

Build Python Code

Project Name: Fertilizers Recommendation System for Disease Prediction

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from flask import Flask, render_template, request, Markup
import numpy as np
import pandas as pd
from utils.disease import disease_dic
from utils.fertilizer import fertilizer_dic
import requests
import config
import pickle
import io
import torch
from torchvision import transforms
from PIL import Image
from utils.model import ResNet9
import os

disease_classes = ['Apple__Apple_scab',
                   'Apple_____Black_rot',
                   'Apple__Cedar_apple_rust',
                   'Apple_____healthy',
                   'Blueberry__healthy',
                   'Cherry_(including_sour)_____Powdery_mildew',
                   'Cherry_(including_sour)_____healthy',
                   'Corn_(maize)__Cercospora_leaf_spot
Gray_leaf_spot',
                   'Corn_(maize)_____Common_rust',
                   'Corn_(maize)____Northern_Leaf_Blight',
                   'Corn_(maize)__healthy',
                   'Grape__Black_rot',
                   'Grape__Esca(Black_Measles)',
                   'Grape_____Leaf_blight(Isariopsis_Leaf_Spot)',
                   'Grape_healthy',
                   'Orange_____Haunglongbing(Citrus_greening)',
                   'Peach__Bacterial_spot',
                   'Peach_____healthy',
                   'Pepper,bell__Bacterial_spot',
                   'Pepper,bell_____healthy',
                   'Potato_____Early_blight',
                   'Potato_____Late_blight',
                   'Potato__healthy',
                   'Raspberry_____healthy',
                   'Soybean_____healthy',
                   'Squash_____Powdery_mildew',
                   'Strawberry__Leaf_scorch',
                   'Strawberry__healthy',
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        'Tomato__Bacterial_spot',
        'Tomato____Early_blight',
        'Tomato____Late_blight',
        'Tomato__Leaf_Mold',
        'Tomato__Septoria_leaf_spot',
        'Tomato__Spider_mites   Two-spotted_spider_mite',
        'Tomato__Target_Spot',
        'Tomato____Tomato_Yellow_Leaf_Curl_Virus',
        'Tomato__Tomato_mosaic_virus',
        'Tomato_____healthy']
disease_model_path = 'models/plant_disease_model.pth'
disease_model = ResNet9(3, len(disease_classes))
disease_model.load_state_dict(torch.load(
    disease_model_path, map_location=torch.device('cpu')))
disease_model.eval()
crop_recommendation_model_path = 'models/RandomForest.pkl'
crop_recommendation_model = pickle.load(
    open(crop_recommendation_model_path, 'rb'))
def weather_fetch(city_name):
    api_key = config.weather_api_key
    base_url = "http://api.openweathermap.org/data/2.5/weather?"

    complete_url = base_url + "appid=" + api_key + "&q=" + city_name
    response = requests.get(complete_url)
    x = response.json()

    if x["cod"] != "404":
        y = x["main"]
        temperature = round((y["temp"] - 273.15), 2)
        return temperature
    else:
        return None
def predict_image(img, model=disease_model):
    transform = transforms.Compose([
        transforms.Resize(256),
        transforms.ToTensor(),
    ])
    image = Image.open(io.BytesIO(img))
    img_t = transform(image)
    img_u = torch.unsqueeze(img_t, 0)

    # Get predictions from model
    yb = model(img_u)

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        # Pick index with highest probability
        _, preds = torch.max(yb, dim=1)
        prediction = disease_classes[preds[0].item()]
        # Retrieve the class label
        return prediction
app=Flask(__name__)
@ app.route('/crop-predict', methods=['POST'])
def crop_prediction():
    title = 'Harvestify - Crop Recommendation'
    if request.method == 'POST':
        N = int(request.form['nitrogen'])
        P = int(request.form['phosphorous'])
        K = int(request.form['pottasium'])
        ph = float(request.form['ph'])
        rainfall = float(request.form['rainfall'])

        # state = request.form.get("stt")
        city = request.form.get("city")

        if weather_fetch(city) != None:
            temperature, humidity = weather_fetch(city)
            data = np.array([[N, P, K, temperature, humidity, ph,
rainfall]])
            my_prediction = crop_recommendation_model.predict(data)
            final_prediction = my_prediction[0]
            return render_template('crop-result.html',
prediction=final_prediction, title=title)
        else:
            return render_template('try_again.html', title=title)
@ app.route('/fertilizer-predict', methods=['POST'])
def fert_recommend():
    title = 'Harvestify - Fertilizer Suggestion'
    crop_name = str(request.form['cropname'])
    N = int(request.form['nitrogen'])
    P = int(request.form['phosphorous'])
    K = int(request.form['pottasium'])
    # ph = float(request.form['ph'])
    df = pd.read_csv('Data/fertilizer.csv')
    nr = df[df['Crop'] == crop_name]['N'].iloc[0]
    pr = df[df['Crop'] == crop_name]['P'].iloc[0]
    kr = df[df['Crop'] == crop_name]['K'].iloc[0]
    n = nr - N
    p = pr - P
    k = kr - K

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temp = {abs(n): "N", abs(p): "P", abs(k): "K"}
max_value = temp[max(temp.keys())]
if max_value == "N":
    if n < 0:
        key = 'NHigh'
    else:
        key = "Nlow"
elif max_value == "P":
    if p < 0:
        key = 'PHigh'
    else:
        key = "Plow"
else:
    if k < 0:
        key = 'KHigh'
    else:
        key = "Klow"
    response = Markup(str(fertilizer_dic[key]))
    return render_template('fertilizer-result.html',
recommendation=response, title=title)
@app.route('/disease-predict', methods=['GET', 'POST'])
def upload():
    if request.method=='POST':
        f=request.files['image']
        basepath=os.path.dirname(_file_)
        filepath=os.path.join(basepath,'uploads',f.filename)
        f.save(filepath)
        print('File Save')
        img=image.load_img(filepath,target_size=(128,128))
        x=image.img_to_array(img)
        print('Image to gray')
        x=np.expand_dims(x,axis=0)
        plant=request.form['plant']
        if(plant=='vegetable'):
            model=load_model("vegitable.h5")
            y=np.argmax(model.predict(x),axis=1)
            df=pd.read_excel('precautions_veg.xlsx')
        if(plant=='fruit'):
            model=load_model('fruit.h5')
            y=np.argmax(model.predict(x),axis=1)
            df=pd.read_excel('precautions_fruits.xlsx')
        return df.iloc[y[0]]['caution']
if __name__=='__main__':
    temp.run(debug=False)

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