Project Initialization and Planning Phase

Date	7 July 2024
Name	Pratik Prasad Mahadik
Project Title	Greenclassify: Deep Learning-Based Approach For Vegetable Image classification
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) template

Project Overview	
Objective	To develop a Deep Learning-Based model for accurately classifying vegetable images into 15 categories.
Scope	The project will focus on building a robust image classification model capable of identifying and distinguishing between different types of vegetables. The model will be trained and evaluated using a dataset of 21,000 images, with 15,000 images in the training set, 3,000 in the validation set, and 3,000 in testing respectively.
Problem Statement	
Description	The problem this project aims to address is the challenge of accurately and efficiently identifying different types of vegetables from images. The manual identification of vegetables can be a timeconsuming and subjective process, especially when dealing with a large variety of vegetable types or when the visual characteristics of different vegetables are similar.
Impact	Solving this problem will improve efficiency in various applications, such as inventory management in grocery stores, automated sorting in agriculture, and dietary analysis.
Proposed Solution	

Approach	1. Collect and preprocess the dataset. 2. Implement a CNN architecture suitable for image classification. 3. Train the model on the training set, validate it on the validation set, and test its performance. 4. Try different models such as VGG16, ResNet50, Inception,

	Xception. Compare their accuracy. 5. Fine-tune hyperparameters to improve accuracy. 6. Deploy the final model using Flask for real-time classification
Key Features	1. Use of CNN and transfer learning for high accuracy in image classification. 2. Equal representation of all classes in the dataset to prevent bias. 3. Real-time model deployment using Flask with a user-friendly interface.

Resource Requirements

Resource Type	**Description**	**Specification/Allocation**
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	1 X NVIDIA T4 GPU on Google Colab
Memory	RAM specifications	16 GB
Storage	Disk space for data, models, and logs	1 TB SSD for data, model, and logs
Software		
Frameworks	Python frameworks	TensorFlow, Keras, Flask
Libraries	Additional libraries	OpenCV for image processing, Matplotlib for visualization
Development Environment	IDE, version control	Google Colab Notebook, Git

Data		
Data	Source, size, format	Source: Kaggle dataset of 21,000 vegetable images Size: 21,000 images Format: JPEG format, resolution 224x224 pixels