

Project Design Phase-I

Date	12 November 2022
Team ID	PNT2022TMID42961
Project Name	Project - Fertilizers Recommendation System for Disease Prediction
Maximum Marks	2 Marks

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Agriculture is the most important sector in today's life. Most plants are affected by a wide variety of bacterial and fungal diseases. Diseases on plants placed a major constraint on the production and a major threat to food security. Hence, early and accurate identification of plant diseases is essential to ensure high quantity and best quality. In recent years, the number of diseases on plants and the degree of harm caused has increased due to the variation in pathogen varieties, changes in cultivation methods, and inadequate plant protection techniques.
2.	Idea / Solution description	An automated system is introduced to identify different diseases on plants by checking the symptoms shown on the leaves of the plant. Deep learning techniques are used to identify the diseases and suggest the precautions that can be taken for those diseases.
3.	Novelty / Uniqueness	<p>This application can suggest good fertilizer for the disease in the plant by recognizing the images from the camera. It can also suggest the best plant for gardening according to the photos taken by the camera.</p> <p>The app can also help you in identifying the plant diseases from the photos captured by the camera. It can also suggest irrigation schedule to the farmers.</p>

4.	Social Impact / Customer Satisfaction	The proposed system is a farmer friendly system with GUI, that will predict which would be the best suitable fertilizer for particular crop disease. So, this makes the farmers to take right decision in selecting the fertilizer for crop disease such that agricultural sector will be developed by innovative idea.
5.	Business Model (Revenue Model)	The application is used by farmers to predict the amount of fertilizer needed for their crops and to analyse the diseases in their crops. Farmers can subscribe to the application to get these services. The application is recommended to farmers in subscription basis. Predicting the fertilizers, Analysing the disease in a tap makes the life of farmers easy with minimal subscriptions would provide an acceptable return for the organization. This action adds a lot of value to the company and the business in society.
6.	Scalability of the Solution	The system uses a convolutional neural network (CNN) to learn the features of the images of leaves. The dataset used to train the CNN model is the Plant Village dataset. The CNN model is trained on a total of 54,306 images belonging to 38 classes of plant diseases. The model is then tested on a total of 6,538 images. The results show that the CNN model can achieve an accuracy of 97.47%.