Optimizing Flight Booking Decisions Through Machine Learning Price Predication

DONE BY

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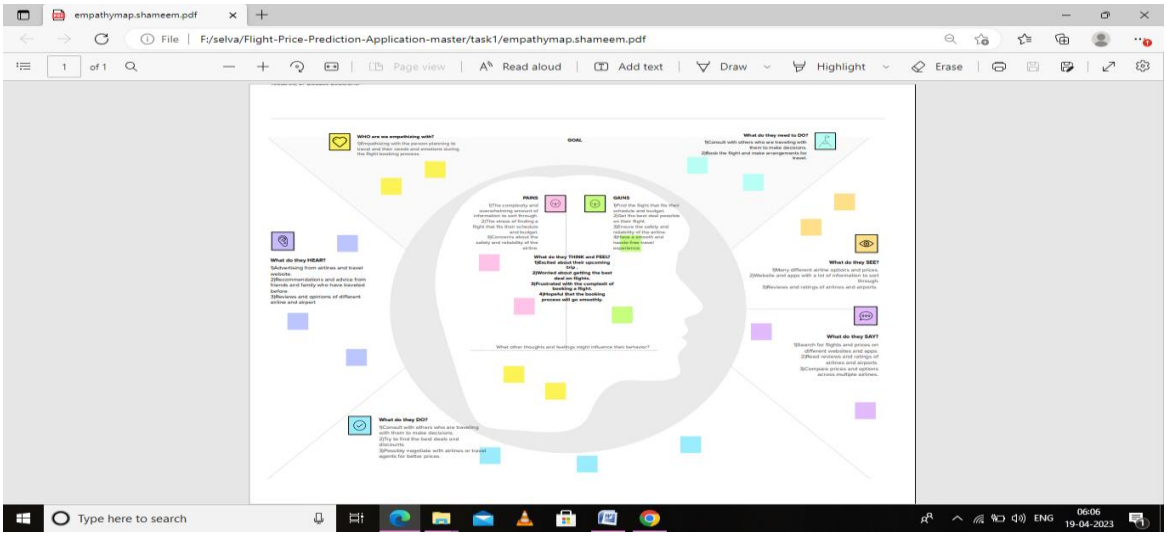
INTRODUCTION

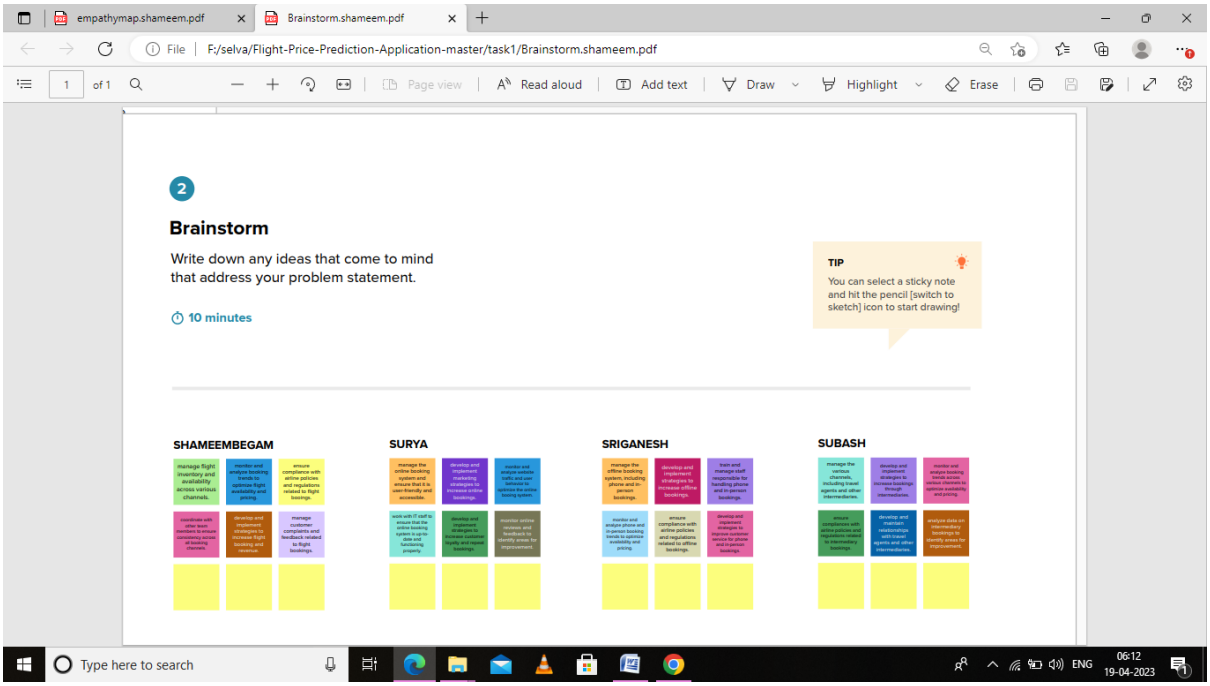
A booking is an arrangement to reserve a certain ticket, accommodation or a place in advance. Prices can be frozen by booking to pay a more affordable price for travel scheduled in the future. Reservation rules are explained in detail on Reservations.

PROBLEM DEFINITION & DESIGN THINKING

EMPATHY MAP



Brainstoram



ADVANTAGES

- Cancelation and Changes of Travel. ...
- Early Check-Ins. .
- Maximize Efficiency. ...
- Special Amenities or Deals. ...
- Time Saver and Less Hectic.

DISADVANTAGES

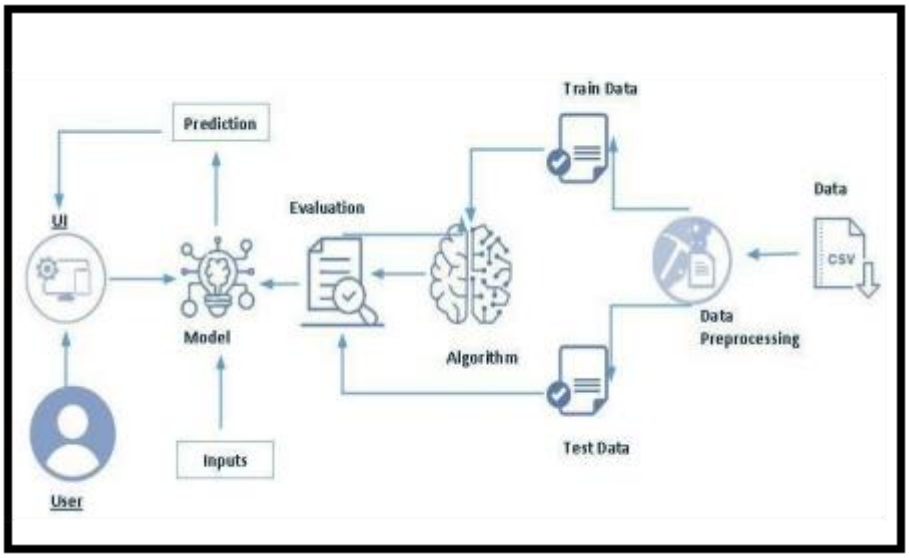
- f you make a mistake, while you re booking, for example spell your name wrong, you re done, your ticket is not vallied and you are charged.

- There is usually nobody you can turn to, in case of a problem with the flight.
- If you want to claim, after the trip, or something went wrong with the trip, your claim is kind of in the air. Nobody is really responsible. The airline itself: Where did you buy the ticket? Ok. claim there. But there is nobody to adress to. Yeah, thats YOUR problem.

APPLICATIONS

Flight booking applications help the airline industry automate the booking process. Users worldwide can book flights on the go using the simple apps, which include features such as quick flight search, download tickets, check and modify booking details, one-tap check-in, and many more.

TechnicalArchitecture:



Project Flow:

● User interacts with the UI to enter the input.

● Entered input is analysed by the model which is integrated.

● Once model analyses the input the prediction is showcased on the UI To accomplish this, we have to complete all the activities listed below,

● Define Problem / Problem Understanding ○ Specify the business problem ○ Business requirements ○ Literature Survey ○ Social or Business Impact.

● Data Collection & Preparation ○ Collect the dataset ○ Data Preparation

● Exploratory Data Analysis ○ Descriptive statistical ○ Visual Analysis

● Model Building ○ Training the model in multiple algorithms ○ Testing the model

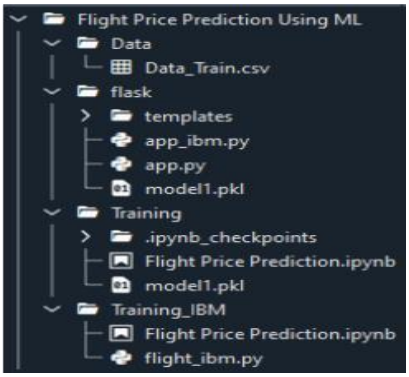
● Performance Testing & Hyperparameter Tuning ○ Testing model with multiple evaluation metrics ○ Comparing model accuracy before & after applying hyperparameter tuning

● Model Deployment ○ Save the best model ○ Integrate with Web Framework

● Project Demonstration & Documentation ○ Record explanation Video for project end to end solution ○ Project Documentation-Step by step project development procedure

ProjectStructure:

CreatetheProjectfolderwhichcontainsfilesasshownbelow



Importing the libraries:

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.model_selection import train_test_split
from sklearn.ensemble import RandomForestClassifier, GradientBoosti
from sklearn.tree import DecisionTreeClassifier
from sklearn.neighbors import KNeighborsClassifier
from sklearn.metrics import f1_score
from sklearn.metrics import classification_report, confusion_matrix
import warnings
import pickle
from scipy import stats
warnings.filterwarnings('ignore')
plt.style.use('fivethirtyeight')
```

Dataset:

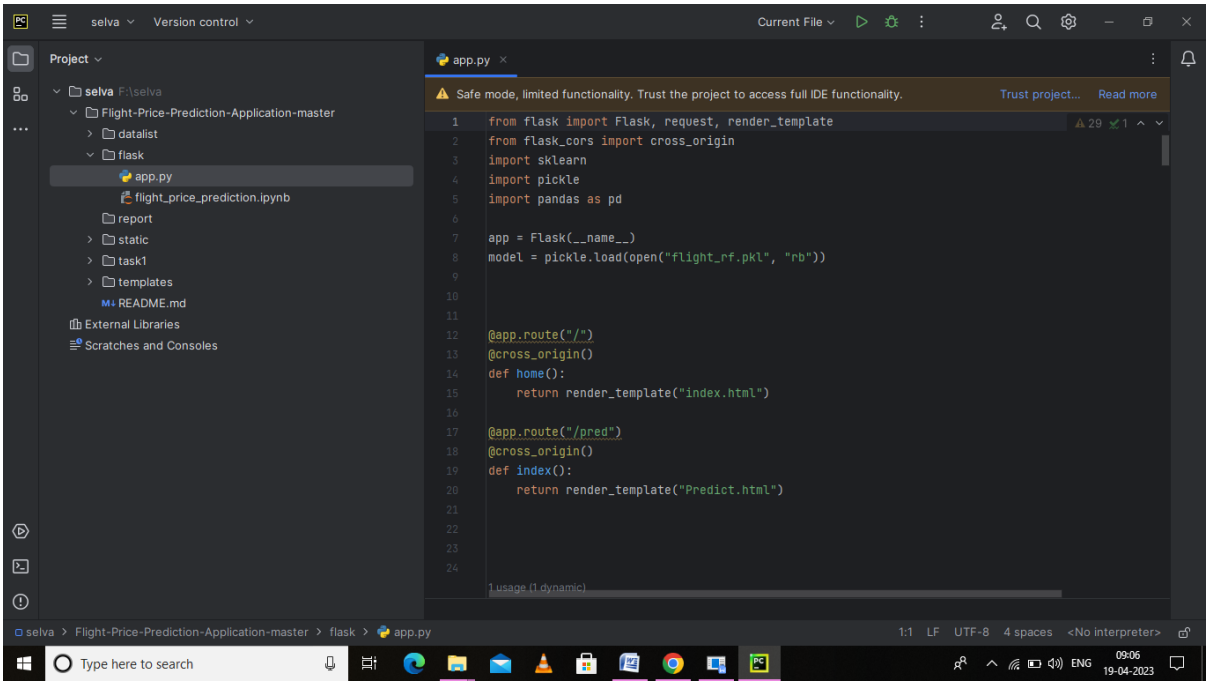
```
data=pd.read_csv("Data_Train.csv")
```

```
data.head()
```

	Airline	Date_of_Journey	Source	Destination	Route	Dep_Time	Arrival_Time	Duration	Total_Stops	Additional_Info	Price
0	IndiGo	24/03/2019	Banglore	New Delhi	BLR → DEL	22:20	01:10 22 Mar	2h 50m	non-stop	No info	3897
1	Air India	1/05/2019	Kolkata	Banglore	CCU → IXR → BBI → BLR	05:50	13:15	7h 25m	2 stops	No info	7662
2	Jet Airways	9/06/2019	Delhi	Cochin	DEL → LKO → BOM → COK	09:25	04:25 10 Jun	19h	2 stops	No info	13882
3	IndiGo	12/05/2019	Kolkata	Banglore	CCU → NAG → BLR	18:05	23:30	5h 25m	1 stop	No info	6218
4	IndiGo	01/03/2019	Banglore	New Delhi	BLR → NAG → DEL	16:50	21:35	4h 45m	1 stop	No info	13302

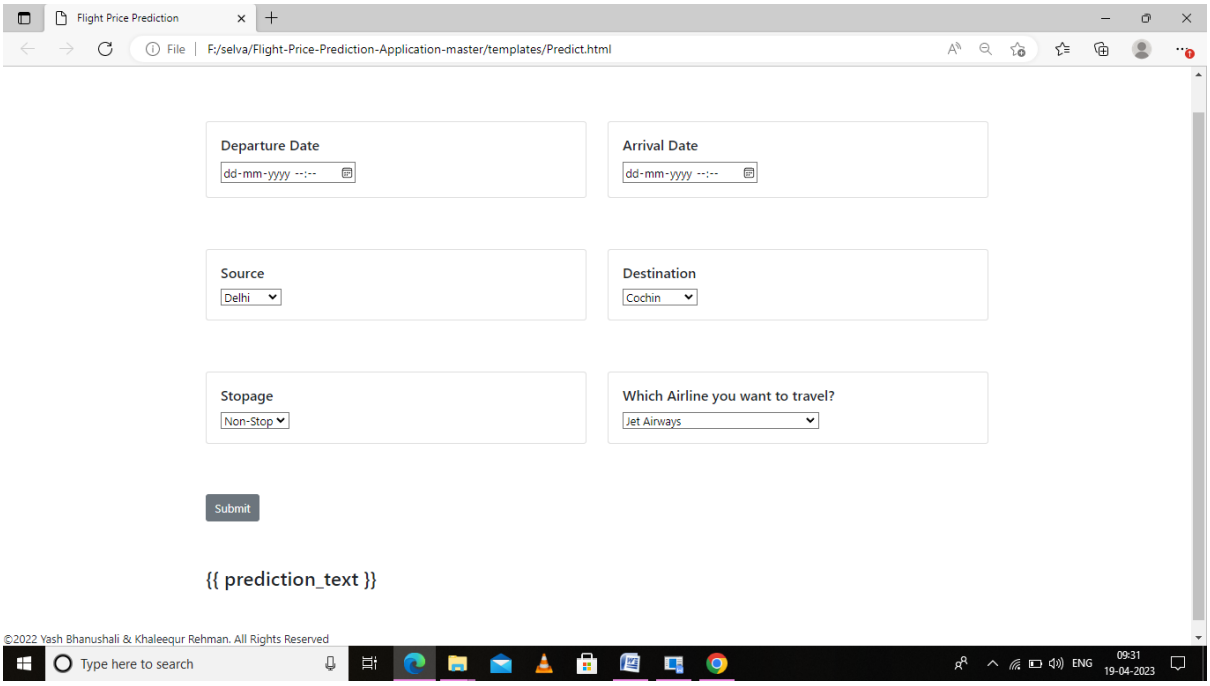
Flask coding using form pycharm:

The flask coding using the packages view the screenshot…



Using images:

Inputimage & outputimage……



CONCLUSION:

Online ticket booking system is an application where the customer can book a ticket online and 24*7 hours a day from anyplace in the world. Customers can also interact with theticket booking website to know any other details they want. Online ticket booking system hasbeen developed successfully. System performance is also found to be satisfactory. This is a user-friendly application. Through this application, the cost can be reduced and efficiency is increased. There are several procedures that can be selected by customers. With the help of thisapplication customers can book tickets, can know the status of a flight, bus or trains, a Sourcestation and destination can be chosen according to their choice, can select seats, can choose the flight.