Project Initialization and Planning Phase

Date	18 JUNE 2025
Team ID	SWTID1749825524
Project Title	Deepfruitveg: Automated Fruit And Veg Identification
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) report

The proposal report aims to transform fruit/vegetable identification using machine learning, boosting efficiency and accuracy. It tackles system inefficiencies, promising better operations, reduced risks, and happier customers. Key features include a machine learning-based sorting model and real-time decision-making.

Project Overview	
Objective	To develop a robust and scalable deep learning model that can accurately identify and classify fruits and vegetables from image data, thereby automating tasks such as sorting, quality control, and agricultural monitoring.
Scope	To **automate the classification of fruits and vegetables** using deep learning, specifically Convolutional Neural Networks (CNNs), by training on image datasets.
Problem Statement	
Description	DeepFruitVeg is an AI-powered system that uses deep learning—specifically Convolutional Neural Networks (CNNs)—to automatically identify and classify various fruits and vegetables from images. By learning from visual features like color, shape, and texture, the model is capable of accurate classification, even under varying lighting and background conditions.
Impact	• **Increased Efficiency**: Automated classification speeds up sorting and monitoring processes in factories and farms. • **Improved Accuracy**: Reduces human errors and inconsistencies in product handling and labelling. • **Enhanced Quality Control**: Ensures fresh and correctly labelled produce in retail settings. • **Smarter Agriculture**: Enables real-time crop health monitoring using drones or ground-based cameras.
Proposed Solution	

Approach	Employing machine learning techniques to analyze and predict the fruits and vegetables accurately
Key Features	Implementation of a machine learning-based credit assessment model.

Resource Requirements

Resource Type	**Description**	**Specification / Allocation**
Hardware		
	Computing Resources	Google Colab with **T4 GPU**, 2 vCPUs
	Memory	**8–12 GB RAM**
	Storage	**1 TB Google Drive / SSD** for storing images, models, and logs
Software		
	Frameworks	**TensorFlow / Keras** for deep learning
	Libraries	**numpy**, **matplotlib**, **pandas**, **scikit-learn**, **seaborn**, **PIL**
	Development Environment	**Google Colab**, **Jupyter Notebook**, **VS CODE**
	Web Framework (optional)	**Flask** (for web deployment or model API)
Data		
	Dataset Source	Custom image dataset from **Google Drive** or **Kaggle**
	Dataset Size	~**2,000–5,000 images**, depending on number of classes
	Dataset Format	Folder structure (e.g., /class_name/image.jpg) used with image_dataset_from_directory()