**Project Initialization and Planning Phase**

| Date | 12 April 2024 |
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| Team ID | 144893 |
| Project Name | MangoNet Leaf Disease Detection |
| Maximum Marks | 3 Marks |

**Project Proposal (Proposed Solution)**

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| **Project Overview** | |
| Objective | To develop a machine learning model that can accurately detect diseases in mango leaves from images, enabling early intervention and reducing crop loss. |
| Scope | The project will focus on detecting common mango leaf diseases using image classification techniques. It includes data collection, preprocessing, model development, evaluation, and a user-friendly interface for prediction. |
| **Problem Statement** | |
| Description | Visual inspection of mango leaves for disease identification is time-consuming, inconsistent, and requires expert knowledge. This leads to delayed or incorrect treatment, risking significant crop damage. |
| Impact | Solving this problem will help farmers detect diseases early, reduce crop losses, improve yield quality, and enable cost-effective and timely treatment through accessible technology. |
| **Proposed Solution** | |
| Approach | We propose using a Convolutional Neural Network (CNN) model trained in labeled images of healthy and diseased mango leaves. The model will classify the disease type based on visual patterns. The project will be developed using Python, TensorFlow/Keras, and Jupyter Notebook. |
| Key Features | Automatic detection of multiple mango leaf diseases from images - High accuracy through CNN optimization - Simple and intuitive interface - Scalable model for other crop diseases in the future |

**Resource Requirements**

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| **Resource Type** | **Description** | **Specification/Allocation** |
| **Hardware** | | |
| Computing Resources | Computing for model training | GPU-enabled system (e.g., Google Collab / local machine with CUDA support) |
| Memory | RAM specifications | e.g., 8 GB |
| Storage | Disk space for data, models, and logs | e.g., 1 TB SSD |
| **Software** | | |
| Frameworks | Python frameworks | e.g., Flask |
| Libraries | Additional libraries | e.g., tensorflow, OpenCV, NumPy, Keras |
| Development Environment | IDE, version control | e.g., Jupyter Notebook, Git |
| **Data** | | |
| Data | Source, size, format | e.g., Kaggle dataset, 10,000 mango leaf images in JPG format |