

Abstract

Currently, home security remains a special concern not only in big cities but also in suburban areas, especially for people who do a lot of activities outside the home. A strategy is needed that functions to improve and ensure security and monitoring systems around the house that can be monitored remotely. Smart Home Security which uses motion detectors is one of the solutions to this problem. This research designs and analyzes motion detectors for integrated home security using four Passive Infrared sensors. When the Passive Infrared sensor module detects movement, the detection results will provide a motion detection notification sent to the homeowner's smartphone via the Blynk application. The datasets were divided in a 70:30 ratio. Dataset testing using the bagging methods was carried out to find out the data matrix. From the test results, Confusion Matrix calculations both before and after tuning produce the highest value through the Bagging method. The Bagging method has 5 classifiers, namely Random Forest, Extra Tree, KNN, SVC, and Ridge, which requires a longer computation time compared to the Max Voting and Boosting methods. The confusion matrix value of the test data after tuning gives 95.7% for accuracy, precision, recall, and F1-Score. The results show that the proposed prototype can be used as a home security model.

Keywords: *Smart Home Security, PIR Sensor, Ensemble, Machine Learning.*