

Abstract

Passive Infrared (PIR) sensor-based Home Security Systems have been created and proposed by several researchers. Generally, PIR is used to collect data on the movement of suspicious objects related to potential home security. From existing research, the accuracy of the observed motion detection depends on the number of sensors installed. The more sensors the accuracy we get, the better. However, as the number of sensors increases, the detection time also increases. In general, the accuracy obtained on the four sensors is about 90%, with a detection time of 3 seconds. This final project research provides a solution to the above problem, by proposing a real-time deep learning model so as to reduce the detection time of suspicious objects. To that end, this research also analyzes the performance of several Deep Learning methods in order to get the best performance results (object detection process time) in the context of home security. The methods used in this research are: 1. Literature study of Deep Learning algorithms. 2. Experimentation with the algorithm. 3. Analyze the best algorithm. It is expected that this final project research can produce detection accuracy of more than 90%.

Keywords: *Machine Learning, Deep Learning, PIR Sensor*