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Plant Leaf Disease Detection using Machine Learning Algorithms

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Abstract: *Plant diseases significantly impact agricultural productivity, leading to reduced crop yields and economic losses. Early and accurate detection of plant leaf diseases is crucial for effective management and prevention. This project proposes a machine learning-based approach for the detection and classification of plant leaf diseases. By utilizing image processing techniques and machine learning algorithms, the system analyzes leaf images to identify the presence of diseases such as blight, mildew, and rust. Preprocessing techniques, including resizing, normalization, and color space conversion, prepare the images for feature extraction. Convolutional Neural Networks (CNNs) are used for feature learning and classification due to their superior ability to recognize patterns in visual data. The model is trained on a dataset of labeled leaf images and achieves high accuracy in detecting common plant diseases. The proposed system can be deployed as a mobile or web-based application, enabling farmers and agricultural professionals to monitor crop health effectively. This project aims to reduce crop losses, enhance agricultural sustainability, and support precision farming practices.*

Keywords: Plant Leaf Disease, Machine Learning Alogorithms, Detection

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