Project Design Phase-I
Solution Architecture

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Team ID PNT2022TMID592899
Project Name - Deep Learning Model For Detecting Diseases In Tea Leaves
Maximum Marks 4 Marks

Solution Architecture:

The Tea Leaf Disease Detection project aims to identify and categorize diseases affecting tea leaves using machine learning models. The architecture employs a VGG16-based Convolutional Neural Network (CNN) to accurately diagnose and classify tea leaf diseases. The solution's key components and processes are as follows:

- Data Collection:
    - Compilation of an extensive dataset containing various images of healthy and diseased tea leaves. Images are pre-processed to ensure uniformity and consistency.
- Model Development:
    - Implementation of the VGG16 model for training, using pre-trained weights on a large dataset like ImageNet. The model is fine-tuned on the tea leaf dataset to recognize patterns and features indicative of various diseases.
- User Interface Integration:
    - Integration of a web-based user interface powered by Flask, allowing users to upload images for disease prediction.
- Image Preprocessing:
    - Image processing to standardize resolution and format for model compatibility. Preprocessing steps include resizing, normalization, and augmentation.
- Prediction and Classification:
    - Upon image submission, the model predicts the likelihood of tea leaf diseases, categorizing the image into predefined classes such as Antracnose, Algal Leaf, Bird Eye Spot, among others.
- Real-Time Feedback:
    - Real-time diagnosis feedback to the user interface, displaying the identified tea leaf disease and associated health status.
- Continuous Model Improvement:

- A continuous learning loop to retrain the model periodically with new data, enhancing its ability to detect and categorize evolving tea leaf diseases.

The proposed architecture streamlines the process of tea leaf disease detection, delivering an efficient and user-friendly system that contributes to improving tea cultivation practices and reducing economic losses for farmers.

Solution Architecture Diagram