APPLICATION BUILDING

Date	12 November 2022
Team ID	PNT2022TMID13084
Project Name	Flight Delay Prediction Using Machine Learning

APPLICATION BUILDING:

Building flask file:

app.py screen shots

```python
import numpy as np
import os
from flask import Flask, request, jsonify, render_template
import pickle

app=Flask(__name__)
model = pickle.load(open('rfmodel.pkl', 'rb'))
@app.route("/")
def firstpage():
    return render_template("index.html")
```

```python
@app.route('/predict',methods=['POST'])
def predict():
    '''
    For rendering results on HTML GUI
    '''
    summer=[6,7,8]
    Winter=[9,10,11]
    Spring=[12,1,2,3]
    Fall=[4,5]
    Form_Data= [int(x) for x in request.form.values()]
    print(Form_Data[1])
    if Form_Data[1] in summer:
        Form_Data.append(0)
    elif Form_Data[1] in Winter:
        Form_Data.append(1)
    elif Form_Data[1] in Spring:
        Form_Data.append(2)
    else:
        Form_Data.append(3)
    final_features=np.array(Form_Data,dtype='int64')
    print(final_features)
    prediction = model.predict([final_features])
```

```python
    output = round(prediction[0])

    if output==0:
        return render_template('Prediction.html', prediction_text='No delay will happen {}'.format(output))
    elif output==1:
        return render_template('Prediction.html', prediction_text='There is a chance to departure delay will happen {}'.format(output))
    elif output==2:
        return render_template('Prediction.html', prediction_text='here is a chance to both departure and arrival delay will happen {}'.for
    elif output==3:
        return render_template('Prediction.html', prediction_text='here is a chance to flight  will diverted {}'.format(output))
    elif output==4:
        return render_template('Prediction.html', prediction_text='here is a chance to cancel the flight {}'.format(output))
    else:
        return render_template('Prediction.html', prediction_text='output {}'.format(output))
```

Figure 1 app.py

Creating HTML files:

Index.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 Data</title>
    <link rel="stylesheet" href="{{ url_for('static',filename='css/index.css')}}">
</head>
<body>
    <h1>Prediction of Flight Delay</h1>
    <form  action="{{ url_for('predict')}}" method="post">
      <div>
        <label for="">Quater of the year</label>
        <input type="number" name="quater" placeholder="ex:3" required="required" min='1' max='4' />

        <label for="">Month:</label>
        <input type="number" name="month" placeholder="ex:12" required="required" min='1' max='12'><br>

        <label for="">Day of Month:</label>
        <input type="number" placeholder="ex:28" required="required" min='1' max='31' name="day" ><br>

        <label for="">Day of Week:</label>
        <input type="number" placeholder="ex:7" required="required" min='1' max='7' name="week"><br>

        <label for="">Enter the Flight Number:</label>
        <input type="number" placeholder="ex:2823" required="required" max="9999" name="flight number" id=""><br>
```

```
        <label for="">Origin:</label>
        <select name="origin" id="">
            <option value='1'>ATL</option>
            <option value='2'>DWT</option>
            <option value='3'>JFK</option>
            <option value='4'>MSP</option>
            <option value='5'>SEA</option>
        </select><br>
        <label for="">Destination:</label>
        <select name="destination" id="">
          <option value='1'>ATL</option>
          <option value='2'>DWT</option>
          <option value='3'>JFK</option>
          <option value='4'>MSP</option>
          <option value='5'>SEA</option>
        </select><br>

        <label for="">Scheduled Departure Time(format hhmm):</label>
        <input type="number"  name="Scheduled dept time" placeholder="ex:1723" required="required" max="9999"><br>

        <label for=""> Scheduled Arrival Time(format hhmm):</label>
        <input type="number"  placeholder="ex:2023" required="required" max="9999" name="Scheduled arrival time" id=""><br>

        <label for="">Actual Departure Time(in minutes):</label>
        <input type="number" placeholder="ex:180" required="required" max="9999" name="Actual dept time" id="">
        <br>

        <label for="">Distance(in Kms):</label>
        <input type="number" name="distance" placeholder="ex:2500" required="required"min='140' max="99999"/>
        <br>
```

Figure 2 index.html

Prediction.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>Prediction Result</title>
    <link rel="stylesheet" href="{{ url_for('static',filename='css/prediction.css')}}">
</head>
<body>
    <h1>Prediction of Flight Delay</h1>
      <div>
        Prediction Result:
        <label for="">{{ prediction_text }}</label>
      </div>
</body>
</html>
```

Figure 3 prediction.html

Index.css:

```css
html,body{
    background-image: url("ap.png");
  /* Full height */
  height: 100%;
  /* Center and scale the image nicely */
  background-position: left;
  background-repeat: no-repeat;
  /* background-size: cover; */
}
h1{
    text-align: center;
    font-family: monospace;
}
.button {
    background-color: yellow;
    text-align: center;
  }
  div {
    color: black;
    /* background: rgb(234, 0, 255); */
    padding: 15px;
    position: absolute;
    top: 50%;
    left: 50%;
    -ms-transform: translateX(-50%) translateY(-50%);
    -webkit-transform: translate(-50%,-50%);
    transform: translate(-50%,-50%);
    font-size: 14px;
    display: grid;
line-height: 1.4;
```

Figure 4 index.css

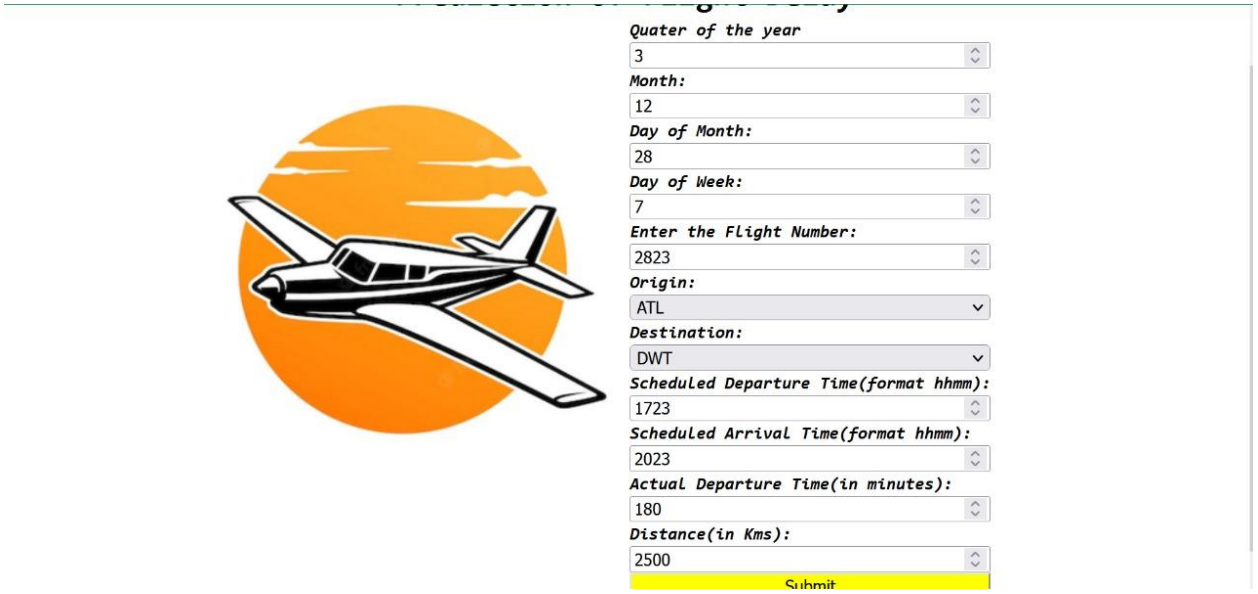

Figure 5 Website for flight delay prediction

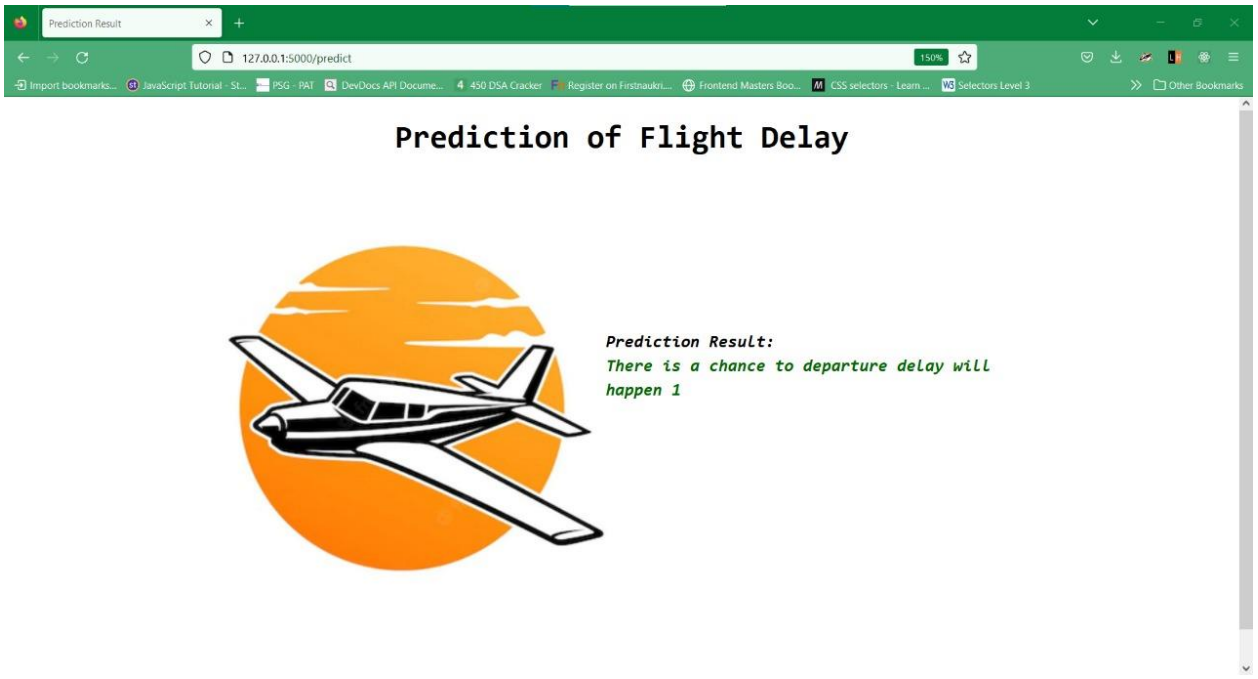

Figure 6 The output is predicted whether the flight is delayed or not