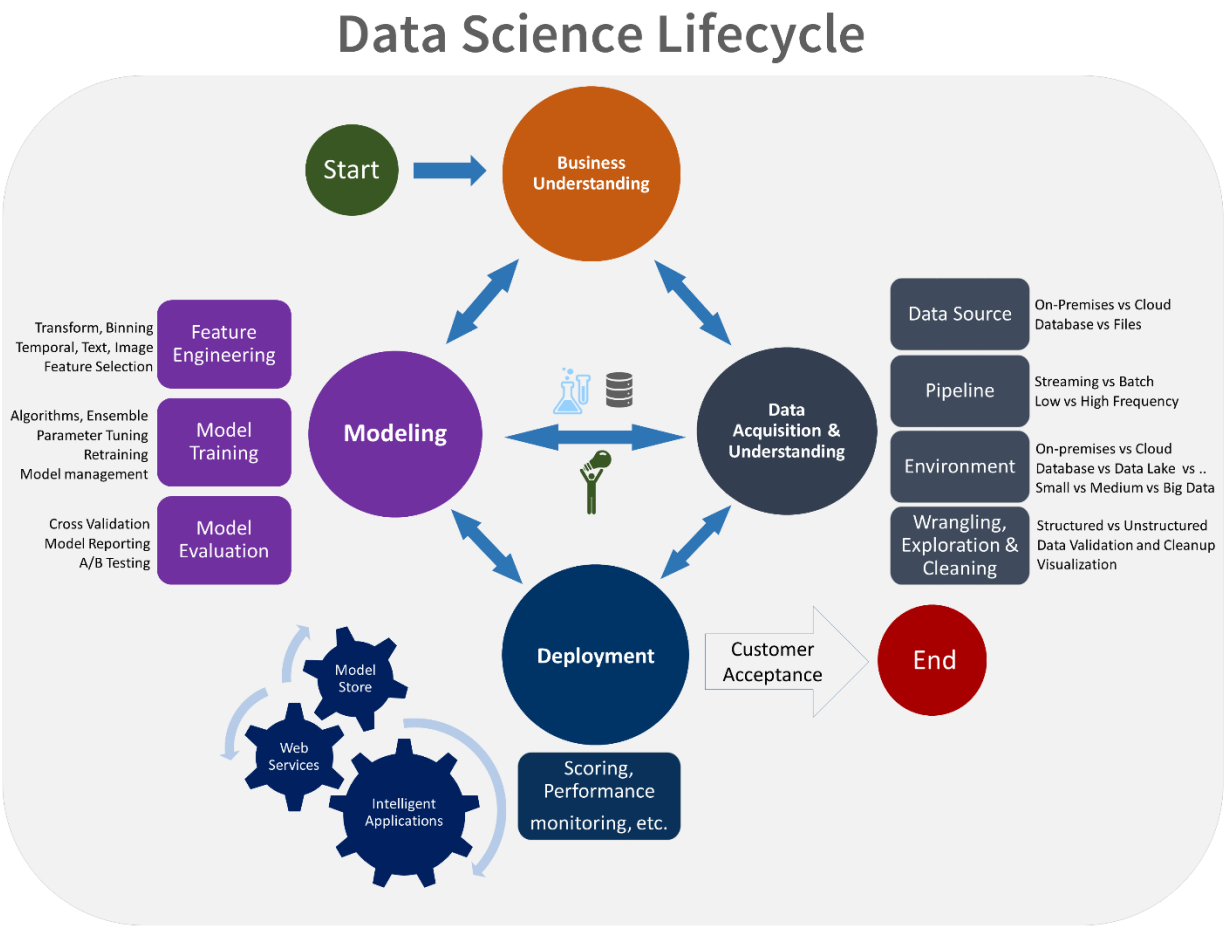

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Conclusion: The designed model can easily predict the data related to ratings . This makes it an important aspect to be considered, before making a dining decision. Such analysis is essential part of planning before establishing a venture like that of a restaurant. Lot of researches have been made on factors which affect sales and market in restaurant industry. Various dine-scape factors have been analysed to improve customer satisfaction levels. If the data for other citirs is also collected, such predictions could be made for accurate