Abstract

The PIR sensor is capable of detecting object movement. Several studies in the literature have utilized the sensor in smart city and smart home applications. However, existing innovations are less accurate because the PIR data prediction method is not optimal, and the response to movement data is slow. Therefore, this final project research addresses these issues by proposing the development of a smart home security system based on machine learning that utilizes PIR sensor data to obtain accurate object movement predictions. The proposed system processes PIR data into normal and abnormal object movement features, which are then applied to several machine learning algorithms to obtain a model that can predict object movement. To speed up the response, this research also studies the effect of the number and placement of PIR sensors. The test results show that the best performance in this research prototype is achieved using the Random Forest algorithm with an accuracy of 74%, precision of 87%, and sensitivity of 74%.

Keywords: Machine Learning, Sensor PIR.