

**Project Design Phase-
I Proposed Solution Template**

Date	27 October 2022
Team ID	PNT2022TMID31104
Project Name	Project – Fertilizer Recommendations system for Disease Prediction
Maximum Marks	2 Marks

Proposed Solution Template:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Mostly, the plant leaf diseases are caused by Pathogens which are positioned on the stems of the plants. These different symptoms and diseases of leaves are predicted by different methods in image processing. These different methods include different fundamental processes like segmentation, feature extraction and classification and soon. Mostly, the prediction and diagnosis of leaf diseases are depending on the segmentation such as segmenting the healthy tissues from diseased tissues of leaves. Detection and recognition of plant diseases using machine learning are very efficient in providing symptoms of identifying diseases at its earliest.
2.	Idea / Solution description	Leaves are affected by bacteria, fungi, virus, and other insects. Support Vector Machine (SVM) algorithm classifies the leaf image as normal or affected. Vectors are constructed based on leaf features such as colour, shape, textures. Then hyperplane constructed with conditions to categorize the pre-processed leaves and also implement multiclass classifier to predict diseases in leaf image with improved accuracy.
3.	Novelty/ Uniqueness	Recommends the fertilizer for affected leaves based on severity level. Fertilizers may be organic or inorganic. Admin can store the fertilizers based on disease categorization with severity levels. The measurements of fertilizers are as suggested based on disease severity.
4.	Social Impact / Customer Satisfaction	Presently our farmers are not effectively using technology and analysis, so there may be a chance of wrong selection of fertilizer for crops that will reduce their income. To reduce those type of losses we have developed 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 (RevenueModel)	
6.	Scalabilityofthe Solution	<p>The proposed method uses SVM to classify tree leaves,identify the disease and suggest the fertilizer. The proposedmethod is compared with the existing CNN based leafdisease prediction. The proposed SVM technique gives abetterresultwhen compared toexisting CNN. For the same set of images, F-Measure for CNN is0.7and0.8forSVM,the accuracyofidentificationofleaf diseaseof CNNis0.6andSVMis0.8.</p>