

Implementasi Aplikasi Deteksi Penyakit pada Daun Mangga Berbasis Android dengan Menggunakan *Convolutional Neural Network (CNN)*

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Abstract

The Central Statistics Agency recorded mango production in Indonesia reaching 3.28 million tons in 2022. Despite being the second most produced fruit in Indonesia, mango crop development is significantly affected by weather conditions and pests.

Extreme weather such as heavy rain leads to the rapid development of fungal pests, causing crop failure for farmers. This study aims to detect diseases in mango leaves to take further action and avoid crop failure.

This study used a Convolutional Neural Network (CNN) classification model with simple image preprocessing. This method was chosen because CNN can learn patterns and recognize objects more effectively and quickly. The models tested in this study included an experiment using one convolutional layer, a second experiment with the addition of the VGG-16 architecture, and a third experiment with the NASNetMobile architecture. The dataset used contains images of mango leaves divided into 7 categories: Anthracnose, Bacterial Canker, Die Back, Gall Midge, Powdery Mildew, Sooty Mould, and healthy leaves, with 500 images in each category. The models were then implemented into an Android-based application using the Kotlin programming language.

The test results showed that the model with the VGG-16 architecture had an accuracy of 93.71%, while the NASNetMobile architecture achieved 94.48% accuracy, and the CNN model with one convolutional layer had only 90.29% accuracy.

Keywords: cnn, vgg-16, nasnetmobile, mango leaf disease detection, kotlin
