ABSTRACT

Biometric recognition system is a pattern recognition system that uses the characteristic physiological or behavioral characteristics to identify a person. Iris is one of the most potential physiological characteristics used in biometric recognition system. Complexity, uniqueness, and stability characteristics of iris texture can be used as a passport as the recognition.

This final project aims to implement a digital image processing by designing a system that able to recognize iris of someone. This system will be designed with the Java language using *NetBeans* software. This iris recognition system consists of a process of segmentation and feature extraction using PCA (Principle Component Analysis) on trained image and test images. The process of iris recognition is done by using *K-Nearest Neighbor* to match the feature of the trained image with the test image.

From the simulation system which has been done, we get the highest accuracy of the system which is 85.0877193%. The condition is obtained by using a value of K=1 and K=3 on the K-Nearest Neighbor method. And at the time of enactment the value of the threshold for the test images that from individuals outside the training image, the accuracy of the system becomes 84.02777778%. These conditions are also obtained using the threshold value of 6550, it means if the euclidean distance of test images with the data characteristic traits training image above 6550 then the system will not recognize the test images. The value of FRR and FAR that obtained from the threshold are 8.771929825% and 10%. The computing time between the system before being given the verification process and after given the verification, the sistem before being given the verification process is a bit faster though the time difference is not too obtrusive.

Key word : *iris recognition*, PCA, *K-Nearest Neighbor, java*