Detection of Disease in Citrus Plants through Leaf Images using a Convolutional Neural Network

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Abstract—Citrus is one of the most commonly consumed fruits by humans due to its delicious taste and vitamin C. For citrus plant cultivators, it is crucial to recognize the problem early so that it does not interfere with citrus plant growth or even prevent citrus plant death. Creating a computer-based application that automatically recognizes citrus plant diseases will be more manageable for farmers to eradicate immediately. In this paper, a recognition model of citrus plant diseases is developed using a CNN to classify the disease of citrus leave images into four classes: Blackspot, Cancer, Greening, and Healthy. This dataset was obtained from the Kaggle website. An evaluation using the 5-fold cross-validation for a dataset of 600 image data of citrus leaves shows that the developed model gives an accuracy of 95,6%. The accuracy results in this study are better than previous studies using the M-SVM model and weight segmentation with an accuracy of 90.4%.

Keywords—classification, convolutional neural network, image processing, citrus leaves disease, data augmentation.