"Flight Price Prediction"

Submitted in fulfillment of the requirements
of the degree of
Bachelor of Engineering (Sem-VII)

By

Aditya Tupe: 73
Kalpesh Wagh: 76
Suraj Yadav: 79

Supervisor:

Prof. B.W Balkhande

Department of Computer Engineering

Bharati Vidyapeeth College of Engineering, Navi Mumbai
C.B.D Belapur, Navi Mumbai-400614

(Affiliated to University of Mumbai)

2022-2023
Academic Year 2022-2023

Department of Computer Engineering

Bharati Vidyapeeth College of Engineering, Navi Mumbai

CERTIFICATE

This is to certify that

Mr. Aditya Tupe

Mr. Kalpesh Wagh

Mr. Suraj Yadav

has satisfactorily completed the requirements of the mini project entitled

"Flight Price Prediction"

*as prescribed by the **University of Mumbai**, for the award of the degree of*
Bachelor of Engineering** in **Computer Engineering

Prof. B.W Balkhande   **Prof. D.R Ingle**

Guide   **Head of Department**

ACKNOWLEDGEMENT

I take this opportunity to express my deepest gratitude and appreciation to all those who have helped me directly or indirectly towards the successful completion of this dissertation report.

It is a great pleasure and a moment of immense satisfaction for me to express my profound gratitude to my dissertation Project Guide**, Prof. B.W Balkhande,** whose constant encouragement enabled me to work enthusiastically. His perpetual motivation, patience, and excellent expertise in discussion during the progress of the dissertation work have benefited me to an extent beyond expression. I am highly indebted to him for his invaluable guidance and ever-ready support in the successful completion of this dissertation in time. Working under his guidance has been a fruitful and unforgettable experience. Despite his busy schedule, he was always available to give me advice, support, and guidance during the entire period of my project. The completion of this project would not have been possible without his encouragement, patient guidance, and constant support.

I am thankful to **Prof. D. R. Ingle**, Head of the Computer Engineering Department, for their guidance, encouragement, and support during my project. I would like to mention here that he was instrumental in making available all the needed resources throughout my project. I am highly indebted to him for his kind support.

I am also thankful to **Dr. Sandhya Jadhav**, Principal, for her encouragement and for providing an outstanding academic environment, also for providing adequate facilities. I acknowledge all the **staff members** of the department of Computer Engineering for their valuable guidance with their interest and valuable suggestions that brightened me.

No words are sufficient to express my gratitude to my beloved **Parents** for their unwavering encouragement in every work. I also thank all my friends for being a constant source of my support.

TABLE OF CONTENTS

INTRODUCTION

Perfect time for purchasing plane ticket by the passenger's view is difficult since passengers get very less information of future business price rates. Different models figure out future business price on plane and categories the best time to obtain flight ticket. Airlines use different strategies of pricing for their tickets, later taking the decision on price because order shows higher value for the approximation models. The causes behind the difficult system are each Planes has limited number of seats to be filed, so airlines must regulate demand. Suppose when demand is expected to increase capacity, the airline may increase prices, to decrease the rate at which seats fill. Also, seating arrangements in flight which is not occupied shows the loss of the amount invested for the business airline companies and making them purchase the ticket to fill the seats for any price this would be the best idea to get profit in loss too. Passengers should be compatible with the airline companies to get adjusted for the increase and decrease of the price. Passengers or customers should make their own planning to get the best offers available on different airlines and travel through less price. Planes ticket prices changes as time passes, pulling out the elements which creates the difference. Reporting the correlated and models which is used to price the flight tickets. Then, using that information,
building the model which helps passengers to make pull out the ticket to buy and predicting air ticket prices which progresses in the future. Duration, Arrival time, Price, Source, Destination and much more these are the attribute used for flight price prediction.

LITERATURE SURVEY

Literature	Method	Advantage and Disadvantage
Flight Price Prediction for Users by Machine Learning Techniques	Random Forest	Advantages: The results obtained by the random forest and decision tree algorithm has better accuracy, but best accuracy is predicted by decision tree algorithm as shown is the above analysis. Accuracy of the model is also forecasted by the R-squared value.
Airfare Price Prediction Using Machine Learning Algorithms	Data mining, K Feature selection, Genetic algorithm, etc.	Advantage: The outcome of the experiments derives from the fact that machine learning models satisfies the need of forecasting the airfare costs. Other vital parts in airfare prediction are the feature selection and data collection from which we have derived some helpful conclusions.
Predicting The Price of a Flight Ticket with The Use of Machine Learning Algorithms	Bagging Regression	This gives the predicted values of flight fare to get a flight ticket at minimum cost. Data is collected from the websites which sell the flight tickets so only limited information can be accessed.

PROBLEM STATEMENT

Flight ticket prices can be something hard to guess, today we might see a price, check out the price of the same flight tomorrow, and it will be a different story.

To solve this problem, we have been provided with prices of flight tickets for various airlines between the months of March and June of 2019 and between various cities, using which we aim to build a model which predicts the prices of the flights using various input features.

Objectives

In conceptual level, there are two subtasks for selecting features and taking decision about feature combination. Execution of Building the model through Random Forest, decision tree and test the results of continuous as well as categorical data. Removing the elements which are of not required, duplicate and redundant information from the data collected. Limiting the caused error and through classification results we are increasing the accuracy. Choosing the subdivision of suitable attribute from the whole dataset. Performing statistical analysis through various test

System Design

The important a part of the project is data collection. Data on different websites is gathered with unique attribute to provide the best accuracy. The data is collected from website kaggle.com and the models are implemented using python. The python-script helps to easily pre-process the data and forecast the output. The duplicate values are avoided in the pre-processing step. This dataset is more concentrated on calculating the plane price value. The dataset contains the data with attributes such as

- Journey Date
- Departure
- Designation
- Arrival
- Airline
- Duration
- Source
- Price

1. **Cleaning and preparing data**

    The gathered data must be cleaned and pre-processed and after improving the data, it is read to run on the algorithms. The duplicate values are removed, data is arranged with numerical values by pre-processing and by this model building and selecting the features becomes easier. Pre-processing plays the vital role for the whole dataset

2. **Analyzing Data** Constructing of the data is the huge task, by knowing the various patterns of data visualization and later using the required machine learning models. Also, from the current attribute the new small elements can be acquired. If it is on holiday, festival day or a weekday or weekend, plane date plays main role. Travelling during weekends is costlier hand the planes on weekdays and time is considered in classes as: Morning, afternoon, evening and night, so time plays important role.
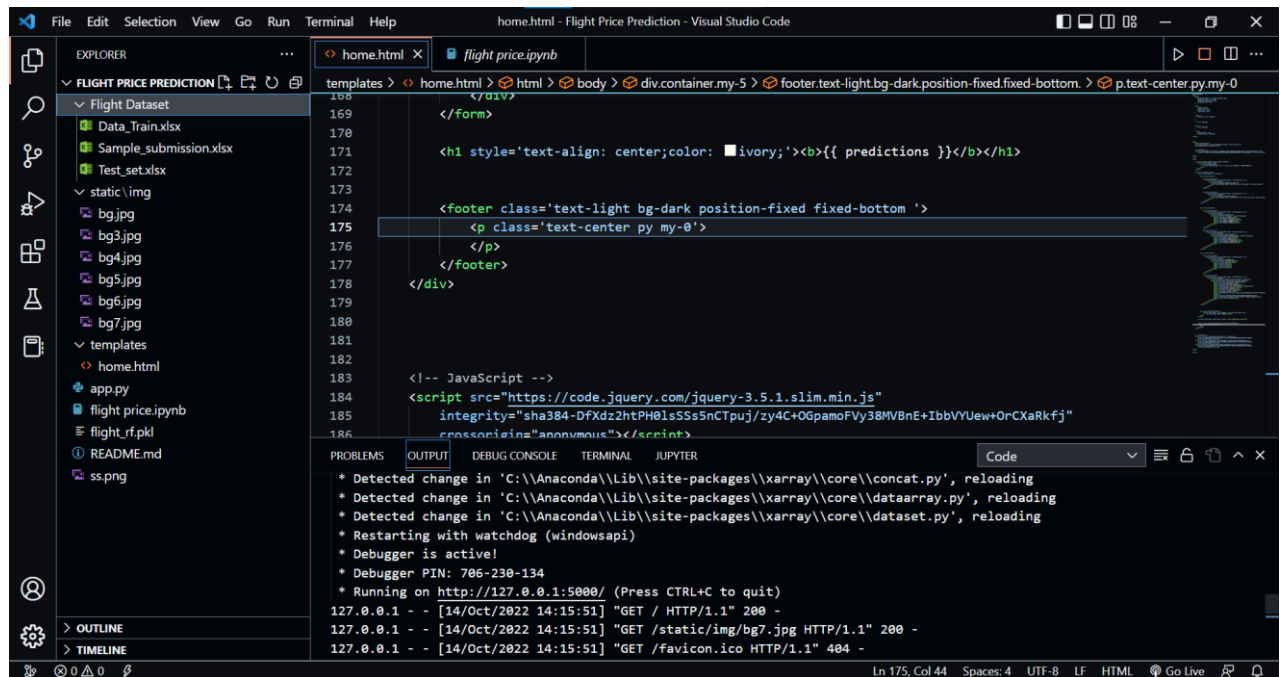
Implementation & Result
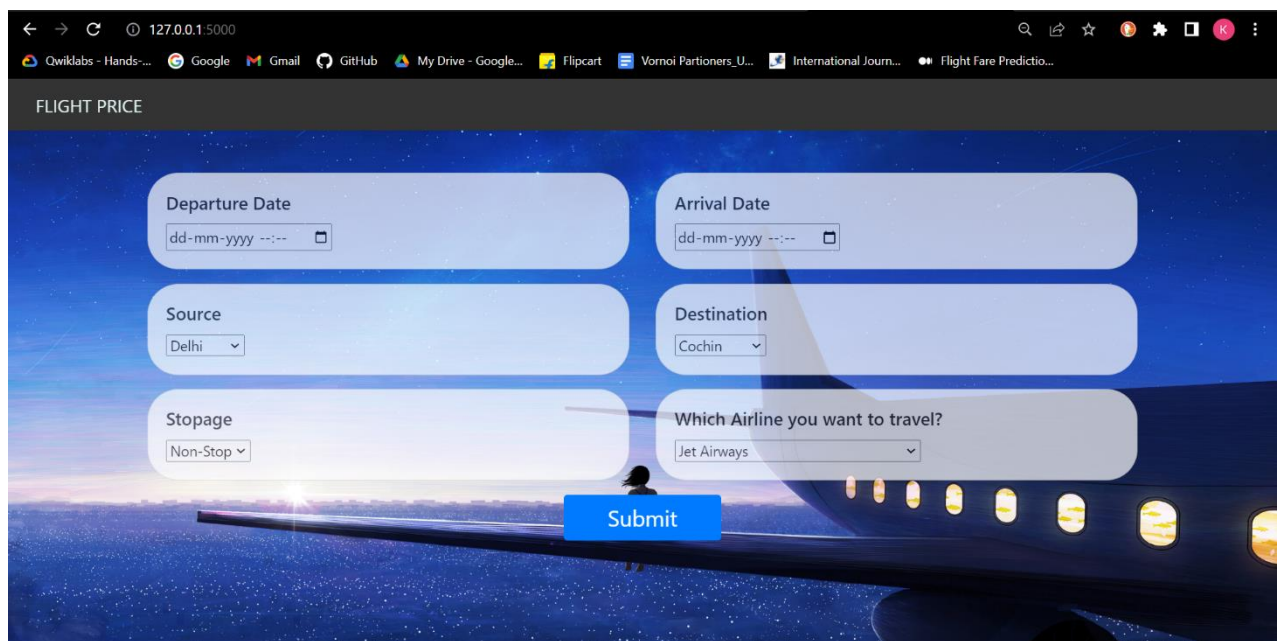

Fig 1.: -Backend Structure

Fig 2: -Initial Homepage

Fig 3: Result

CONCLUSION

Currently there is a static prediction engine that serves prediction results for one disease. There is a possibility of extending the system, to allow end-users to write their own prediction engine, execute it and publish it. In summary, the primary and secondary aims of the project have been achieved but there is still room for improvement and further enhancement.