ABSTRACT

Coffee has an important role as a foreign exchange earner for Indonesia. In addition, coffee has a high economic value compared to other plantation products. The results of roasting coffee beans have different levels of maturity if the roasting process is not done as desired. Therefore, to obtain the desired maturity, it is necessary to develop a software system that is capable of classifying coffee bean roasting levels.

This research is to classify the roasting level of coffee beans. The maturity levels used are light roast, medium roast, and dark roast. For feature extraction using Gray Level Co-Occurrence Matrix (GLCM) and classification using Backpropagation Neural Networks before the system is used, training data and test data are required, the comparison of training data used is 20:80, 50:50, 80:20. To get the best accuracy results, the epoch parameters 100, 200, and 250 and hidden layers ¬50, 100, and 150 are added. Two tests were carried out on the training data and test data using a virtual background and those that did not use a virtual background. In the test using virtual background gets the highest level of accuracy with a comparison of training data and test data of 80:20, epoch 200, and hidden layer 150 which is 94.17%. The test does not use a virtual background to get the highest level of accuracy with a comparison of training data and test data of 80:20, epoch 250, and hidden layer 50, namely 90.42%. This system is expected to make it easier for coffee producers to produce the desired maturity level.

Keywords: *Coffee, Gray Level Co-occurrence Matrix (GLCM), Artificial Neural Network*