ABSTRACT

The productivity of Gambung tea leaves gradually decreases. This is caused by an incompatibility in choosing GMB series tea clones used. GMB series tea clones consist of GMB 1 up to GMB 11. The limitation of PPTK (Pusat Penelitian Teh dan Kina) Gambung workers and tea farmers in classifying GMB series tea clones to differentiate type between clones that morphologically have a degree of close similarity has becoming the reason of choosing GMB series tea clones that are suitable for use less optimal.

This final project designed a system visually capable of classifying tea clone type which consists of 11 different classes, that is GMB 1-11 with digital image processing. Data image were taken using handphone's camera, then followed by pre-processing resize and augmentation. Convolutional Neural Network (CNN) has becoming a training method in identifying object through system supported by Residual Neural Network (ResNet) 101 with better accuracy because its ability to simplify images through many layers.

The system is able to classify the image of GMB series tea clones 1 until GMB 11. Test scenario are done by using the total amounts of 1100 datsets as original data and 2860 as pre-processing augmentation data. The best testing using augmentation data of 2640 training data and 220 test data. The best system parameters obtained by using Adam optimizer and epoch 100 who trained on the ResNet-101 model. The test results obtained the best accuracy value of 97.8%, recall 97.6% and precision 97.9%.

Keywords: *Gambung tea clone series, Classification, CNN, ResNet*