Name/Title of the Project: Automated Detection and Diagnosis of Plant Diseases Using Digital Image Processing.

Abstract: This project aims to develop an automated system for the detection and diagnosis of diseases in plants and crops using Digital Image Processing (DIP). The system will leverage image capture technology to acquire images of plants, apply advanced image processing techniques to identify potential diseases or fungi, and provide solutions for effective plant health management.

Motivation: The agricultural sector faces significant challenges due to the impact of diseases on crop yield and quality. Early detection of plant diseases is crucial for timely intervention and effective management. This project addresses the need for an automated and efficient solution to monitor plant health, thereby contributing to sustainable agriculture.

Problem Formulation/Objectives: The primary objective is to design and implement a system that can:

- Capture high-quality images of plants or crops.
- Utilize DIP techniques to detect and diagnose diseases or fungi.
- Provide actionable solutions and recommendations for disease management.

Methodology/Planning of Work:

1. Image Capture: Utilize a camera or imaging device to capture images of plants.
2. Image Preprocessing: Crop, resize, and enhance image quality for better analysis.
3. Disease Detection: Apply image segmentation and machine learning for disease identification.
4. Solutions Suggestions: Utilize a database of diseases to provide relevant solutions.

5. Implementation in Python: Use OpenCV, scikit-image, and relevant libraries for development.

6. User Interface: Implement a user-friendly interface for easy interaction.

Facilities Required for Proposed Work:

- Software: Python programming environment, OpenCV, scikit-image, TensorFlow or PyTorch for machine learning.
- Hardware: Computer system with a camera or imaging device.

Testing Technologies Used:

- Unit testing for individual components.
- Integration testing for the complete system.
- Performance testing for efficiency and responsiveness.

Real Life Application: The developed system can be deployed in agriculture, enabling farmers to monitor and manage the health of their crops more effectively. It can contribute to increased crop yield, reduced losses, and sustainable farming practices.

Bibliography/References:

1. OpenCV Documentation: https://docs.opencv.org/
2. scikit-image Documentation: https://scikit-image.org/