Project Design Phase-I

Proposed Solution

Date	24 September 2022
Team ID	PNT2022TMID22999
Project Name	Project – Fertilizers Recommendation System for Disease Prediction
Maximum Marks	2 Marks

Proposed Solution:

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 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 in 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	the proposed system recommends the fertilizer for affected leaves based on the severity level of the crops. Fertilizers may be organic or inorganic. The user can also save the recommended fertilizers in the device's local storage and can be viewed at any time. The measurements of fertilizers (i.e.) the effectiveness of the fertilizers are suggested based on disease severity.
4.	Social Impact / Customer Satisfaction	We propose a user-friendly web application system based on machine learning. So, the user can provide the input using forms on our user interface and quickly get their results. The proposed method is also found to perform better and produce a higher number of yields. Using the proposed model, crop yield production increased and gave the super ability to decide the right combination of different types of available resources. This will help farmers and agriculture experts to adopt the method for other crops.
5.	Business Model (Revenue Model)	A digital camera or similar devices can be used to capture the image of the affected leaves. Then the user uploads the image to the model. Then different image pre-processing techniques are applied to the dataset and then split into training and testing data and also to get different features needed for the purpose of analyzing leaf disease identification. Now the trained data and tested data are evaluated using the Machine Learning algorithm and then the algorithm generates an output image as a grayscale, an invert, and a smoothed one.

		After that, the prediction of disease is done and a suitable fertilizer is recommended to the user. Now the user can use the recommended fertilizers for the diseased plants.
6.	Scalability of the Solution	More farmers get benefited from this system as they simply have to upload an image to get the fertilizer recommendation. The proposed system is also beneficial to the government in analyzing the soil condition of any region and the requirements of the farmer to maximize soil production. The fertilizer companies can use the dataset produced in the process to create customizable fertilizer depending on the need of each region.