

IMPLEMENTATION OF HISTOGRAM OF ORIENTED GRADIENTS (HOG) METHOD FOR FACE RECOGNITION IN HOME SECURITY SYSTEM

Anthares Ramadhisa Ramadhani

*Electrical Engineering Study Program, Faculty of Science & Technology
University of Technology Yogyakarta
Jl. Ringroad Utara Jombor Sleman Yogyakarta
E-mail : Masantharess@gmail.com*

ABSTRACT

This study aims to design and implement a home security system using the Histogram of Oriented Gradients (HOG) method for face detection. The HOG method is used because of its ability to detect important features on the face, allowing the system to perform face recognition with good accuracy. Testing of this system is divided into two parts: Testing Against Familiar Faces and Testing Against Unfamiliar Faces. In the first test, the system is expected to be able to recognize faces detected by the camera and the door lock will open after verification for 3 seconds, which is indicated by the sound of a buzzer. The second test aims to detect unknown faces, where the system will take a picture of the face and send it directly to the Telegram application. Testing is carried out based on three parameters: distance, lighting level, and use of attributes on the head or around the face. Identification errors are caused by distance factors and lighting levels that affect the camera's ability to recognize registered faces, resulting in taking pictures and sending them to Telegram. The results of the system accuracy test show that the system as a whole can function well as expected, with an accuracy level of 100%.

Keywords: *Face Recognition, Home Security, Histogram of Oriented Gradients (HOG), Image Processing, Computer Vision*