Abstract

Security is an important aspect of a smart home. One type of security used is facial recognition technology. This technology can be used to detect the faces of people who have access and who do not have access. In implementing this technology, Iriun Webcam, machine learning models, tuning, and the OpenCV python library which utilizes the Haar Cascade Classifer are used.

Iriun Webcam will be installed on smartphone and laptop devices connected to the internet. The smartphone will send the image while the laptop receives, processes, then detects the face in the image. The machine learning model used was selected using KNN, SVM, and Decision Tree. Based on the selection, KNN got the highest score on the accuracy metric of 97.28%, precision of 93%, recall of 97%, and f1-score of 97%. Then the metrics were improved using GridSearchCV tuning which resulted in an accuracy of 98.84%, precision of 98%, recall of 98%, and f1-score of 98%. By utilizing KNN, OpenCV, and Haar Cascade Classifer, the system is implemented and is capable of detecting faces in real-time.

***Keywords**: machine learning, KNN, SVM, decision tree, iriun webcam, GridSearchCV.*