

## ABSTRACT

Home security systems today tend to use a biometric characteristic of man as a key. Examples such as using a fingerprint, iris and retina of the eye or voice as a password. At this final project facial pattern recognition is used to recognize faces and distinguish it from homeowners with who are not homeowners face. This is because every human face has a special different characteristic.

At this final project required an algorithm that detects the face in an image and facial recognition features. For the face area tracking process is used for recognition algorithms CamShift and facial features used Gabor Filter method. The programming language used was *Matlab 2009a*.

Test results show that the tracking system based on skin color with CamShift algorithm is good enough. Applications are made to detect the user's face while doing the movement and change pose or position of the face. Human face recognition system using Gabor filters achieve 86% accuracy rate with a face database of 100 images consisting of 10 individual images with 10 poses. Truth and accuracy rate of 83% when the distance to the capture device users by 50 -75 cm, while for a distance of 75-100 cm have a 79% accuracy the truth. The system also remains accurate for the presence of noise by 66%. While the computing time required for preprocessing the range in the 0.3 - 0.4 seconds, for the convolution of the test images Gabor filter (Gabor kernel) takes about 3.5 - 5.5 seconds and 16-21 seconds for each recognition process.