

FERTILIZER RECOMMENDATION SYSTEM FOR **DISEASE PREDICTION**

PROJECT FLOW

Project Flow is an indicator of change planned for occurrence within a project over time. It shows the movement of project product from its conceptualization and design through delivery and deployment. Project flow describes a pre set sequence of activities required to plan, produce, deliver and maintain project product, along with information, materials, and resources required by the project.

A web Application is built where

- Farmers can interact with the portal build
- Interacts with the user interface to upload images of diseased leaf
- Our model built analyses the Disease and suggests the farmer with fertilizers are to be used

To accomplish the above task you must complete the below activities and tasks

- Download the dataset.
- Classify the dataset into train and test sets.
- Add the neural network layers.
- Load the trained images and fit the model.
- Test the model.
- Save the model and its dependencies.
- Build a Web application using a flask that integrates with the model built.



To take a picture of the plant for future Process.	Image processing is a method to perform some operations on a image, inorder to get an enhanced image or to extract some useful information from it.	During Test and Train The CNN network processes each image with its values being assigned randomly and then make comparisons with the class label of the input image.	It used to predict the occurrence or change in severity of plant diseases.
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DATA COLLECTION:

Create Train and Test folders with each folder having sub-folders 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.

MODEL BUILDING:

FOR FRUIT DISEASE PREDICTION

We are ready with the augmented and pre-processed image data, Lets begin our model building, this activity includes the following steps

- Import the model building Libraries
- Initializing the model
- Adding CNN Layers
- Adding Hidden Layer
- Adding Output Layer
- Configure the Learning Process
- Training and testing the model
- Saving the model

FOR VEGETABLE DISEASE PREDICTION

Create an other jupyter notebook file in the project folder and name it as `vegetable_training`. The same steps followed for the fruit disease prediction model are to be followed to train the tomato, potato, and pepper diseases.

TEST THE MODEL:

The model is to tested with different images to know if it is working correctly.

1. import the required libraries.
2. Load the tested image, pre-process it and predict.