PEPPER PLANT LEAF DISEASES IDENTIFICATION SYSTEM USING IMAGE PROCESSING

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Abstract

Pepper, also known as the "King of Spices," is the most widely used spice in the world. The pepper crop is indigenous to South Asia, and historical records indicate that it originated in South India. Pepper is primarily grown in Sri Lanka's low and mid-country wet and intermediate agro-climatic zones. The total area of pepper in Sri Lanka is approximately 42,989 ha, with the major districts being Matale, Kandy, Kegalle, Badulla, Ratnapura, Monaragala, and Kurunegala. Pepper plant diseases are a major impediment to the pepper plant industry. Because pepper is grown in many areas of Sri Lanka, if they encounter any problems with cultivation, they should contact the Central Research Station in Matale. Getting to these establishments and gathering information can be difficult for the planters. The next issue is that they must pay exorbitant fees to consult with private sector consultants. This research will help to reduce the amount of effort required by small/medium scale business planters by allowing them to identify the disease and obtain information on control methods. They will also be given the necessary contact information to contact the Central Research Station if they require additional assistance. This could all be done with a simple app on their phone.

The system was developed using image processing and CNN (Convolution Neural Network) to identify and minimise the damage caused by black pepper plant diseases. The dataset was created by the author at the Central Research Station Matale, Sri Lanka, with the assistance of domain experts. The images chosen for the dataset were correctly adjusted by changing the image backgrounds and sizes. The dataset, which was created from pre-processed images, was then loaded to a model and trained.

The model was trained several times and its test accuracy was tested, and the model was trained until it achieved very good test accuracy. Expanding the database will improve the accuracy of diagnosing pepper plant diseases.

Keywords: Pepper plant Diseases, CNN, Image Classification, Deep Learning, Image recognition.