Project Initialization and Planning Phase

Date	27 June 2024
Team ID	SWTID1719992739
Project Title	Visual Diagnostics: Detecting Tomato Plant Diseases through Leaf Image Analysis
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.

Project Overview	
Objective	Develop an automated system that accurately identifies and classifies various diseases in tomato plants based on analysis of digital leaf images.
Scope	This project will include the necessary steps to prepare the data for modelling. This project will involve designing and training a CNN Model (Resnet 152 V2) but will not include exploration of multiple deep learning architectures. This project will result in a functional application prototype. This project will be trained to detect a predefined set of common tomato plant diseases. A simple and intuitive interface allowing users to upload images and view the results.
Problem Statement	
Description	Tomato Plant Disease Detection from Leaf Images is a technology that utilizes image analysis and machine learning to automatically identify diseases in tomato plants.
Impact	Increased tomato crop yield and improved food security, Reduced reliance on chemical pesticides.
Proposed Solution	

Approach	We used a pre trained model of Resnet152V2(transfer learning) and trained our model with the data freely available on Kaggle. We also used additional 2 dense layers for better accuracy.
Key Features	Simple and intuitive interface to the users to upload images of tomato leaves. Quick and accurate predictions of the disease present in the uploaded leaf image. Identification of the specific disease affecting the tomato plant. Techniques to augment data, increasing the model's robustness to various image conditions.

Resource Requirements

Resource Type	**Description**	**Specification/Allocation**
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	I5 processor and Nvidia GTX 1650 4GB
Memory	RAM	8 GB
Storage	Disk space for data, models, and logs	Data: 188MB, Model: 447MB
Software		
Frameworks	Python frameworks	Flask
Libraries	Additional libraries	Numpy, Pandas, Matplotlib, Tensorflow.
Development Environment	IDE, version control	VS Code, GitHub
Data		
Data	Source, size, format	Kaggle, 188 MB, Images (JPG)