Project Design Phase-II

DATE	23 September 2023
TEAM ID	Team-592327
Project Name	Deep Learning Model For Detecting Diseases In Tea Leaves
Team Members	Saatvik Sumanta Kotamareddi Abigna Abhigyan Ghoshal Denesh L

Proposed Solution:

S.No	Parameter	Description
1.	Problem Statement (Problem to be solved)	Design a machine learning model to accurately detect and classify diseases in tea leaves based on images captured from diverse environmental conditions.The model should be able to differentiate between multiple types of diseases, such as fungal infections, pest damage, nutrient malnourished etc that other common ailments that affect a tea plant. The system should be capable of handling real time changes, allowing accurate identification of diseases in tea leaves, resulting in increased yield
2.	Idea / Solution description	The comprehensive solution approach involves the integration of Convolution Neural Networks, specialising in procesing images to detect the diseases in tea leaves. The TensorFlow is used to facilitate the training of the model, ensuring model's efficiency and accuracy. OpenCV will aid in image processing, feature extraction, enhancing the quality of input data and subsequently improving the model's performance. The YOLO is integrated into the model to identify and localize multiple disease impacts(affected spots) in the images efficiently in a single frame(live identification). Additionally, Mask R-CNN is used for Pixel-level pigmentation, outlining the boundaries of impacts which makes the model more precise. Pandas are used to streamline the handling and manipulating

		kaggle datasets into the model.
3.	Novelty / Uniqueness	Using CNN for disease identification ensures precision and efficiency, reducing health risks for tea plantation. It promotes medical awarness, protects the crops, and contributes to economic growth, making it a holistic and innovative approach to disease identification. With aditional feature of live identification using YOLO.
4.	Social Impact / Customer Satisfaction	Farmers detecting diseases in tea leaves promptly.They can enhance the yield and quality of tea by taking proactive measures to cure their plants.They can reduce the use of harmful chemicals and maintain the quality of the product.Ensuring high quality tea production can lead to increased exports and better positioning in the market.
5.	Business Model (Revenue Model)	The app can have basic features like disease identification for free and give medical suggestion on a subscription based model to generate a constant flow of money.
6.	Scalability of the Solution	To achieve a scalable solution, the dataset is efficiently handled an expanding dataset of tea leaf images, integrating new data seamlessly without compromising performance. To achieve this, the system id efficiently handle a growing repository of tea leaf images, each with diverse disease patterns, ensuring continous and accurate disease identification. Maintainence-wise the system should facilitet effortless updaes and modifications.