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

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