Project Initialization and Planning Phase

Date	10 Feb 2026
Project Title	GreenClassify:Deep learning-based approach for vegetable image classification

Project Overview

Objective	To develop a robust and accurate deep learning-based system for automatic vegetable image classification, improving efficiency in agriculture, processing, and retail.
Scope	This project will focus on building a system capable of classifying a predefined set of vegetables (e.g., 15 common varieties) using a CNN model. The system will include a user-friendly web interface for image upload and prediction display.

Problem Statement

Description	Current methods for vegetable classification rely heavily on manual inspection, leading to inefficiencies, inconsistencies, increased labor costs, and potential errors in sorting and quality control across agricultural, processing, and retail sectors.
Impact	Solving this problem will significantly improve efficiency, reduce labor costs, enhance quality control, minimize food waste due to improved inventory management, and lead to more accurate and timely data in the supply chain.

Proposed Solution

Approach	We will employ a deep learning approach using Convolutional Neural Networks (CNNs), trained on a large and diverse dataset of vegetable images. The trained model will be integrated into a Flask web application with a user-friendly interface for image upload and prediction.
Key Features	High accuracy in vegetable classification, user-friendly web interface for image upload and prediction, scalability to accommodate a wider range of vegetables in future iterations, potential for integration with existing systems (e.g., inventory management).

Resource Requirements

Resource Type	Description	Specification/Allocation
Hardware	Computing Resources	8-core CPU, NVIDIA GeForce RTX 3060 GPU (or equivalent),
	Memory	16 GB RAM
	Storage	128 GB SSD (minimum, depending on dataset size)
Software	Frameworks	Python 3.9+, Flask
	Libraries	TensorFlow/Keras, OpenCV, NumPy, Scikit-learn
	Development Environment	Jupyter Notebook, VS Code, Git
Data	Vegetable Images Dataset	Multiple sources (specified in Data Collection Plan), 10,000+ images (Target size), various formats (JPG, PNG, etc.)
Personnel	Data Scientist	1
	Software Engineer	1
	(Optional) QA Tester	1 (for thorough testing)