**AI-powered Plant Disease Prediction System**

**Abstract**:

The health of crops is vital for ensuring a stable and productive farming ecosystem, but diseases can spread quickly, causing significant crop damage and financial loss. Detecting and diagnosing plant diseases early is a challenging yet crucial task for farmers. This project aims to develop an **AI-powered Plant Disease Prediction System** that uses advanced machine learning and image processing techniques to predict potential plant diseases before they spread, allowing farmers to take timely action.

By leveraging AI algorithms and a robust dataset of plant images, the system analyzes plant health by identifying early signs of disease through visual patterns such as discoloration, spots, and deformations. Using **Convolutional Neural Networks (CNNs) and other ML algorithms**, the system not only detects visible symptoms but also predicts the likelihood of disease progression based on environmental factors like temperature, humidity, and soil conditions.

Farmers will be able to upload images of their crops through a **user-friendly web application**, where the system will predict possible diseases, assess the severity, and offer recommendations for preventative measures or treatments. This proactive approach helps farmers minimize the impact of plant diseases, reduce pesticide use, and optimize crop yields. The farmer will receive the message in his/her own mother tongue through any messaging app or through the user-friendly web application.

With this AI-powered prediction system, farmers can work smarter, not harder, by staying ahead of potential outbreaks, ensuring healthier crops, increasing their profits and contributing to more sustainable farming practices.

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