Cotton Plant Disease Detection and prescribing its Cure Using Machine Learning

Final Year Project Proposal

Submitted To: Sir Hamza Yousuf

Submitted by:

Muhammad Ahmed Ahsan   (20L-1456)

Muhammad Ahsan Javed   (20L-1478)

Hiba Naseer   (20L-1492)

Abstract:

The proposed Final Year Project (FYP) aims to develop an advanced system for Cotton-plant disease identification and cure by leveraging the power of machine learning and image processing techniques. As the agricultural industry plays a crucial role in providing sustenance for a growing global population, early and accurate detection of plant diseases and cure is essential to ensure higher crop yields and prevent substantial economic losses. This project seeks to create an innovative solution that empowers farmers and researchers to identify diseases in plants using images of Leaf, thus enabling timely interventions and management strategies.

Objective:

The main objective of this FYP is to design, implement, and evaluate a cotton plant disease detection system that utilizes machine learning algorithms and image processing techniques and finally take actions (Sprinkle Medicine) based on the disease Type. The project aims to use a dataset of cotton-plant images for its training and to implement image-preprocessing techniques to enhance image quality for better prediction accuracy. It will be done by using Machine-Learning algorithm.

Software-Tools:

- MERN Stack (React, Node.js, Express.js, MongoDB)
- Google Colab
- Python
- Open CV
- Tensor-Flow

Hardware-Components:

- Raspberry Pi-4 Model B
- Sprinkler
- Camera
- UGV (un-manned ground vehicle)

Execution phase:

1. Dataset Collection and Preparation
2. Image capturing and Preprocessing
3. Machine Learning Model Selection and Training
4. Feature Extraction
5. Actions for cure, if needed
6. Display Status and Disease-type along with image on Website

Importance & Future Scope:

This project holds significant importance for modern agriculture by providing a tool that can revolutionize disease detection. The system can aid farmers in making informed decisions about disease management and treatment, leading to increased crop yield and reduced economic losses. Additionally, the project contributes to the advancement of machine learning and image processing techniques in the context of agricultural applications.

Expenditure and Cost Analysis:

The project will require access to a computer with sufficient processing power, access to relevant software tools and libraries, a UGV along with mounted camera, a dataset of plant images (which can be obtained from publicly available sources), and potentially some budget for creating an appealing user interface (Website).

Conclusion:

This proposal outlines a comprehensive plan for developing a Cotton-plant disease detection and prescribing cure system using machine learning and image processing. The project's successful completion will contribute to the agricultural sector and advance the field of AI-driven disease detection. By accurately identifying plant diseases at an early stage, the proposed system can positively impact global food production and security.

Expected Model:

Contact Details:

Name	University-Email	Mobile Number
Muhammad Ahmed Ahsan	L201456@lhr.nu.edu.pk	+92-321-9977607
Muhammad Ahsan Javed	L201478@lhr.nu.edu.pk	+92-309-7025542
Hiba Naseer	L201492@lhr.nu.edu.pk	+92-323-7233064