

ABSTRACT

COMPARISON OF TRANSFER LEARNING TECHNIQUES VGG16, RESNET50 WITH COMBINED LSTM FOR POTATO LEAF DISEASE CLASSIFICATION

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In recent years deep learning has become popular, especially CNN transfer learning, which has done a lot of research related to the method. The classification of potato leaf disease can be used for comparison of transfer learning architecture models and LSTM combinations because in Indonesia potatoes are one of the largest suppliers of vegetable commodities reaching 7.85%. To make comparisons, the methods used are the VGG16 transfer learning architecture, ResNet50, and the merger of LSTM in classifying and comparing architectures based on training accuracy results, memory use, and confusion matrix result in potato leaf diseases such as Late blight, Early blight, Hollow Leaves, Curling Leaves, and Healthy leaves. In this study, the best model with VGG16 dense layer 75 architecture obtained the highest value with a precision value of 87%, recall of 86%, accuracy of 86% and f1-score of 86%, and memory usage of 66.3MB and obtained train accuracy reaching 99.70%, while for models with a combination architecture VGG16 and LSTM node 100 obtained the lowest result with a precision value of 21%, recall 24%, accuracy 24% and f1-score 21% and memory usage of 59.4MB and obtained train accuracy of 42.62%.

Keywords: *Deep Learning, LSTM, Resnet50, Potato Plants, Transfer learning, VGG16*