

PROJECT DEVELOPMENT PHASE

SPRINT 1 – CODE AND TESTCASE

Date	10 November 2022
Team ID	PNT2022TMID10242
Project	Flight delay prediction using Machine learning
Marks	8 Marks

We have developed web based application Home Page which helps the User to Predict their flight with the help of details such as Flight number, Origin, Destination etc... The User will enter the flight details and with the help of the details the machine learning will work and it display the predicted output in “predict.html” web page.

SEARCH :

Index.html :

This page is used to get flight details from the User and send to “predict.html”.

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Flight Prediction Details</title>
  <link rel="stylesheet" type="text/css" href="{{
url_for('static',filename='styles/style2.css') }}">
</head>
<body>
  <h1>Flight Delay Prediction using Machine Learning</h1>
  <h2>Team ID : PNT2022TMID10242</h2>
```

```

<form action="{{url_for('predict')}}" method="post">

    <div class="form-control">
        <label for="name" >
            Flight Number :
        </label>

        <input type="text" placeholder="Enter your Flight
Number" name="name" required />
    </div>

    <div class="form-control">
        <label for="month" >
            Month :
        </label>

        <input type="text" placeholder="Enter your Month" name="month"
required />
    </div>

    <div class="form-control">
        <label for="dayodmonth">
            Day Of Month :
        </label>

        <input type="text"
            id="dom"
            placeholder="Enter your Day of Month"
name="dayofmonth" required/>
    </div>

    <div class="form-control">
        <label for="dayofweek">
            Day Of Week :
        </label>

        <input type="text"
            id="dow"
            placeholder="Enter your Day of week" name="dayofweek"
required/>
    </div>

    <div class="form-control">
        <label for="origin">
            Origin :
        </label>

        <!-- <input type="text"
            id="ori"
            placeholder="Enter your Origin" name="ori" required /> -->

```

```

        <select name="origin" id="ori">
            <option value="msp">msp</option>
            <option value="dtw">dtw</option>
            <option value="jfk">jfk</option>
            <option value="sea">sea</option>
            <option value="atl">atl</option>

        </select>
    </div>
    <div class="form-control">
        <label for="destination">
            Destination :
        </label>
        <select name="destination" id="dest">
            <option value="msp">msp</option>
            <option value="dtw">dtw</option>
            <option value="jfk">jfk</option>
            <option value="sea">sea</option>
            <option value="atl">atl</option>

        </select>

    </div>
    <div class="form-control">
        <label for="dept" >
            Scheduled Departure Time :
        </label>

        <input type="text"
            id="dept"
            placeholder="Enter your scheduled departure time"
name="dept" required />
    </div>
    <div class="form-control">
        <label for="arrtime">
            Scheduled Arrival Time :
        </label>

        <input type="text"
            id="arrtime"
            placeholder="Enter your scheduled arrival
time" name="arrtime" required/>
    </div>
    <div class="form-control">
        <label for="actdept" >
            Actual Departure Time :
        </label>

```

```

        <input type="text"
              id="actdept"
              placeholder="Enter your actual arrival
time" name="actdept" required/>
    </div>
    <button>
        <div class="svg-wrapper-1">
            <div class="svg-wrapper">
                <svg xmlns="http://www.w3.org/2000/svg" viewBox="0 0 24 24"
width="24" height="24">
                    <path fill="none" d="M0 0h24v24H0z"></path>
                    <path fill="currentColor" d="M1.946 9.315c-.522-.174-.527-
.455.01-.634l19.087-6.362c.529-.176.832.12.684.638l-5.454 19.086c-.15.529-
.455.547-.679.045l12 14l6-8-8 6-8.054-2.685z"></path>
                </svg>
            </div>
        </div>
        <span>Predict</span>
    </button>

</form>
<b>{{showcase}}</b>
</body>
</html>

```

Style.css :

This page is respect to “index.html” for styling purpose.

```

@import
url('https://fonts.googleapis.com/css2?family=Poppins:ital,wght@0,400;0,500;0,
600;0,700;0,800;0,900;1,300&display=swap');

body{
    background-image: url('flight.jpg');
    background-repeat: no-repeat;
    background-attachment: fixed;
    background-size: cover;
    text-align: center;
    /* background-blend-mode: overlay; */
}
h1{
    margin-top: 10px;
    font-size: 55px;
}

```

```

margin-bottom: 20px;
text-align: center;
letter-spacing: 2px;
font-weight: 300px;
color: rgb(255, 255, 255);
opacity: .9;
}
h2{
margin-top: 10px;
font-size: 30px;
margin-bottom: 5px;
text-align: center;
font-weight: 30px;
color: rgb(255, 222, 181);
opacity: .9;
}

form {
/* background-color: rgba(255, 255, 255, 0.804); */
background-color: #F0F1EE;
max-width: 500px;
margin: 50px auto;
padding: 30px 20px;
width: 30rem;
height: 1050px;
border-radius: 30px;
box-shadow: 2px 5px 10px rgba(0, 0, 0, 0.5);
}

/* Styling form-control Class */
.form-control {
text-align: left;
margin-bottom: 25px;
}

/* Styling form-control Label */
.form-control label {
display: block;
margin-bottom: 10px;
font-size: 25px;
color: #19096b;
font-weight: bolder;
font-style: oblique;
}

/* Styling form-control input,
select, textarea */
.form-control input

```

```
{
  /* border: 1px solid #777; */
  /* border-radius: 2px; */
  padding: 10px;
  display: block;
  width: 95%;
  width: 80%;
  /* margin-bottom: 8px; */
  height: 500%;
  /* margin-top: 30%; */
  margin: 5% auto;
  /* border: none; */
  font-size: 14px;
  outline: none;
  background-color: #c4c4c462;
  border-radius: 10px;
}

.form-control select{
  padding: 10px;
  display: block;
  width: 95%;
  width: 80%;
  /* margin-bottom: 8px; */
  height: 500%;
  /* margin-top: 30%; */
  margin: 5% auto;
  /* border: none; */
  font-size: 14px;
  outline: none;
  background-color: #c4c4c462;
  border-radius: 10px;
}

button {
  font-size: 20px;
  background: rgb(21, 65, 196);
  color: white;
  padding: 0.7em 1em;
  height: 50px;
  width: 165px;
  /* align-content: center; */
  /* padding-left: 0.5em; */
  display: flex;

  border-radius: 16px;
  overflow: hidden;
  transition: all 0.2s;
  align-items: center;
```

```
margin-left: 30%;
}

button span {
  display: block;
  margin-left: 0.9em;
  transition: all 0.3s ease-in-out;
}

button svg {
  display: block;
  transform-origin: center center;
  transition: transform 0.3s ease-in-out;
}

button:hover .svg-wrapper {
  animation: fly-1 0.6s ease-in-out infinite alternate;
}

button:hover svg {
  transform: translateX(1.2em) rotate(45deg) scale(1.1);
}

button:hover span {
  transform: translateX(5em);
}

button:active {
  transform: scale(0.95);
}

@keyframes fly-1 {
  from {
    transform: translateY(0.1em);
  }

  to {
    transform: translateY(-0.1em);
  }
}

.reg{
  margin-left: 100px;
}
```

HOMEPAGE SCREENSHOT :

The screenshot shows a web browser window with the title 'Flight Prediction Details' and the address '127.0.0.1:5000'. The main heading of the page is 'Flight Delay Prediction using Machine Learning' with a subtitle 'Team ID : PNT2022TMID10242'. The background features a New Zealand Airline aircraft in flight. A central form is used for data entry:

Flight Number :

Month :

Day Of Month :

Day Of Week :

Origin :

Destination :

Scheduled Departure Time :

Scheduled Arrival Time :

Actual Departure Time :

VIEW :

Predict.html :

With the help of this page, the User will get an machine learning predicted output with respect to User's flight details.

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Flight Delay Prediction</title>
  <!-- <link rel="stylesheet" href="predict.css" -->
  <link rel="stylesheet" type="text/css" href="{{
url_for('static',filename='styles/predict.css')}}">
</head>
<body>
  <h1>Predicted Analysis of your Flight</h1>
  <h2>{{showcase}}</h2>
  <a href="/">Go Back</a>
</body>
</html>
```

Predict.css :

This page is respect to “predict.html” for styling purpose.

```
@import
url('https://fonts.googleapis.com/css2?family=Poppins:ital,wght@0,400;0,500;0,600;0,700;0,800;0,900;1,300&display=swap');

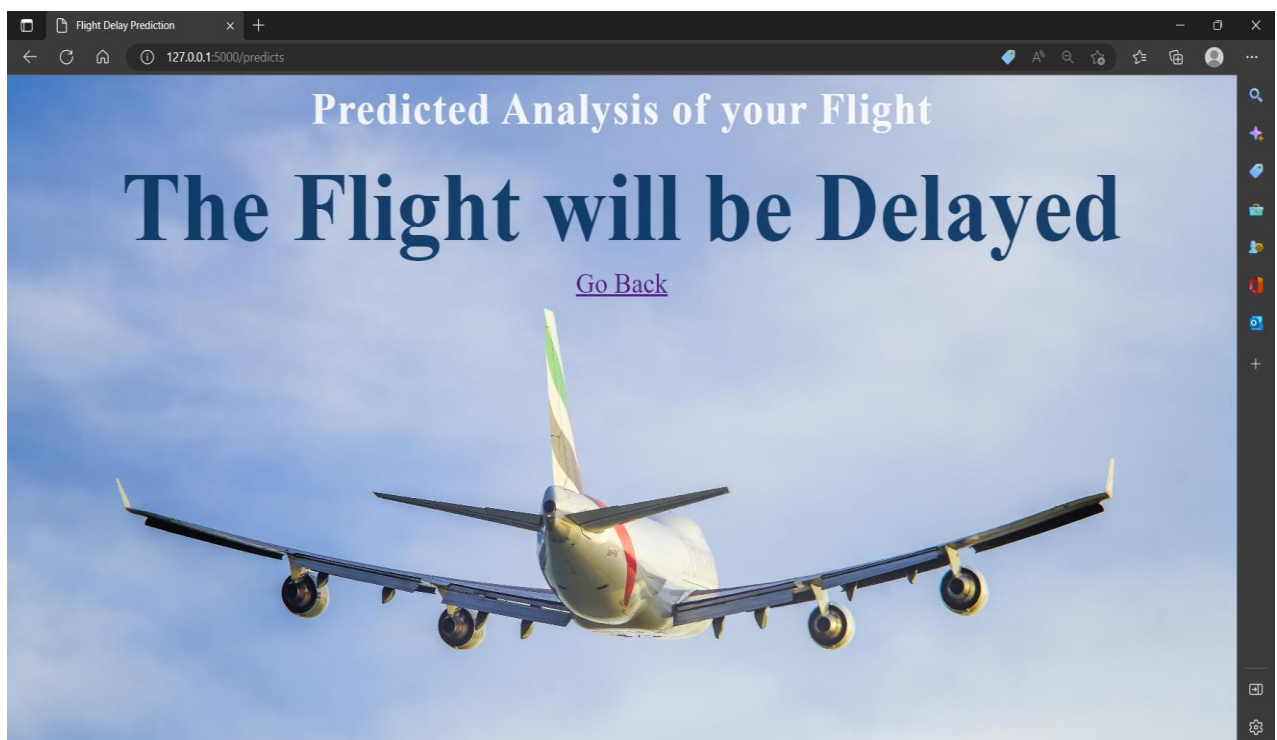
*{
  margin: 0%;
  padding: 0%;
}
body{
  background-image: url('preflight.jpg');
  background-repeat: no-repeat;
  background-attachment: fixed;
  background-size: cover;
  text-align: center;
  /* background-blend-mode: overlay; */
}
```

```

h1{
  margin-top: 10px;
  font-size: 55px;
  margin-bottom: 20px;
  text-align: center;
  letter-spacing: 2px;
  font-weight: 300px;
  color: rgb(255, 255, 255);
  opacity: .9;
}
h2{
  margin-top: 10px;
  font-size: 120px;
  margin-bottom: 5px;
  text-align: center;
  font-weight: 30px;
  color: rgb(2, 48, 94);
  opacity: .9;
}
a{
  font-size: 35px;
}

```

VIEW PAGE SCREENSHOT :



App.py(Flask);

With the help of Flask app, the Machine learning model will get the predicted output and integrated with web page and display the Output to the User.

```
from flask import Flask,request, render_template
import numpy as np
import pandas as pd
import pickle
import os

model=pickle.load(open('flight.pkl','rb'))
app=Flask(__name__)

@app.route('/')
def home():
    return render_template('index2.html')

@app.route('/predicts', methods=['POST','GET'])
def predict():
    name=request.form['name']
    month=request.form['month']
    dayofmonth=request.form['dayofmonth']
    dayofweek=request.form['dayofweek']
    origin=request.form['origin']
    if(origin=="msp"):
        origin1,origin2,origin3,origin4,origin5=0,0,0,0,1
    if(origin=="dtw"):
        origin1,origin2,origin3,origin4,origin5=1,0,0,0,0
    if(origin=="jfk"):
        origin1,origin2,origin3,origin4,origin5=0,0,1,0,0
    if(origin=="sea"):
        origin1,origin2,origin3,origin4,origin5=0,1,0,0,0
    if(origin=="alt"):
        origin1,origin2,origin3,origin4,origin5=0,0,0,1,0

    destination=request.form['destination']
    if(destination=="msp"):
        destination1,destination2,destination3,destination4,destination5=0,0,0
,0,1
    if(destination=="dtw"):
        destination1,destination2,destination3,destination4,destination5=1,0,0
,0,0
```

```

        if(destination=="jfk"):
            destination1,destination2,destination3,destination4,destination5=0,0,1
,0,0
        if(destination=="sea"):
            destination1,destination2,destination3,destination4,destination5=0,1,0
,0,0
        if(destination=="atl"):
            destination1,destination2,destination3,destination4,destination5=0,0,0
,1,0

        dept=request.form['dept']
        arrtime=request.form['arrtime']
        actdept=request.form['actdept']
        dept15 = int(dept) - int(actdept)
        total=[[name,month,dayofmonth,dayofweek,origin1,origin2,origin3,origin4,or
igin5,destination1,destination2,destination3,destination4,destination5,dept,ar
rtime]]
        y_pred=model.predict(total)
        print(y_pred)

        if(y_pred == [0.]):
            ans="The Flight will be on time"
        else:
            ans="The Flight will be Delayed"

        return render_template("predict.html",showcase=ans)

if __name__=='__main__':
    app.run(debug = True)

```