Project Design Phase- I
Proposed Solution Template

Date	01-11-2023
Team ID	Team-592384
Project Name	Deep Learning Model For Detecting Diseases In Tea Leaves
Maximum Marks	2 Marks

Proposed Solution Template:

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

S.No.	Parameter	Description
1.	**Problem Statement (Problem to be solved)**	Early detection of tea leaf diseases is essential for reducing crop losses and improving tea quality. However, traditional methods of disease detection, such as visual inspection, can be time-consuming and inaccurate. Deep learning models can be used to develop more efficient and accurate methods for detecting tea leaf diseases.
2.	**Idea / Solution description**	We propose a deep learning model for detecting diseases in tea leaves using a convolutional neural network (CNN). The CNN will be trained on a dataset of labelled tea leaf images, including images of healthy leaves and leaves with different types of diseases. Once trained, the CNN will be able to identify diseased tea leaves in new images with high accuracy. The model analyse the image and detects whether the tea leaves is having any disease or not and its type.

3.	**Novelty / Uniqeness**	1) Focusing on a particular subset of tea leaf diseases: developing a model that specializes in detecting fungal diseases, or bacterial diseases. 2) Using hyperspectral imaging data to provide additional information about the tea leaves. 3) Developing a mobile app or web-based platform: This would make it easier for tea farmers to use your model to detect diseases in their tea plantations. 4) Develop a model that can be used to detect diseases in tea leaves under different environmental conditions, such as different lighting conditions and weather conditions.
4.	**Social Impact / Customer Satisfaction**	**Reduced crop losses:** Tea leaf diseases can cause significant crop losses, which can have a devastating impact on tea farmers and their families. By helping tea farmers to identify and treat diseases early, the model could help to reduce crop losses and improve their livelihoods. **Improved tea quality:** Tea quality can be affected by tea leaf diseases. By detecting diseases early and taking corrective action, the model could help to improve the quality of tea and make it more marketable. **Increased income for tea farmers:** By reducing crop losses and improving tea quality, the model could help to increase the income of tea farmers. This would have a positive impact on their families and communities.
5.	**Business Model (Revenue Model)**	1) Tea farmers or tea companies would pay a fee to use the model to detect diseases in their tea leaves. The fee could be based on the number of images processed or the number of diseases detected. 2) The model could be offered as a subscription service with tiered pricing based on the number of users, the number of tea plantations, or the size of the tea crop. Ex-cloud based services.

6.	**Scalability of the Solution**	**Use transfer learning**: Transfer learning can be used to initialize the model weights with the weights of a pre-trained model on a related task, such as image classification. This can reduce the amount of training data required and make the model more scalable. The model should be able to be trained on new datasets of tea leaf images and to detect new types of tea leaf diseases.