ABSTRACT

The individuals recognition is a method that is widely used in the fields of medicine, technology, and security. Biometrics is a recognition technology based on the characteristics possessed by each person. The characteristics that are often used are fingerprints. However, fingerprints have several disadvantages, which are vulnerable to noise such as wounds, relatively small image objects are also a weakness of fingerprints. The face is a biometric object that is often used for recognition and security systems. In the face there are several characteristics that can be used in the introduction, such as the size of the eyes, nose and lips, distance of the eyes, nose and lips, as well as the pattern of depth of the parts of the face.

In this study, an individual recognition system was created with 3-dimensional facial images taken using the Kinect camera. 3D face images taken from 18 individuals. Each individual was taken 8 samples, each sample consisted of 48 photos. 48 photos represent the overall face shape. Of the 48 photos that have been taken, they will be partitioned into 3 partitions and 6 partitions. This is used to test system performance. The partition will be used as input for the feature extraction process. The method used for feature extraction is Iterative Closest Point (ICP) and is classified by the method of artificial neural networks designed using the MATLAB application.

The results of this final project produce an individual face recognition system with the best parameters, namely 6 partitions, 5th iteration, 5 hidden layers and feed forward neural network algorithms and obtained performance results of 78.57%. This system can be an alternative to identifying one's identity. In addition, it is hoped that this research can be a reference for further research on the introduction of individuals based on 3D imagery in the future.

Keywords: 3-dimensional face, biometrics, Iterative Closest Point (ICP), ANN