

ABSTRACT

Assamica is one of the tea varieties in Indonesia. This variety has eleven clones known as the Gambung series. This clone has been studied by the Tea and Quinine Research Center (PPTK) namely: GMB 1 to GMB 11. Unfortunately, only a few experts can identify these eleven clones using only the visual eye. Some of the factors are the Gambung series structure and color that have many similarities.

Gambung series has different production capacities, which thereby affecting revenue profitability. This thesis uses Python programming language with the Convolutional Neural Network (CNN) method with GoogLeNet architecture as a digital image processing from the Gambung series tea leaf. Digital images of the Gambung series tea leaves will be used as the input system in Red Green Blue (RGB) color channel form. The CNN process will extract features from each input of the training data Gambung tea leaf series that will be used for the classification in the model training. Trained model used to detect and classify validation data of the Gambung tea leaf series.

The result of this thesis is a system to detecting and classifying eleven Gambung series tea leaves with CNN GoogLeNet Architecture. The amount of training data used is 2640 with augmentation process and 220 for validation data. System achieved 62.39 % accuracy, loss 2.74, and 63 % precision with Adam Optimizer learning rate 0.0001.

Keywords: **Gambung series, CNN, GoogLeNet**