ABSTRACT

DETECTION OF PESTS ON GREEN MUSTARD LEAVES USING ANDROID-BASED CONVOLUTION NEURAL NETWORK

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The agricultural sector is very important in the economy and the fulfillment of Indonesia's food and clothing needs. However, in the agricultural sector, especially in the production of mustard greens, there are a number of obstacles faced in the development of mustard greens themselves. One of the main factors is the disturbance of Plant Disturbing Organisms (OPT) which makes a decrease in the quality and quantity of mustard green production. Pest damage rates on mustard greens range between 32.2% and 50.24%. Therefore, by utilizing advances in artificial intelligence technology and the popularity of mobile technology, this research aims to create a model that can detect the presence of android-based caterpillar pests to help improve the quality and quantity of green mustard production in Indonesia. One of the artificial intelligence technologies used is deep learning which is the result of the development of artificial intelligence and can be used for classification. Convolutional Neural Network (CNN) which is one of the deep learning architectures, has become a representative neural network in the field of computer vision because of its performance that almost touches the human level accuracy. However, this success can occur due to large datasets. To overcome the problem of data limitation, transfer learning methods have come to overcome the problem of data limitation by transferring the learned knowledge from one domain to another relevant domain. Experimental results, involving a dataset of 2000 images, show variations in accuracy from the first to the twelfth trial. The tests were conducted using the MobileNetV2 architecture. Successful results were achieved by the seventh experiment, which achieved 100% accuracy and the android application that has been deployed using the model can classify the presence of pests on mustard greens well.

Keywords : Android, Mustard Greens, Pests, Transfer Learning