

ABSTRACT

Biometrics is the development of basic methods for self identification by using the natural characteristic of human beings as its base. Characteristics in question include fingerprint, palm print, facial characteristics, retinal and iris patterns. Biometrics has the significant advantage than the traditional identification techniques (password, name, PIN number, smartcard, etc) due to the fact that biometric characteristics of an individual can not be duplicated easily, unique to each person and can not be lost, stolen or destroyed. Characteristics discussed in this final task is image of the nose. This is because the nose is a permanent sample, meaning that the human nose under any circumstances will not experience changes in size and shape changes.

The purpose of this final task is to develop software systems of individual identification based on image recognition of the size and shape of the nose using a wavelet and artificial neural network adaptive resonance theory-2. Nose image is processed beginning with wavelet transform so that resulting multiresolution from the original image. Use of wavelet transform is motivated by the results of research on wavelet transform that has the ability to create (feature) specific to the image being investigated. The wavelet transform is used here instead as feature extraction methods simultaneously also reduces the input image dimensions. Reduced image subsequently processed for classification using artificial neural network ART-2.

From the test results with feature extraction using wavelet packet decomposition level 3 and the parameters of an artificial neural network ART-2 is $\alpha = 0.1$, $\rho = 0.999$ and iteration = 3 obtained by individual recognition accuracy rate of 91,56% for training data and 86,25% for data test. FAR and FRR test system with the image of a nose that made as training image is a nose image of Putri coached as many as 10 samples so that the resulting value of 4.0% FAR and FRR of 90%.. The time required to perform individual recognition from reading the input until the result of the identification is 1.7645 seconds, so the system is expected to work in *real time*.

Keywords : Biometric, Nose Image, Wavelet Packet Decomposition, ART-2