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Low Level Document (LLD)
Flight Ticket Price Prediction

Version number: 1.0
Last date of revision: 24 February 2023

Mohammed Saad K

DECLARATION

I declare that this written submission represents us ideas is our own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources.
I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission.
I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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Revision History

Version	Date	Author	Reviewer	Approver	Comments
0.1	24-02-2023	Mohammed Saad K	Mohammed Saad K		Draft version
0.2	25-02-2023	Mohammed Saad K	Mohammed Saad K		Suggested some selections like key notes, screen validations and attributes to be added
0.3	25-02-2023	Mohammed Saad K	Mohammed Saad K		Suggested document format related comments like correction of version, adding one sections for open issues etc
0.4	27-02-2023	Mohammed Saad K	Mohammed Saad K		Suggested some changes like correct sequence diagram, changes in data design sections etc
1.0	28-02-2023	Mohammed Saad K	Mohammed Saad K		Baseline version

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Table of Contents

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1. Introduction:

1.1 Scope of the Document

- This section will cover details regarding scope of the document
- Low level design document will be at component level i.e., for website portal there will be one LLD

1.2 Intended Audience

- This section will cover categories of audiences who will be referring/reviewing this document

1.3 System Overview

- This section will capture overview of system application i.e for what system is being developed
- Who are the stake holders of system?
- What are other external Systems through which this will be interacting

2. Project Briefing:

Travelling through flights has become an integral part of today's lifestyle as more and more people are opting for faster travelling options. The flight ticket prices increase or decrease every now and then depending on various factors like timing of the flights, destination, and duration of flights various occasions such as vacations or festive season. Therefore, having some basic idea of the flight fares before planning the trip will surely help many people save money and time. The main goal is to predict the fares of the flights based on different factors available in the dataset.

Benefits are: [1] Travelers get the fare prediction handy using which it's easy to decide the airlines. [2] Saves time in searching / deciding for airlines.

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3. Problem Statement:

A System / Web application which can predict the price of the flight based on various affecting factors. The price should be calculated based on the time, source, destination and number of stops given by user.

4. Problem Solution:

In the proposed system, I make use of datasets to forecast the fare of flight tickets at the consumer segment levels. During the data pre-processing stage, all databases are cleaned to remove any potentially erroneous examples, then converted and integrated depending on market group. The feature engineering extracts and generates handmade attributes that are intended to describe the segment of the market. The goal of adaptive filtering modules is to improve accurate channels by assessing the utility of the characteristics and removing any unnecessary characteristics. Finally, I use the selected criteria to build our forecasting techniques, that result in the finished product of the projected flight cost of the ticket.

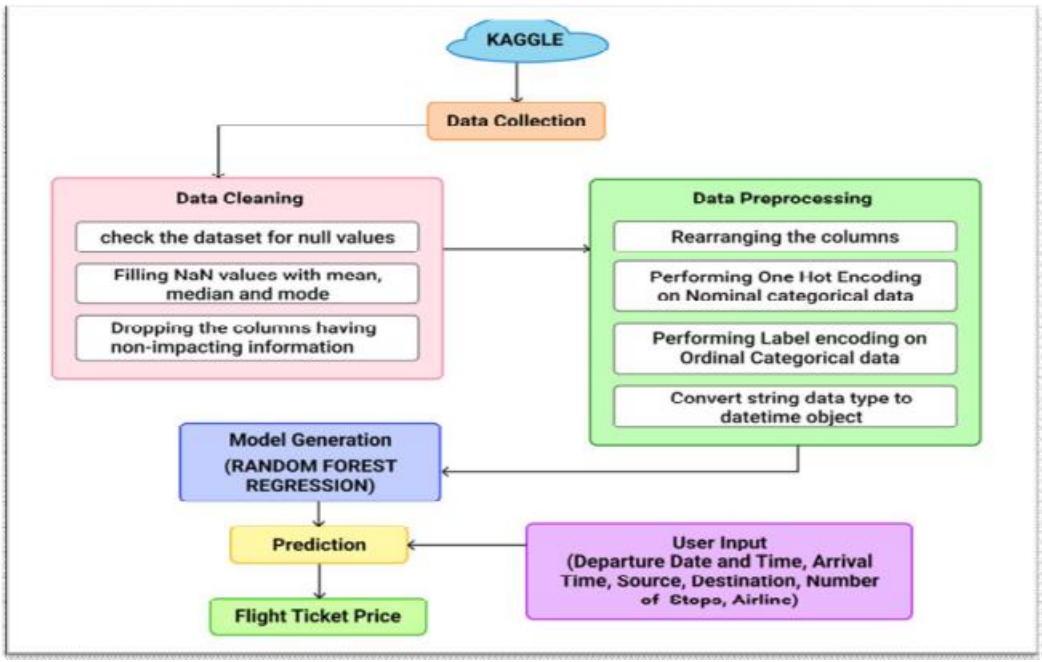
5. Objective of the Project:

Objective of this project is to predict the price of flight tickets based on various factors.

6. Scope of Project:

The future aim is to work more on the feature selection and model accuracy. We can also consider various other crucial features that affect the flight ticket prices like public holidays, number of luggage, number of hours till departure, crude oil price, etc. in order to get best results.

7. Block Diagram:



8. Requirements Gathering:

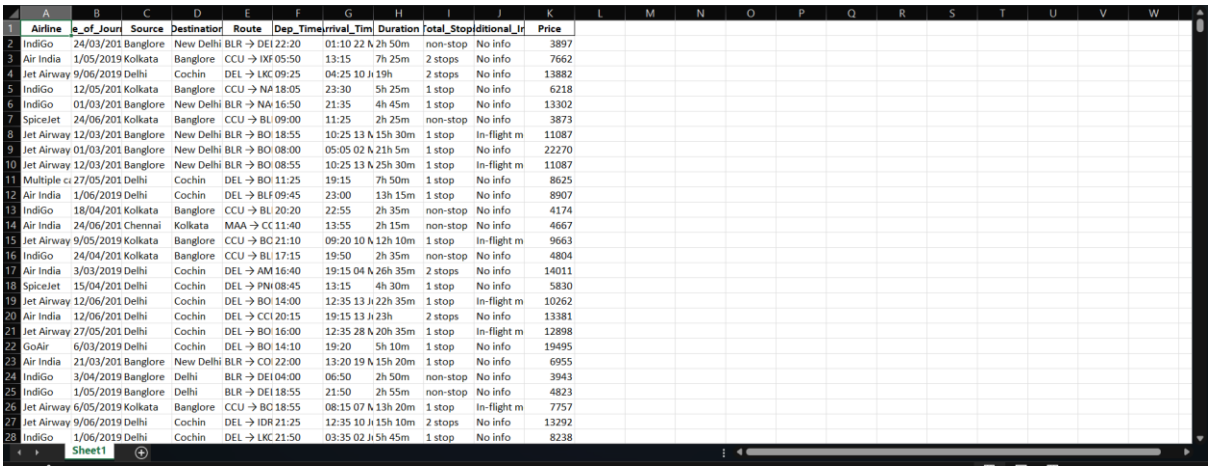
- Window 10 Operating system
- Visual studio code software
- Project integration idea from Kaggle website
- Few Github Non copyrighted source codes

9. Analysis:

Three machine learning models were examined in this project to forecast the average flight price at the consumer segment level. I used training data to train the training data and test data to test it. These records were used to extract a number of characteristics. Our suggested model can estimate the quarterly average flight price using attribute selection strategies. To the highest possible standard, much prior studies into flight price prediction using the large dataset depended on standard statistical approaches, which have their own limitations in terms of underlying issue estimates and hypotheses. To our knowledge, no other research have included statistics from holidays, celebrations, stock market price fluctuations, depressions, fuel price and socioeconomic information to estimate the air transport market sector; nonetheless, there are numerous restrictions. As example, neither of the databases provide precise information about ticket revenue, including such departing and arrival times and days of the week. This framework may be expanded in the future to also include flight tickets payment details, that can offer more detail about each area, such as timestamp of

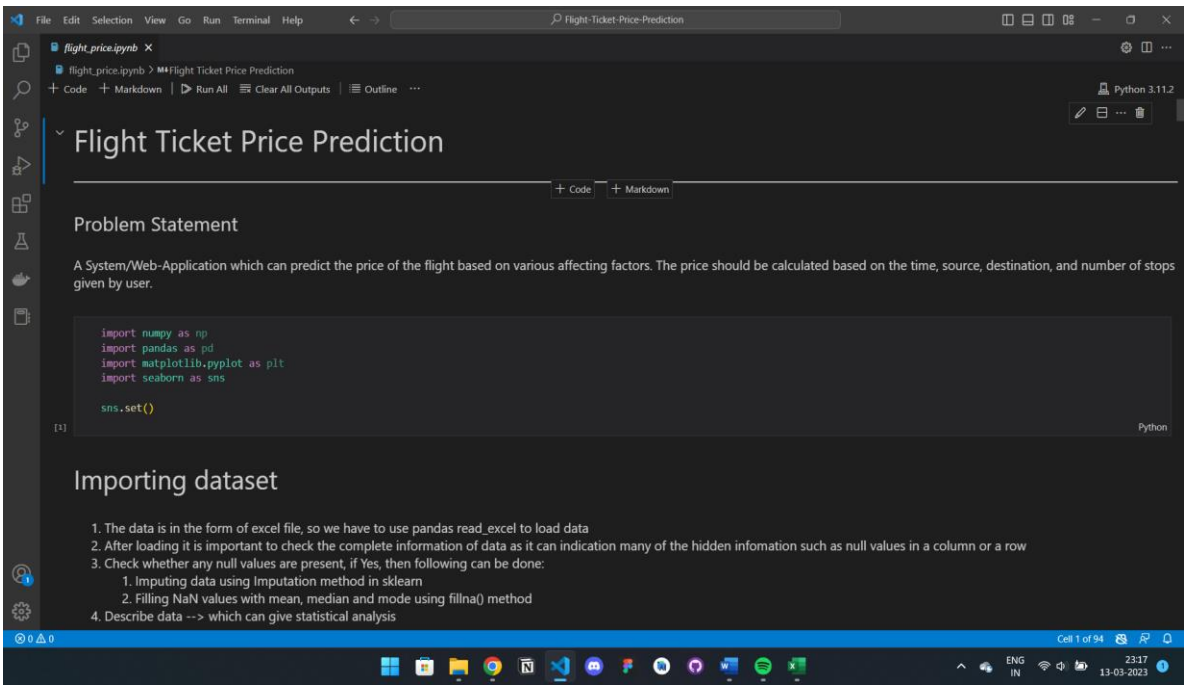
entry and exit, seat placement, covered auxiliary items, and so on. By merging such data, it is feasible to create a more robust and complete daily and even daily flight price forecast model. Furthermore, a huge surge of big commuters triggered by some unique events might alter flight costs in a market sector. Thus, incident data will be gathered from a variety of sources, including social media sites and media organizations, to supplement our forecasting models. We will also examine specific technological Models, such as Deeper Learning methods, meanwhile striving to enhance existing models by modifying their hyper-parameters to get the optimum design for airline price prediction.

10. Final Screenshot of Project Output



	A	B	C	D	E	F	G	H	I	J	K
1	Airline	e_of_Jour	Source	Destinatior	Route	Dep_Time	rrival_Tim	Duration	otal_Stop	ditional_In	Price
2	IndiGo	24/03/201	Banglore	New Delhi	BLR → DEI	22:20	01:10 22 M	2h 50m	non-stop	No info	3897
3	Air India	1/05/2019	Kolkata	Banglore	CCU → IXF	05:50	13:15	7h 25m	2 stops	No info	7662
4	Jet Airway	9/06/2019	Delhi	Cochin	DEL → LKC	09:25	04:25 10 J	19h	2 stops	No info	13882
5	IndiGo	12/05/201	Kolkata	Banglore	CCU → NA	18:05	23:30	5h 25m	1 stop	No info	6218
6	IndiGo	01/03/201	Banglore	New Delhi	BLR → NA	16:50	21:35	4h 45m	1 stop	No info	13302
7	SpiceJet	24/06/201	Kolkata	Banglore	CCU → BL	09:00	11:25	2h 25m	non-stop	No info	3873
8	Jet Airway	12/03/201	Banglore	New Delhi	BLR → BO	18:55	10:25 13 M	15h 30m	1 stop	In-flight m	11087
9	Jet Airway	01/03/201	Banglore	New Delhi	BLR → BO	08:00	05:05 02 M	21h 5m	1 stop	No info	22270
10	Jet Airway	12/03/201	Banglore	New Delhi	BLR → BO	08:55	10:25 13 M	25h 30m	1 stop	In-flight m	11087
11	Multiple ca	27/05/201	Delhi	Cochin	DEL → BO	11:25	19:15	7h 50m	1 stop	No info	8625
12	Air India	1/06/2019	Delhi	Cochin	DEL → BLF	09:45	23:00	13h 15m	1 stop	No info	8907
13	IndiGo	18/04/201	Kolkata	Banglore	CCU → BL	20:20	22:55	2h 35m	non-stop	No info	4174
14	Air India	24/06/201	Chennai	Kolkata	MAA → CC	11:40	13:55	2h 15m	non-stop	No info	4667
15	Jet Airway	9/05/2019	Kolkata	Banglore	CCU → BO	21:10	09:20 10 M	12h 10m	1 stop	In-flight m	9663
16	IndiGo	24/04/201	Kolkata	Banglore	CCU → BL	17:15	19:50	2h 35m	non-stop	No info	4804
17	Air India	3/03/2019	Delhi	Cochin	DEL → AM	16:40	19:15 04 M	26h 35m	2 stops	No info	14011
18	SpiceJet	15/04/201	Delhi	Cochin	DEL → PN	08:45	13:15	4h 30m	1 stop	No info	5830
19	Jet Airway	12/06/201	Delhi	Cochin	DEL → BO	14:00	12:35 13 Ju	22h 35m	1 stop	In-flight m	10262
20	Air India	12/06/201	Delhi	Cochin	DEL → CCI	20:15	19:15 13 Ju	23h	2 stops	No info	13381
21	Jet Airway	27/05/201	Delhi	Cochin	DEL → BO	16:00	12:35 28 M	20h 35m	1 stop	In-flight m	12898
22	GoAir	6/03/2019	Delhi	Cochin	DEL → BO	14:10	19:20	5h 10m	1 stop	No info	19495
23	Air India	21/03/201	Banglore	New Delhi	BLR → CO	22:00	13:20 19 M	15h 20m	1 stop	No info	6955
24	IndiGo	3/04/2019	Banglore	Delhi	BLR → DEI	04:00	06:50	2h 50m	non-stop	No info	3943
25	IndiGo	1/05/2019	Banglore	Delhi	BLR → DEI	18:55	21:50	2h 55m	non-stop	No info	4823
26	Jet Airway	6/05/2019	Kolkata	Banglore	CCU → BO	18:55	08:15 07 M	13h 20m	1 stop	In-flight m	7757
27	Jet Airway	9/06/2019	Delhi	Cochin	DEL → IDR	21:25	12:35 10 Ju	15h 10m	2 stops	No info	13292
28	IndiGo	1/06/2019	Delhi	Cochin	DEL → LKC	21:50	03:35 02 Ju	5h 45m	1 stop	No info	8238

Sheet1



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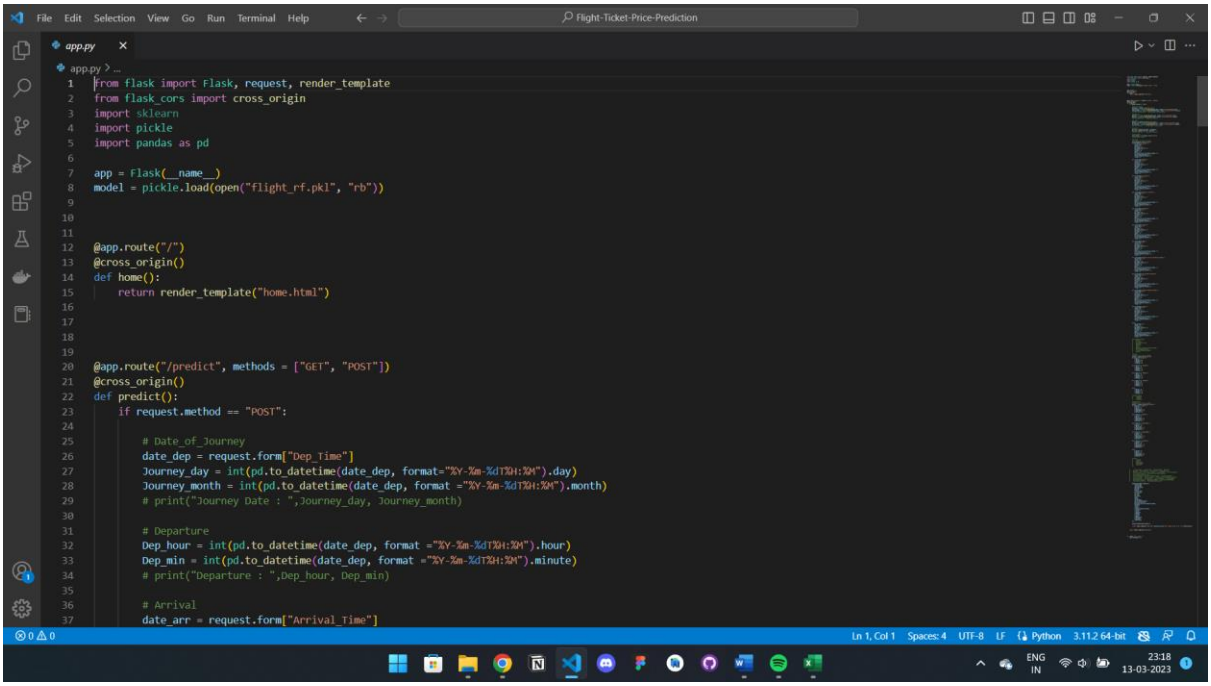
File Edit Selection View Go Run Terminal Help
Flight-Ticket-Price-Prediction
app.py
app.py > ...
from flask import Flask, request, render_template
from flask_cors import cross_origin
import sklearn
import pickle
import pandas as pd
app = Flask(__name__)
model = pickle.load(open("flight_rf.pkl", "rb"))
@app.route("/")
@cross_origin()
def home():
return render_template("home.html")
@app.route("/predict", methods = ["GET", "POST"])
@cross_origin()
def predict():
if request.method == "POST":
# Date_of_Journey
date_dep = request.form["Dep_Time"]
Journey_day = int(pd.to_datetime(date_dep, format="%Y-%m-%dT%H:%M").day)
Journey_month = int(pd.to_datetime(date_dep, format ="%Y-%m-%dT%H:%M").month)
# print("Journey Date : ",Journey_day, Journey_month)
# Departure
Dep_hour = int(pd.to_datetime(date_dep, format ="%Y-%m-%dT%H:%M").hour)
Dep_min = int(pd.to_datetime(date_dep, format ="%Y-%m-%dT%H:%M").minute)
# print("Departure : ",Dep_hour, Dep_min)
# Arrival
date_arr = request.form["Arrival_Time"]
Ln 1, Col 1 Spaces: 4 UTF-8 LF Python 3.11.2 64-bit
ENG
IN
23:18
13-03-2023