Embedding Python model into Flask Framework:

Date	24 November 2022
Team ID	PNT2022TMID17743
Project Name	Visualizing and Predicting Heart Diseases with an Interactive Dashboard

flask_app.py

```python
import numpy as np

from flask import Flask,render_template,request

import pickle

app = Flask(__name__)

model = pickle.load(open('decmodel.pkl', 'rb'))

@app.route('/')

def home():

    return render_template('index.html')


@app.route('/predict',methods=['POST'])

def predict():

    int_features = [float(x) for x in request.form.values()]

    features = [np.array(int_features)]

    prediction = model.predict(features)

    output = prediction

    if output == 1:

        return render_template('index.html',result="Kindly check with your cardiologist..this test says you are suffering from heart disease...")

    else:

        return render_template('index.html',result="Hurray !! The Patient is Healthy and not likely to have Heart Disease if the health is maintained...")


if __name__ == "__main__":

    app.run(debug=True)
```

model.py

```python
#!/usr/bin/env python
# coding: utf-8
from sklearn.model_selection import train_test_split
from sklearn.tree import DecisionTreeClassifier
import pickle
import pandas as pd
import numpy as np
dt=pd.read_csv("F:/IBM/Heart_Disease_Prediction.csv")
from sklearn.preprocessing import LabelEncoder
le = LabelEncoder()
label = le.fit_transform(dt['Heart_Disease'])
label
dt.drop("Heart_Disease", axis=1, inplace=True)
dt["Heart_Disease"] = label
dt
x = dt.drop("Heart_Disease",axis=1)
y = dt["Heart_Disease"]
X_train,X_test,Y_train,Y_test = train_test_split(x,y,test_size=0.30,random_state=0)
decTree = DecisionTreeClassifier(max_depth=6, random_state=0) #Decision Tree Classifier
decTree.fit(X_train,Y_train)
pickle.dump(decTree, open('decmodel.pkl', 'wb'))
```

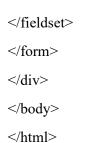**index.html:**

```html
<html>

<head>

    <title>Heart Disease Prediction</title>

    <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css"
integrity="sha384-
JcKb8q3iqJ61gNV9KGb8thSsNjpSL0n8PARn9HuZOnIxN0hoP+VmmDGMN5t9UJ0Z"
crossorigin="anonymous">

    <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js" integrity="sha384-
DfXdz2htPH0lsSSs5nCTpuj/zy4C+OGpamoFVy38MVBnE+IbbVYUew+OrCXaRkfj"
crossorigin="anonymous"></script>

    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.16.1/dist/umd/popper.min.js"
integrity="sha384-
9/reFTGAW83EW2RDu2S0VKaIzap3H66lZH81PoYlFhbGU+6BZp6G7niu735Sk7lN"
crossorigin="anonymous"></script>

    <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"
integrity="sha384-
B4gt1jrGC7Jh4AgTPSdUtOBvfO8shuf57BaghqFfPlYxofvL8/KUEfYiJOMMV+rV"
crossorigin="anonymous"></script>

</head>

<body background-image="cardiac_blues.jpg" background-repeat="no-repeat" background-
size="cover">

<script src="https://code.jquery.com/jquery-3.5.1.slim.min.js" integrity="sha384-
DfXdz2htPH0lsSSs5nCTpuj/zy4C+OGpamoFVy38MVBnE+IbbVYUew+OrCXaRkfj"
crossorigin="anonymous"></script>

<script src="https://cdn.jsdelivr.net/npm/popper.js@1.16.1/dist/umd/popper.min.js"
integrity="sha384-
9/reFTGAW83EW2RDu2S0VKaIzap3H66lZH81PoYlFhbGU+6BZp6G7niu735Sk7lN"
crossorigin="anonymous"></script>

<script src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"
integrity="sha384-
B4gt1jrGC7Jh4AgTPSdUtOBvfO8shuf57BaghqFfPlYxofvL8/KUEfYiJOMMV+rV"
crossorigin="anonymous"></script>


<nav class="navbar navbar-dark" style="background-color: rgb(243, 216, 13);">

<marquee style="font-size:20pt;color:blueviolet"behavior="alternate"
direction="left"><b>Welcome to Heart Disease Prediction Portal!</b></marquee>
```

```html
</nav>

<div class="container">

<br>

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

<fieldset>

<legend style="color: rgb(219, 117, 21); text-align: center;"><b>Heart Disease Prediction
Platform</b></legend><br>

<div class="card card-body" style="background-color: rgba(224, 162, 188, 0.795);">

<div class="form-group row">

<div class="col-sm-3">

<label for="age">Age</label>

<input type="number" class="form-control" id="age" name="age" min="18" max="100"
required>

</div>

<div class="col-sm-3">

<label for="sex">Sex</label>

<select class="form-control" id="sex" name="sex" required>

<option disabled selected value> Choose Field </option>

<option value = "0">Female</option>

<option value = "1">Male</option>

</select>

</div>

</div>

<br>

<div class="form-group row">

<div class="col-sm">

<label for="cp">Chest Pain Type</label>

<select class="form-control" id="cp" name = "cp" required>

<option disabled selected value> Choose Field </option>

<option value = "1">Typical Angina</option>

<option value = "2">Atypical Angina</option>
```

```html
<option value = "3">Non-anginal Pain</option>

<option value = "4">Asymptomatic</option>

</select>

</div>

<div class="col-sm">

<label for="trestbps">Blood Pressure</label>

<input type="number" class="form-control" id="trestbps" name="trestbps" min="60" max="200" required>

</div>

<div class="col-sm">

<label for="chol">Cholesterol</label>

<input type="number" class="form-control" id="chol" name="chol" min="100" max="600" required>

</div>

<div class="col-sm">

<label for="fbs">Fasting Blood Sugar over 120</label>

<select class="form-control" id="fbs" name="fbs" required>

<option disabled selected value> Choose Field </option>

<option value = "0">Absence</option>

<option value = "1">Presence</option>

</select>

</div>

</div>

 <br>

<div class="form-group row">

<div class="col-sm">

<label for="restecg">EKG Results </label>

<select class="form-control" id="restecg" name="restecg" required>

<option disabled selected value> Choose Field </option>

<option value = "0">Normal </option>

<option value = "1">Having ST wave abnormality </option>
```

```html
<option value = "2">HAving High abnormality</option>

</select>

</div>

<div class="col-sm">

<label for="thalach">Maximum Heart Rate</label>

<input type="number" class="form-control" id="thalach" name="thalach" min="100" max="200" required>

</div>

<div class="col-sm">

<label for="exang">Exercise Angina </label>

<select class="form-control" id="exang" name="exang" required>

<option disabled selected value> Choose Field </option>

<option value = "0">Absence</option>

<option value = "1">Presence</option>

</select>

</div>

<div class="col-sm">

<label for="oldpeak">ST Depression</label>

<input type="number" step="any" class="form-control" id="oldpeak" name="oldpeak" min="0" max="7" required>

</div>

</div>

<br>

<div class="form-group row">

<div class="col-sm">

<label for="slope">Slope of ST</label>

<select class="form-control" id="slope" name="slope" required>

<option disabled selected value> Choose Field </option>

<option value = "1">Upslope</option>

<option value = "2">Flat</option>

<option value = "3">Downslope</option>
```

```html
</select>
</div>
<div class="col-sm">
<label for="ca">Number of fluro Vessels</label>
<select class="form-control" id="ca" name = "ca" required>
<option disabled selected value> Choose Field </option>
<option value = "0">0</option>
<option value = "1">1</option>
<option value = "2">2</option>
<option value = "3">3</option>
</select>
</div>
<div class="col-sm">
<label for="thal">Thallium</label>
<select class="form-control" id="thal" name = "thal" required>
<option disabled selected value> Choose Field </option>
<option value = "3">Normal</option>
<option value = "6">Fixed defect</option>
<option value = "7">Reversable defect</option>
</select>
</div>
</div>
<br>
<div class="form-group">
<input class="btn btn-info" type="submit" value="Result">
</div>
<div id ="result">
<strong style="color:red">{{result}}</strong>
</div>
</div>
```

```
</fieldset>

</form>

</div>

</body>

</html>
```

Final Result: