

## ABSTRACT

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*Palm oil is a highly sought-after plant for producing vegetable oil due to its significant potential in boosting the economy and improving community welfare. The ripeness level of palm oil is determined by experienced farmers or workers. The maturity of palm oil can be identified by its color: purple for unripe and a reddish-yellow for ripe. Differences in perception among farmers or selectors are one of the factors causing suboptimal selection of palm oil fruits with the appropriate ripeness level. In this study, we classified two types of ripeness levels, namely unripe and ripe, using the Convolutional Neural Network algorithm. The dataset used consisted of several datasets from Roboflow, resulting in a total of 330 images divided into two classes: ripe and unripe. The guideline used for analysis in this study is accuracy. Additionally, this research employed four testing scenarios for hyperparameters: optimizer, target size, batch size, and epoch. After testing, the best results were obtained using the Adam optimizer, a target size of 224x224, a batch size of 8, and 200 epochs. Based on the test results, the achieved test accuracy was 96% with a testing loss of 0.0969.*

*Keywords: Oil Palm, Maturity, Convolutional Neural Network, Dataset*