

Project Design Phase-I

Proposed Solution

Date	25-10-2022
Team ID	PNT2022TMID27540
Project Name	Project - Fertilizers Recommendation System for Disease Prediction
Maximum Marks	2 Marks

Proposed Solution:

Project team shall fill the following information in proposed solution template.

S. No	Parameter	Description
1.	Problem Statement (Problem to be solved)	Fertilizers Recommendation System for Disease Prediction In India, the agricultural sector provides a living for almost 48% of the population. Most of the Indian population depends on agriculture for their livelihood. Majority of the farmers face problem of planting an inappropriate crop for their land based on non-scientific approach and the outcomes for the farmer for choosing the wrong crop for the land is moving towards quitting agriculture, ending their lives and giving land on lease to industrialist or use it for non-agricultural purposes. The outcome of wrong crop selection is less yield and less profit.
2.	Idea / Solution description	The solution to the problem is Machine Learning (ML) which is one of the applications of Artificial Intelligence (AI), which is used to implement the proposed system. Crop recommendation is going to recommend the best crop one can grow in their land as per soil nutrition value and along with the climate in the region. The challenging task is to recommend the best fertilizer for every crop. An important issue is when a plant gets caught by heterogeneous diseases that affect on the agricultural production and quality. To overcome these issues this recommendation system has been proposed. The technique is used to build a recommendation model that combines the prediction of multiple ML. Models to recommend the right crop based on soil value and the best fertilizer to use.
3.	Novelty / Uniqueness	The system comes with a model to be precise and accurate in predicting crop yield and deliver the end user with the proper recommendations about required fertilizer ratio based on atmospheric and soil parameters of the land which enhance to increase the crop yield and increase farmers revenue. Thus, the proposed system takes the data regarding the quality of soil and the weather-related information as an input.

		The quality of the soil such as Nitrogen, Phosphorous, Potassium and Ph value. Weather related information like Rainfall, Temperature and Humidity to predict the better crop
4.	Social Impact / Customer Satisfaction	<p>In India, majority of the population is dependent on agriculture for their livelihood. Many new technologies like Machine Learning (ML) and Deep Learning (DL) are being implemented into agriculture so it is easier for farmers to grow and maximize their yield crops. The beneficial users are Farmers, Seller, Buyer, Employees, Industrial people, Common people.</p> <ul style="list-style-type: none"> • In the crop recommending application, the user can provide soil data and the application will predict what are the crops that can be grown by the user. • In the fertilizer recommending application, the soil nutrient analysis uses a soil NPK sensor with the recommendation of fertilizers according to the obtained nutrient value, the user can input the soil data and the type of crop they are growing, the application will predict what is lacking or being excess in the soil and will recommend improvements. • The last application is the plant disease prediction application where the user can input image of a diseased plant leaf, and the application will predict the disease caused and will give suggestions to cure it.
5.	Business Model (Revenue Model)	Predicting the fertilizers, analysing the diseases 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	On-spot results are obtained, and the time required for fertilizer recommendation is within 80s. Successful identification of crops that can be grown and the necessary fertilizer is recommended with more than 90% accuracy. The proposed approach is also compared with the other intelligent approaches, such as Artificial Neural Network (ANN), K-Nearest Neighbour (KNN), and Support Vector Machine (SVM), and it is observed that the proposed CNN approach gives higher accuracy in the shortest time.