ABSTRACT

One of technology which can be a solution to maintain the security and confidentiality of information and has been proven its validity is use biometrics. Biometrics based on the shape of the physiology and natural characteristics every human being can be used for system identification. Among various human characteristics in biometrics, human identification method through pattern found on the knuckles is not developed widely yet. However, this method can certainly be used for identification because the pattern of knuckles on each human is unique and has different characteristics.

In this final project the system was designed and analyzed to identify human using patterns of finger knuckles. Finger images that used are index, middle, and ring. The system is examined using Matlab 2009a as a helping tool. The testing sample is captured and is processed based on image processing, using Principal Component Analysis (PCA) method for feature extraction and K-Nearest Neighbor for identify. The output of this system is a decision of the identity of each finger knuckle.

The best accuracy using 120 images for training and 120 images for testing is obtained with 23 Principal Components, the value of k = 1, and cosine calculation method, that is equal to 100%.

Keywords : identification, finger knuckles, digital image processing, PCA, K-Nearest Neighbor