

## ABSTRACT

Strawberry is a horticultural product that has high economic value and great opportunities in the Indonesian market. However, there are several factors that can inhibit the productivity of strawberry plants such as attacks by pests and human resources. Although the strawberry plants affected by Plant Disturbing Organism (PDO) attack have physical differences that appear on the leaves, due to the lack of knowledge of human resources, it still causes difficulties in determining the disease that is attacking the strawberry plants and determining the appropriate treatment steps.

Based on these problems, the authors designed a system to classify diseases on strawberry plant leaves with the concept of planting *deep learning* directly on an Android application so that it can run without internet connectivity. The dataset used in this capstone design is primary data in the form of images taken using a Canon EOS M3 camera with a total of 1,336 photos of strawberry plant leaves, classified into four classes. Those are healthy leaves, caterpillar leaves, powdery mildew leaves, and mite leaves. To classify images, the *deep learning* algorithm used is the Convolutional Neural Network (CNN). Meanwhile, for developing Android applications, it uses the Kotlin programming language. The author then conducts tests to compare the best results from the *MobileNetV3-Large* and *EfficientNet-B0* architectures. After that, the best results are integrated with Android applications to become a complete system. So that it can be tested on related aspects of the use of the system.

After conducting research, the results show that the best model of *deep learning* is achieved using the *MobileNetV3-Large* architecture and hyperparameters in the form of an optimizer of the RMSprop type, learning rate of 0.0001, epoch 70, and batch size 32. The values obtained using these parameters in terms of accuracy are 92.14%, precision of 94.85%, recall of 92.14%, F1-Score of 92.06%, and loss of 0.2212. The best *deep learning* models have been successfully integrated with Android application. It was found that the system has been implemented very well with a score of 92, is very easy to use with a score of 94.66 and has a very good user interface with a score of 92.66 on a scale of 100.

Keyword: Strawberry, Pests, Classification, Android, CNN, MobileNetV3-Large, EfficientNet-B0