Potato Disease Classification

1. Executive Summary:

This project aims to classify the type of potato plant studied into healthy and diseased.The diseased ones are further grouped into the plants with either “Early blight” or “Late blight”.The goal is to minimize plant wastage and the consequent economic loss arising from these conditions.

2. Problem Statement:

Background: Potato leaf diseases like early blight and late blight affect crop health and cause loss of leaves.

Objective: Predict the onset and type of potato leaf disease(early blight,late blight) to curtail loss.

Scope: We will create a simple Image Classification Model that will categorize Potato Leaf Disease using a simple and classic Convolutional Neural Network Architecture.

3. Data Sources:

Primary Data: Leaf disease data for over 50,000 leaf images on healthy and infected leaves of crops plants through the existing online platform PlantVillage (https://www.kaggle.com/abdallahalidev/plantvillage-dataset)

Secondary Data: Seasonality trends, economic indicators, provided by Kaggle.

4. Methodology:

Data Collection: Retrieve data from the Kaggle Database.

Data Preparation: Clean and prepare data,data augmentation, handling missing values, and standardizing formats.

Analysis Techniques:Classic CNN(Convolutional Neural Network) architecture,Streamlit for analysis, Python (using libraries like pandas and scikit-learn) for modeling.

5. Expected Outcomes:

Accurate prediction of potato leaf for selected categories.

Early diagnosis of the plant condition to ensure appropriate treatment and therefore curtail loss.

A model that can be used for future prediction.

6. Risks and Challenges:

Data quality issues may require additional cleaning.

Inaccurate predictions could have real-world consequences; validation is essential.

7. Conclusion:

This project promises to provide significant insight to preventing yield loss.Also, this endeavor can be the harbinger to the effort to enable computer vision approaches to help solve the problem of yield losses in crop plants due to infectious diseases. The insights and predictive model developed through this project could lead to early blight diagnosis and prevent loss.