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Plant Leaf Disease Detection using Deep Learning Algorithms

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Abstract: *The Plant Leaf Diseases Detection System addresses the critical challenge of early detection and management of plant diseases, significantly impacting agricultural productivity and food security. Utilizing advanced technologies, this cutting-edge agricultural solution employs a Convolutional Neural Network (CNN) model, specifically based on the VGG19 architecture implemented using Keras. This robust deep learning model is trained on a diverse dataset containing images of both healthy and diseased leaves, allowing it to extract intricate features and accurately classify various plant diseases automatically. The system seamlessly integrates HTML, CSS, and Flask for the front end, while Keras powers the back end, resulting in a user-friendly web application interface. Incorporating this technology not only enhances the efficiency of disease detection but also facilitates user interaction and accessibility.*

Keywords: Plant disease detection, Convolutional Neural Network (CNN), VGG19 architecture, Agricultural productivity, Food security, Image processing, Machine learning, Internet of Things (IoT), Crop health, Early detection, Agriculture technology, Computer vision, Deep Learning, Web application interface, Flask framework, Keras, Data preprocessing, Model training, Disease classification, Agricultural innovation