

## ABSTRACT

Face recognition systems are widely used in the fields of identification and authentication. The current approval system uses a biometric technique that allows a device to be used physically by humans using fingerprints, face, and retina. In this case, image processing is processed in the form of two-dimensional or three-dimensional images. Facial recognition has been implemented in various fields, one of which is the security system. Based on its development, the technology expected by this system can work accurately.

In this Final Project, facial image processing will be implemented in three dimensions, where the image is extracted using the Sports Wavelet method and the scheme uses the Hidden Markov Model (HMM) method. and will be done so as to produce a new image of the kernel. HMM is a method of classifying features in the form of statistics in the description of various types of data. This method utilizes a transition in the form of probability.

System performance in this Final Project is viewed from the level of system accuracy and computational time. The better the system increases the data, the better the resulting accuracy. By using gabor wavelet extraction method and HMM classification can produce an assessment rate of 28.5714%. While the K-Neighbors  $4 \times 4$  method produces the closest level of 73.33% using a filter with a total face data of 196 training data and 84 test data.