Project Design Phase-I

Date	16 October 2022
Team ID	PNT2022TMID52645
Project Name	Project - Fertilizers Recommendation System ForDisease Prediction
Maximum Marks	2 Marks

Proposed Solution :

The proposed solution of leaf disease detection with preventive measures in that, the leaf images of apple, corn, and peach are taken. Image processing techniques namely, Image preprocessing, and image augmentation classification are applied to leaf image dataset. The process of pre-processing technique transforms raw input leaf image datasets into desirable process datasets format to develop the quality of leaf images and to eliminate the undesired portions from the leaf images. These processes occur in various phases such as data cleaning, integration, reduction, and transformation. The process of augmentation is applied to resize the original leaf image dataset using flipping, cropping, and rotation techniques as well as to convert the leaf images into RGB using color transformation technique. However, the augmented leaf images are created to maintain the balanced quality and size of images in the healthy and unhealthy leaf datasets. The key purpose of this project is to classify leaf diseases from image datasets using a convolutional neural network(CNN). The two deep learning approaches: VGG19 and created new CNN architectures are used to identify the various diseases in the apple, corn, and peach leaves. After training the model is integrated with the flask application.

The final outcome of this project is as follows,

- A web Application will be built.
- Farmers can interact with the portal.
- Farmers can upload images of the diseased leaf.
- Model analyses the Disease and suggests the farmer with fertilizers are to be used.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Agriculture and related industries have already suffered harm as a result of the Covid19 outbreak. Local ecosystems have experienced significant disturbance, but global supply chains have completely collapsed. The crisis will soon be over, but one of its most lasting effects will be the acceleration of digital technology adoption and the growth of mechanization throughout the value chains. Data science along with AI and ML (machine learning and artificial intelligence) will be used more and more in this situation. AI/ML technologies are largely responsible for the concept of "smart farming," which is improving agriculture's profitability and sustainability. Crop and water management, pest and disease detection, crop health monitoring and yield estimation, as well as cultivation and harvesting by intelligent tractors, can all benefit from these technologies.
2.	Idea / Solution description	Identification of pests and illnesses has been an important use of AI. With nothing more than a mobile phone, farmers can spot pests and plant diseases thanks to customized databases for certain crops. The cost of consulting an expert is avoided, and most significantly, there is no delay in diagnosis. Additionally, weeds are being located and targeted using sensors. Robots are sometimes employed to remove weeds, and in other cases, they aid in the precise administration of insecticides. One research team that employed AI to identify disease in Tanzanian cassava plants discovered that the technique had a 98 percent accuracy rate. Instead of evenly dousing the entire agricultural field with insecticides, which is an expensive option for the farmer,

3.	Novelty / Uniqueness	By identifying the photos, this application can suggest a proper fertilizer for plant illnesses.
4.	Social Impact / Customer Satisfaction	Consumers Farming is a significant industry that affects a nation's economic development in agriculture. In a nation like India, the majority of people rely on agriculture as their primary source of income. So that farmers may more easily cultivate their land and increase their productivity, numerous new technologies, including Deep Learning and Machine Learning, are being incorporated into the agricultural sector.
5.	Business Model (Revenue Model)	The application is recommended based on farmer's necessities.
6.	Scalability of the Solution	By smoothly integrating online purchases of agricultural fertilizers, this application could be improved.