

## Airfare Price Prediction System

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**Abstract** - Our actual idea about Flight prediction System is that we will going to predict flights prices with comparison of today to another day. The main purpose of our System is to predict the flight prices with comparison of today to another any day because of this customer can be book their tickets of Flight according to their comfortably, according to their affordability, Means whichever cheaper cost they want they can be easily choose. Before going to visit any place customer have to know what is actual prices for same destination which types of different Flights are available, if they don't know they will pay more money for tickets than the usual. This ticket prices based on various factors like winter, festival, summer, as well as number of tickets available for particular flights. Flight tickets may be vary during day and night. With consideration of some features like arrival time, departure time as well as time to purchase the ticket using these factors prices can be predict. due to this factors there may be change in airline fare prices and also detect how factors are related to being change of Flight ticket. By using the information above to build a system to predict the fare of the ticket priority using machine learning techniques like Random forest algorithm, that might be helpful for the passengers whether to buy a ticket or not. Nowadays, the airline corporations are using complicated strategies and strategies to assign airfare prices in a dynamic fashion. It can be tough to wager the flight price price tag rate when we check it today compared to the other day. The tourists who want to visit a new place should know the fare price tag rate in order to get the cheapest and certain price tag rate with their needs. That's why we decided this project. In this project we will going to use machine Learning as back end. Flask as a python framework. Front end. Flask is nothing but one of the Python Framework.

**Key Words:** UI, ML, Pkl, HTML, CSS, IDE, UML

### 1. INTRODUCTION

Airfare price tag charges may be some thing to bet, nowadays we'd see a fee, test out the fee of the identical flight tomorrow, it is going to be a special story. Ticket charges boom or lower on occasion relying on different factors like timing of the flights, destination, length of flights. Having a few primary concept of the flight fares earlier than making plans the journey will in reality assist many humans keep cash and time. Since the deregulation of the airline industry, airfare pricing approach has advanced right into a

complicated shape of state-of-the-art guidelines and mathematical fashions that pressure the pricing techniques of airfare. Although nevertheless in large part held in secret, research have located that those guidelines are widely recognized to be stricken by a whole lot of elements. Traditional variables consisting of distance, despite the fact that nevertheless gambling a extensive role, are now not the only thing that dictate the pricing approach. Elements associated with economic, advertising and social developments have performed growing roles in dictating the airfare charges. Nowadays, the airline groups are the usage of complicated techniques and strategies to assign airfare charges in a dynamic fashion. These techniques are taking into consideration numerous financial, advertising, business and social elements intently linked with the very last airfare charges. It may be tough to bet the airfare price tag fee whilst. We test it nowadays as compared to the alternative day. The vacationers who need to go to a brand new location need to realize the price tag fee to be able to get the most inexpensive and positive price tag fee with their needs. This whole thing brings the concept to make a prediction approximately the flight tickets to be able to make the vacationers simpler to book their tickets with their needs. Due to the excessive complexity of the pricing fashions implemented with the aid of using the airlines, it's miles very tough a client to buy an air price tag with inside the lowest fee, for the reason that fee modifications dynamically. For this cause a fixed of functions characterizing a normal flight is decided, supposing that those functions have an effect on the fee of an airfare price tag. Technology can convey an answer via the implementation of Machine studying strategies to enhance the uncertainty of flight charges with inside the future. We will use Flight Price Dataset furnished with the aid of using Kaggle Flight Price. This dataset is composed of 1063 records with thirteen columns that specify approximately the flight in India with the aid of using a few Indian and overseas Airlines in 2019. We will examine this dataset the usage of Machine studying strategies in order to expect the flight price tag fee based on the functions furnished in the columns of the dataset. We will begin the Data Science Life Cycle to procedure the data. Recent advances in Artificial Intelligence (AI) and ML to infer guidelines chine Learning (ML) make it viable and model variations on airfare fee based on a large range of functions, regularly uncovering hidden relationships among the functions automatically. To the best of our knowledge, all existing paintings leveraging system studying methods for airfare fee prediction. We ask that authors

comply with a few easy guidelines. In essence, we ask you to make your paper appearance precisely like this document. The simplest manner to do that is absolutely to download the template, and replace(copy-paste) the content material together along with your very own material. Number the reference gadgets consecutively in rectangular brackets (e.g. [1]).However the authors call may be used at the side of the reference range with inside the walking textual content. The order of reference withinside the walking textual content need to suit with the listing of references on the cease of the paper.

### 1.1 GOALS AND OBJECTIVES

**AIM :** The aim of this project is to detect the prices of different flights as compare to today to another day due to which help to people to book the flight ticket according to their need.

**GOAL :** The overall goal of the project is to create the web UI which will predict the price to the customer on the basis of the given input.

#### OBJECTIVES

- To build the model with maximum accuracy using the appropriate Machine learning algorithms.
- To save the final built model.
- Design web pages using HTML and CSS
- Expose the web pages using Flask framework

### 1.2 MOTIVATION

1)Nowadays there are lots of apps for flight ticket booking.if passenger want to travel from one space to another space so they don't know actually what is the prices of that same space flight.

2)To save their money and time we will decide to develop such system due to which user can book the flight ticket according to their need.

## 2. LITERATURE SURVEY

Air ticket price prediction is a challenging task since the factors involved in pricing dynamically change overtime and make the price fluctuate. In the last decade, researchers have incorporated machine learning algorithms and data mining strategies to better model observed prices. Among them, regression models, such as Linear Regression(LR), Support Vector Machines (SVMs), Random Forests(RF), are frequently used in predicting accurate airfare price. Early work also considered using classification models top redict the trends of the itineraries. Ren et al. proposed using LR,

Naive Bayes, Softmax regression, and SVMs to build a prediction model and classify the ticket price into fivebins (60% to 80%, 80% to 100%, 100% to 120%, and etc.)to compare the relative values with the overall average price. More than nine thousand data points, including six features(e.g., the departure week begin, price quote date, the number of stops in the itinerary, etc.), were used to build the models.

The authors reported the best training error rate close to22.9% using LR model. Their SVM regression model failed to produce a satisfying result. Instead, an SVM classification model was used to classify the prices into either "higher" or "lower" than the average.

**Table -1:** Sample Table format

SR .NO	Referenc e Name	Work Description	Problem Found	Any other criteria
1	IndiGo	IndiGo is one of the flight booking app which can predict the flight ticket as well as book the flight ticket.	This app predict ticket price for only of Indigo flights not for other flights.	Registrati on is required
2	Ixigo	Ixigo is one of the flight booking app which can predict the flight ticket as well as book that ticket	This app only predict some Popular airlines like SpiceJet, AirAsiaIndia, GoFIRST, Vistara, AirIndia, IndiGo	

Compared to the current and recent work, our proposed framework manages to handle the price prediction task only using public data sources with minimal features. Also, not restricted by any specific market segment that usually limits the existing work, this proposed framework can be applied to predict the airfare price for any market.

### 3. SYSTEM ARCHITECTURE

Following is the system architecture:-

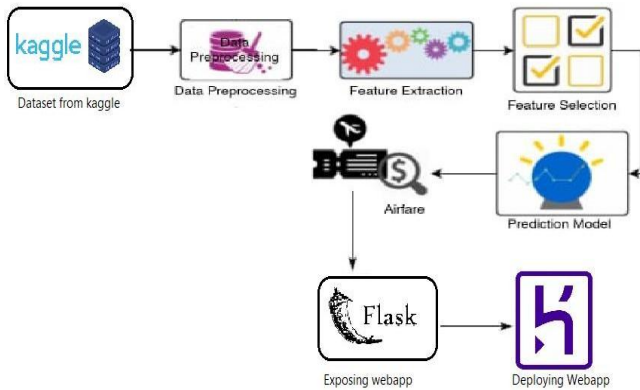


Chart -1: Architecture

### 4. ALGORITHM

**Step1: Downloading Dataset from Kaggle :** Kaggle lets in customers to discover and put up data sets, discover and construct fashions in a web-primarily based totally facts-technology data science environment, paintings with different facts scientists and device mastering engineers, and input competitions to resolve data science challenges.

**Step2: Data Processing:** Data preprocessing is a data mining technique. It is used to convert the raw records in a beneficial and useful format. In the dataset, many attributes include the identical information. Directly merging the tables creates many replica fields. Also, the records pronounced via way of means of the airways can also additionally consist of faulty values because of human error, foreign money conversion error, etc. Hence, as it should be designed records preprocessing workflow is vital to generate correct enter records for you to build the machine learning model.

**Step3: Feature Extraction:** Feature Extraction goals to lessen the wide variety of functions or features in a dataset through developing new functions from the prevailing ones (after which discarding the unique functions). These new decreased set of functions must then be capable of summarize maximum of the statistics contained withinside the unique set of functions.

**Step4: Feature Selection:** Feature selection is the system of decreasing the wide variety of input variables while making a predictive model. It is ideal to lessen the wide variety of input variables to each lessen the computational value of modeling and, in a few cases, to enhance the overall performance of the model.

**Step5: Predicting model:** Algorithm used in our model is Random forest. Random forest is supervised machine learning algorithm. It is a collection of multiple decision trees whose results are aggregated into one final result. As

the name suggests, "Random Forest is a classifier that contains a multiple number of decision trees on various subsets of the given dataset and takes the average to improve the predictive or final accuracy of that dataset.

### 5. CONCLUSIONS

This paper reported on a preliminary study in "airfare prices prediction". We gathered airfare data from a Kaggle website and showed that it is feasible to predict prices for flights based on historical fare data. The experimental results show that ML models are a satisfactory tool for predicting airfare prices. Other important factors in airfare prediction are the data collection and feature selection from which we drew some useful conclusions. From the experiments we concluded which features influence the airfare prediction at most.

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