ABSTRACT

Tea (Camellia Sinensis) is one of the most widely consumed herbal plants in various countries. As one of the countries that rank high for tea exporters globally, the quality and quality of tea in Indonesia is essential. This is done to get good quality tea. Besides that, harvesting tea leaves in Indonesia is still done manually, namely based on the age of picking from the tea planting blocks.

In this study, a classification system for the maturity level of tea leaves was designed from the sample type of the Assamica Klon Gambung 7 (GMB 7) variety, which was taken from several planting blocks that had a picking age of 1 month at the Gambung Tea and Quinine Research Center. This research applies the digital image processing method with Convolutional Neural Network (CNN) algorithm using ResNet Architecture.

The system's design for classifying the maturity level of tea leaves has two stages of testing, namely using a dataset of 600 images as the original data and 1800 images as the data resulting from the augmentation process. The best test uses augmented data as much as 1440 training data and 360 test data. The best system parameters were obtained using the SGD optimizer type, batch size 32, learning rate 0.01 and epoch 100, which were trained on the ResNet 50 model. The test results obtained the best accuracy value of 95%, loss 0.2032 and 95% precision.

Keywords: *Tea Leaves, Classification, CNN, ResNet.*