**CODE FOR CLOUD COMPUTING**

**APPLICATION**

**BACK END(FLASK CODE)**

#Import necessary libraries

from flask import Flask, render\_template, request

import numpy as np

import os

from keras.preprocessing.image import load\_img

from keras.preprocessing.image import img\_to\_array

from keras.models import load\_model

#load model

model =load\_model("model/model\_inception.h5")

print('@@ Model loaded')

def pred\_cot\_dieas(cott\_plant):

test\_image = load\_img(cott\_plant, target\_size = (224, 224)) # load image

print("@@ Got Image for prediction")

test\_image = img\_to\_array(test\_image)/255 # convert image to np array and normalize

test\_image = np.expand\_dims(test\_image, axis = 0) # change dimention 3D to 4D

result = model.predict(test\_image).round(3) # predict diseased palnt or not

print('@@ Raw result = ', result)

pred = np.argmax(result) # get the index of max value

if pred == 0:

return "Apple Scab Disease", 'apple\_scab.html' # if index 0 burned leaf

elif pred == 1:

return 'Black Rot Disease', 'black\_rot.html' # # if index 1

elif pred == 2:

return 'Cedar apple rust Disease', 'apple\_rust.html' # if index 2 fresh leaf

else:

return "Healthy Plant", 'healthy\_plant.html' # if index 3

#------------>>pred\_cot\_dieas<<--end

# Create flask instance

app = Flask(\_\_name\_\_)

# render index.html page

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

def home():

return render\_template('index.html')

# get input image from client then predict class and render respective .html page for solution

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

def predict():

if request.method == 'POST':

file = request.files['image'] # fet input

filename = file.filename

print("@@ Input posted = ", filename)

file\_path = os.path.join('static/user uploaded', filename)

file.save(file\_path)

print("@@ Predicting class......")

pred, output\_page = pred\_cot\_dieas(cott\_plant=file\_path)

return render\_template(output\_page, pred\_output = pred, user\_image = file\_path)

# For local system & cloud

if \_\_name\_\_ == "\_\_main\_\_":

app.run(threaded=False,)

**FRONT END**

<!doctype html>

<html lang="en">

<head>

<!-- Required meta tags -->

<meta charset="utf-8">

<meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">

<!-- Bootstrap CSS -->

<link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css"

integrity="sha384-JcKb8q3iqJ61gNV9KGb8thSsNjpSL0n8PARn9HuZOnIxN0hoP+VmmDGMN5t9UJ0Z" crossorigin="anonymous">

<link href="https://fonts.googleapis.com/css2?family=Rowdies:wght@700&display=swap" rel="stylesheet">

<title>APPLE PLANT DISEASE PREDICTION</title>

<style>

\* {

margin: 0px;

padding: 0px;

box-sizing: border-box;

}

.carousel-inner img {

height: 70vh;

}

form {

display: flex;

height: 85vh;

justify-content: center;

align-items: center;

width: 60%;

text-align: center;

margin: auto;

}

.details h2 {

position: relative;

top: 100px;

margin: auto;

color: rgb(18, 231, 231);

font-size: 3rem;

}

label:hover {

transform: scale(1.03);

}

.details h2 {

/\* margin-bottom: 300px; \*/

position: relative;

top: 100px;

margin: auto;

color: rgb(18, 231, 231);

font-size: 3rem;

}

.gallery-h1 h1 {

background-color: rgb(44, 43, 43);

color: white;

padding: 20px;

border-radius: 15px;

}

.details h1 {

color: white;

padding: 20px;

border-radius: 15px;

background-color: rgb(45, 47, 49);

}

.upload {

font-size: 20px;

background-color: rgb(255, 252, 252);

border-radius: 20px;

outline: none;

width: 315px;

color: rgb(0, 0, 0);

border: 3px solid rgb(45, 47, 49);

}

::-webkit-file-upload-button {

color: white;

padding: 20px;

border: 2px solid rgb(129, 129, 129);

background-color: rgb(129, 129, 129);

border-radius: 15px;

}

::-webkit-file-upload-button:hover {

border-radius: 20px;

border: 2px solid rgb(177, 174, 174);

}

input[type="submit"] {

position: absolute;

margin-top: 150px;

padding: 15px 35px;

background-color: white;

border-radius: 15px;

color: black;

font-size: 1.5rem;

border: 4px solid rgb(31, 185, 190);

}

.carousel-caption {

background: rgba(24, 25, 26, 0.5);

border-radius: 10px;

}

.carousel-caption h3 {

font-family: 'Rowdies', cursive;

color: yellow;

text-transform: uppercase;

margin-bottom: 10px;

}

.carousel-caption p {

padding: 7px;

}

.img-thumbnail {

height: 300px;

}

.Content-h5 {

padding: 15px;

background-color: rgb(153, 156, 150);

color: white;

border-radius: 15px;

margin-bottom: 25px;

}

@media only screen and (max-width: 325px) {

body {

font-size: x-small;

}

}

</style>

</head>

<body style="background-color:#00b300">

<header>

<div class="container-fluid">

<div id="myCarousel" class="carousel slide" data-ride="carousel">

<ol class="carousel-indicators">

<li data-target="#myCarousel" data-slide-to="0" class="active"></li>

<li data-target="#myCarousel" data-slide-to="1" class=""></li>

<li data-target="#myCarousel" data-slide-to="2" class=""></li>

</ol>

<div class="carousel-inner">

<div class="carousel-item active ">

<img src="/static/images/bg9.jpg" class="d-block w-100" alt="...">

<div class="container">

<div class="container background-img3">

<div class="carousel-caption">

<h3>Apple

Plant Diseases Prediction</h3>

</div>

</div>

</div>

</div>

<div class="carousel-item">

<img src="/static/images/bg6.jpg" class="d-block w-100" alt="...">

<div class="container">

<div class="carousel-caption">

<h3>Apple

Plant Diseases Prediction</h3>

</div>

</div>

</div>

<div class="carousel-item">

<img src="/static/images/bg10.jpeg" class="d-block w-100" alt="...">

<div class="container">

<div class="container ">

<div class="carousel-caption">

<h3>Apple

Plant Diseases Prediction</h3>

</div>

</div>

</div>

</div>

</div>

<a class="carousel-control-prev" href="#myCarousel" role="button" data-slide="prev">

<span class="carousel-control-prev-icon" aria-hidden="true"></span>

<span class="sr-only">Previous</span>

</a>

<a class="carousel-control-next" href="#myCarousel" role="button" data-slide="next">

<span class="carousel-control-next-icon" aria-hidden="true"></span>

<span class="sr-only">Next</span>

</a>

</div>

</div>

</header>

<section>

<div class="container-fluid details" >

<h1 class="text-center mt-5">Apple Plant Diseases Prediction</h1>

<h2 style="color:black"> <center>Select and Upload the Image to get Prediction</center></h2>

<form action="/predict" method="post" enctype="multipart/form-data" onsubmit="showloading()">

<input type="file" name="image" class="upload">

<input type="submit" value="Predict">

</form>

</div>

</section>

<section>

<div class="container-fluid details">

<h1 class="text-center mt-5">Photo Gallery</h1>

<hr class="mt-2 mb-5">

<div class="row text-center text-lg-left">

<div class="col-lg-4 col-md-4 col-6 col-12">

<a href="#" class="d-block mb-4 h-100">

<img class="img-fluid img-thumbnail" src="/static/images/bg1.jpeg" alt="">

</a>

</div>

<div class="col-lg-4 col-md-4 col-6 col-12">

<a href="#" class="d-block mb-4 h-100">

<img class="img-fluid img-thumbnail" src="/static/images/bg2.jpg" alt="">

</a>

</div>

<div class="col-lg-4 col-md-4 col-6 col-12">

<a href="#" class="d-block mb-4 h-100">

<img class="img-fluid img-thumbnail" src="/static/images/bg3.jpg" alt="">

</a>

</div>

<div class="col-lg-4 col-md-4 col-6 col-12">

<a href="#" class="d-block mb-4 h-100">

<img class="img-fluid img-thumbnail" src="/static/images/bg4.jpeg" alt="">

</a>

</div>

<div class="col-lg-4 col-md-4 col-6 col-12">

<a href="#" class="d-block mb-4 h-100">

<img class="img-fluid img-thumbnail" src="/static/images/bg7.jpg" alt="">

</a>

</div>

<div class="col-lg-4 col-md-4 col-6 col-12">

<a href="#" class="d-block mb-4 h-100">

<img class="img-fluid img-thumbnail" src="/static/images/bg8.jpeg" alt="">

</a>

</div>

</div>

</div>

</section>

<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>

</body>

</html>