

Abstract

Security system become a principal need in a gadget. With authentication system, that used to identify privileged user to access gadget and rejects non-privileged user. One solution of authentication system implementation is biometric, which using physical feature of user, like face pattern, as unique feature. To implement biometric as authentication system, it requires a method that extract unique feature from user face.

Scale Invariant Feature Transform (SIFT) is an algorithm that can be used to extract unique feature from an object, that be called keypoint. This algorithm has been applied as object recognition, which has superiority that invariant from condition changes, like object rotating, scaling, and illumination when capturing object image. In this Final Project, SIFT will be applied as feature extraction method in authentication system. In keypoint classification process, between input and template image, it will be using Euclidean Distance method to measure similarity level between those two keypoints.

System performance testing be done towards variation of the distance condition and illumination change. Testing result be measured with FAR and FRR parameters. FRR is used to measure system error rate when rejects privileged user to access gadget. FAR is used to measure system error rate when grants access to non-privileged user. Validity level of classification process in testing be measured using Precision parameter.

From the system testing of 5 privileged users, it gets result that authentication system that have been built has average of FRR by 16% in normal condition, 22% in distance of 45 cm, 48% in distance of 60 cm. In result from variation of illumination changes, the average of FRR by 100%. In all testing condition, the FAR is 0%.

In Precision parameter from the testing result shows that classification process of privileged user has better validity rate than non-privileged user in all condition. Precision level of privileged user ranges from 56% to 93%, and non-privileged user ranges from 11% to 64%.

Key Words: Biometric, Authentication System, SIFT, *Keypoint*, *Euclidean Distance*