

## ABSTRACT

Biometrics is the development of the basic method of self-knowledge by using the natural characteristics of humans as the base. The characteristics in question include fingerprint, hand silhouette, facial characteristics, retinal and iris patterns. Biometrics has the significant advantage than the traditional recognition techniques (password name, PIN number, smartcard, etc.) due to the fact that biometric characteristics of an individual can not easily imitate, unique to each person and can not be lost, stolen or destroyed. The characteristics discussed in this thesis is the image of the nose. This is because the nose is permanent, meaning that under no circumstances will the human nose will not experience changes in size and shape changes.

The purpose of this thesis is to create a software system based on image recognition of individual recognition of the size and shape of the ear using wavelet and K-Nearest Neighbor. There are 15 individual samples in which each individual is taken 10 pictures ear consisting of 5 images left ear and right ear with 5 images total to 150 Pieces of data.

Ear image taken using a digital camera resolution of 6 Mps henceforth be processed beginning with the me-resize 800x600, RGB converted to grayscale proceed to the black and white with threshold value 0.5 and the edge detection threshold value of 0.3 and subsequently with the level 3 wavelet transform method so as to produce multiresolution from the original image. At the time of the classification using the K-Nearest Neighbor who will use the value  $K = 3$  to obtain the maximum accuracy and the expected success rate over 80%.

Keywords: Biometric techniques, Pre-Processing, Grayscale, Wavelet, K-NN