

## **ABSTRACT**

PT. Perkebunan Nusantara VII Ciater is a company that specialized in the production of orthodox black tea. To produce tea with consistently good quality, it is necessary to control the quality, by using quality testing process. Quality testing process conducted by PT. Perkebunan Nusantara VII is done manually, which is with organoleptic tests done by trained inspector. The tests performed by the evaluation inspector are subjective and may cause problems and dependent on operator conditions. In this study, an automated design of quality inspection using image processing and artificial neural network is being proposed. Feature extraction done by calculating the average of red, green, blue from RGB layer of an image and by calculating the average of hue, saturation, and value from HSV layer. By using trial and error, red, blue, and hue layer properties is being used as input layer for ANN. Tea quality is categorized into two class, lip 2 and lip 4. Each quality provides 100 samples with total of 300 image of sample for training, including 100 sample for uncategorized category. For offline and real time testing, 60 sample were used. Classification with offline testing resulted in 91,67% accuracy and real-time testing resulted in 86,67% accuracy with average processing time 0.79 seconds.

Keywords: Automated tea quality inspection, Image processing, Artificial Neural Network, MATLAB