ABSTRACT

The eye’s iris biometrics is a type of biometric for individual identification that is more stable than other types of biometrics because a person's iris eyes has a delicate fiber pattern and unique characteristics [1]. The irises of a person's right and left eyes are different. The eye's iris is also permanent and unchanged, so the biometric of the eye's iris is interesting to be used as an individual recognition system. Especially with the rapid development of the times, the need for identity recognition systems is also increasing. Introducing individuals in traditional ways is still less effective than biometric systems because, compared to conventional methods, biometric systems are safer and are not easily stolen, imitated, or accessed by any unauthorized person.

This final project research has been carried out by designing a simulation system for individual identification through iris eyes images using the Histogram of Oriented Gradien (HOG) method for image extraction, where the iris eyes image previously went through the pre-processing stage of pre-processing. The stages include cropping, resizing, and converting RGB images to grayscale. They were continued with classification using Artificial Neural Network (JST) Backpropagation. The dataset used is primary data taken directly through smartphone cameras from 30 individuals.

Based on the test results and analysis of the Histogram of Oriented Gradien method using an image size of 128×128 pixels, parameters of Cell Size 16×16 cells, Bins Numbers 12, Size Block 2×2 cells, L2-Hys normalization scheme, and JST backpropagation classification with Random state value 1, Learning Rates 0.001, Epoch 200, Hidden Layer 100 with the system's sigmoid activation function can produce a performance system with the most significant performance accuracy of 91.93% and a computation time of 40,548 seconds using 1500 training data and 1500 iris eyes image test data.

Keywords: Biometrics, Iris, *Histogram of Oriented Gradient* (HOG), Artificial Neural Network (JST) *Backpropagation.*