**Internship Weekly Report**

**Internship Title:** Plant Disease Detection System for Sustainable Agriculture  
**Internship Organization:** Edunet Foundation in collaboration with Shell  
**Week:** 1  
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**Date:** 02/05/25

**Problem Statement:**

Agriculture is the backbone of many economies, especially in developing countries, but crop losses due to plant diseases continue to pose a significant threat to food security and farmer livelihoods. Early and accurate detection of plant diseases is essential for sustainable agricultural practices. However, traditional methods of disease identification often require expert knowledge and are time-consuming.

This project aims to build an automated Plant Disease Detection System using machine learning and computer vision techniques to assist farmers and agricultural professionals. The system will identify and classify common plant diseases through image analysis, providing timely and accurate feedback that can improve crop management decisions, reduce the use of pesticides, and promote sustainable agricultural practices.

**Project Pipeline:**

The following pipeline has been discussed and proposed for the project implementation:

1. **Problem Understanding & Requirement Analysis:**
   * Define the scope of the plant disease detection system
   * Identify key crops and associated diseases
   * Understand end-user needs (e.g., farmers, agri-experts)
2. **Data Collection & Preprocessing:**
   * Source plant disease datasets (e.g., PlantVillage, field images)
   * Annotate and clean the data
   * Perform image augmentation to address class imbalance and improve generalization
3. **Model Selection & Training:**
   * Explore various deep learning models (e.g., CNNs like ResNet, MobileNet)
   * Train and validate models on the processed dataset
   * Evaluate performance using metrics like accuracy, precision, recall, and F1-score
4. **System Development:**
   * Integrate the trained model into a user-friendly application (web/mobile-based)
   * Include image upload/capture functionality for disease detection
   * Display disease prediction, confidence score, and possible remedies
5. **Testing & Validation:**
   * Test the application under different environmental conditions
   * Collect feedback from potential users and refine the system
6. **Deployment & Reporting:**
   * Deploy the final version of the application
   * Document the process, findings, and outcomes
   * Submit reports and present the results to stakeholders

**Remarks:**

This internship project will help bridge the gap in data-driven agricultural solutions, leveraging AI to support sustainable farming practices. The collaboration with Edunet Foundation and Shell offers valuable guidance, infrastructure, and resources to develop impactful real-world solutions.

End of Report