Fertilizer Recommendation System For Disease Prediction

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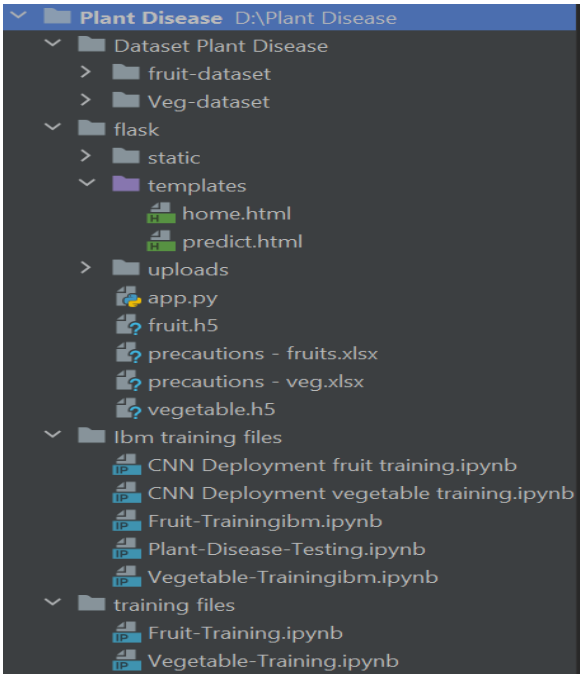
Date : 9 November 2022

Project Structure:

- The dataset folder contains two folders for the fruit and vegetable dataset which again contains a test and train folder, each of them have images of different diseases.
- The Flask folder has all the files necessary to build the flask application.
    - the static folder has the images, style sheets, and scripts that are needed in building the web page.
    - templates folder has the HTML pages.
    - uploads folder has the uploads made by the user.
    - app.py is the python script for server-side computing.
    - .h5 files are the model files that are to be saved after model building.
    - precautions excel files contain the precautions for all kinds of diseases.
- Fruit-Training.ipynb, Vegetable-Training, and Plant-Disease-Testing.ipynb are the training and testing notebooks.
- IBM folder contains IBM deployment files.



```
v Plant Disease  D:\Plant Disease
    v Dataset Plant Disease
        > fruit-dataset
        > Veg-dataset
    v flask
        > static
        v templates
            home.html
            predict.html
        > uploads
        app.py
        fruit.h5
        precautions - fruits.xlsx
        precautions - veg.xlsx
        vegetable.h5
    v Ibm training files
        CNN Deployment fruit training.ipynb
        CNN Deployment vegetable training.ipynb
        Fruit-Trainingibm.ipynb
        Plant-Disease-Testing.ipynb
        Vegetable-Trainingibm.ipynb
    v training files
        Fruit-Training.ipynb
        Vegetable-Training.ipynb
```

Data Collection:

The first step is to download the dataset

Create Train and Test folders with each folder having subfolders with leaf images of different plant diseases. You can collect datasets from different open sources like kaggle.com, data.gov, UCI machine learning repository, etc. The folder contains the provided in the project structure section has the link from where you can download datasets that can be used for training. Two datasets will be used, we will be creating two models one to detect vegetable leaf diseases like tomato, potato, and pepper plants and the second model would be for fruits diseases like corn, peach, and apple.

Image Preprocessing

Now that we have all the data collected, let us use this data to train the model . before training the model you have to preprocess the images and then feed them on to the model for training. We make use of Keras ImageDataGenerator class for image preprocessing.

For more info about image preprocessing please click on the below link

data Augmentation

Image Pre-processing includes the following main tasks

- Import ImageDataGenerator Library.
- Configure ImageDataGenerator Class.
- Applying ImageDataGenerator functionality to the trainset and test set.

Note: The ImageDataGenerator accepts the original data, randomly transforms it, and returns only the new, transformed data.

To know more about the data generator class click on this **link**

Lets build model for fruit leaf disease detection

Open Jupyter notebook and create a new python file, name ii Fruit-Training.ipynb and save it in the project folder. To know more about the usage of the Jupyter notebook watch the video given in the pre-requisites section.