**Project Initialization and Planning Phase**

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| Date | 20 June 2025 |
| Team ID | SWTID1750180871 |
| Project Title | Mangonet: A Vgg16-Based Neural Network For Mango Classification |
| Maximum Marks | 3 Marks |

**Project Proposal (Proposed Solution) template**

This project proposal outlines a solution to address a specific problem. With a clear objective, defined scope, and a concise problem statement, the proposed solution details the approach, key features, and resource requirements, including hardware, software, and personnel.

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| **Project Overview** | |
| Objective | To develop an automated deep learning system using the VGG16 architecture for accurate classification of different mango varieties based on visual attributes, enabling efficient sorting, grading, and quality control in agricultural and commercial settings. |
| Scope | The project covers the development, training, and deployment of a mango classification model using image data. It includes data preprocessing, model training with VGG16, integration into practical workflows (agriculture, markets, processing facilities), and evaluation on real-world mango images. The project does not address non-visual quality factors or non-mango fruits1[2](https://www.scribd.com/presentation/816374096/Mango-Classification-Ppt). |
| **Problem Statement** | |
| Description | Accurately classifying mango varieties and assessing their quality is a challenge in large-scale agriculture, markets, and processing facilities. Manual sorting is labor-intensive, subjective, and prone to errors, leading to inconsistent quality and inefficiencies |
| Impact | Solving this problem will automate and standardize mango classification, reducing labor costs, improving consistency, supporting quality control, and enhancing productivity for farmers, vendors, and processors |
| **Proposed Solution** | |
| Approach | Utilize a deep learning model based on the VGG16 architecture, leveraging transfer learning on a labeled mango image dataset. The system will preprocess images, extract features, and use a neural network to classify mangoes by variety and quality (e.g., ripe, unripe, damaged) |
| Key Features | Supports multi-class classification for 8 mango varieties. |

**Resource Requirements**

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| **Resource Type** | **Description** | **Specification/Allocation** |
| **Hardware** | | |
| Computing Resources | CPU/GPU specifications, number of cores | 2 x NVIDIA V100 GPUs |
| Memory | RAM specifications | 8 GB RAM or higher |
| Storage | Disk space for data, models, and logs | 1 TB SSD |
| **Software** | | |
| Frameworks | Python frameworks | Python,Flask |
| Libraries | Additional libraries | TensorFlow, Keras, NumPy, Matplotlib |
| Development Environment | IDE, version control | Google colab, Git |
| **Data** | | |
| Data | Source, size, format | Kaggle dataset, 10,000 images |