ABSTRACT

Rolanita Scenic Faravati (18102069), 2021 – COMBINATION OF *GRAYSCALE* AND *HYPERPARAMETER* IN *CONVOLUTIONAL NEURAL NETWORK ON BATIK MOTIF PATTERN RECOGNITION*

Batik is an Indonesian culture that is recognized by UNESCO as a world heritage. This is a challenge for the Indonesian people in preserving Indonesian batik culture, one of which is by recognizing batik motifs. However, the many patterns of batik motifs are the basis for the ignorance of ordinary people in identifying batik motifs. Based on the results of a survey of 124 respondents, 63% of respondents are less familiar with existing batik motifs and 99% of them agree that research is needed on pattern recognition in batik motifs. Based on previous research, the CNN algorithm is an algorithm that has good performance in classifying image data. However, CNN has a weakness in the long *Training* time and there can be cases of overfitting in the model. The use of grayscale or gray images and hyperparameters in the form of dropout, stride, and padding can cover the shortcomings of the CNN algorithm. So this study will do a combination of grayscale and hyperparameters in CNN on batik pattern recognition. The dataset used is 4000 images with the 4 most popular batik motifs, namely class kawung, mega mendung, parang, and truntum. The dataset is divided into 80% *training* data, 10% validation data, and 10% testing data. The results of accuracy and computational time on M1 are 96% and 20672 secon; M2 are 95% and 6708 secon; M3 are 96% and 21195 secon; and M4 are 94% and 3596 secon. The combination of grayscale and hyperparameters can speed up computational time and minimize overfitting cases, but the model architecture applied in this study is still not optimal in increasing accuracy.

Keyword: *Batik, Convolutional Neural Network, Grayscale, Hyperparameter, Image Recognition*