**MINI PROJECT**

**Plant Disease Detection**

**Using Deep Learning**

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MCA23-109

**ABSTRACT**

In modern agriculture, the accurate and timely identification of plant diseases and pests is crucial for maintaining healthy crop yields and ensuring food security. This mini-project aims to develop an advanced plant disease identification system utilizing deep learning techniques, specifically Convolutional Neural Networks (CNN) with architectures such as AlexNet and ResNet. Leveraging the comprehensive PlantVillage dataset, which encompasses a diverse range of crops, the system is trained to detect and recognize various plant diseases and pests with high precision. The models developed in this project demonstrate significant potential as practical tools for early disease detection and advisory services in agriculture, enabling farmers to make informed decisions and implement timely interventions.

The exceptional performance of the CNN models demonstrates their capability to generalize across different crops, making the system versatile and applicable to various agricultural contexts. By providing an automated solution for plant disease and pest identification, this project addresses a significant challenge in large-scale farming, where traditional methods can be labor-intensive and time-consuming. The implementation of such a system can substantially enhance agricultural productivity and sustainability, especially in regions like India, where pest and disease management are critical issues. The success of this project lays a solid foundation for the development of an integrated plant disease identification framework that can be further refined and expanded to support a holistic agricultural advisory system, ultimately contributing to improved crop management and food security.