ABSTRACT

Iris in the human's eye is one of body part that is unique and stable. The structure of the iris will remain throughout the human's life unless that an accident causing damage to the iris. With this stable structure, iris can be used for recognition of individual human. Recognition of individual human through the iris is a classification problem that can be solved by using Artificial Neural Networks (ANN). However, ANN need the learning algorithm to obtain optimal weights that are useful in classification. In this thesis, quickprop learning algorithm is used which is expansion of the backpropagation algorithm to train ANN. In quickprop algorithm, approximation calculation is used to obtain optimal weights. Weight change using only local information in each weight and not affected by the other weights that change at the same time thus causing the learning process in ANN can be done quickly. Input of ANN commonly called as input neuron. In this human recognition using eye's iris, input neurons can be either all pixels of the processed iris image. But with the image size is large enough, it need a process that called feature extraction. Feature extraction performed by using principal component analysis (PCA) to obtain specific characteristics of the processed image. PCA can reduce the dimension of the iris image which is processed thus can reduce the number of input neurons in the classification process with ANN. Based on the testing that has been done, the best parameter combination is when used 40 principal components, 27 hidden neurons, learning rate with a value of 0.03, the maximum epoch with a value of 375 and maximum growth factor with a value of 1. From 30 times of training and testing using these best parameters combination, obtained an average recognition accuracy on the training data by 100% and the testing data by 92.1%.

Key words : recognition, iris, classification, ANN, *quickprop algorithm*, *principal component analysis*