

ABSTRACT

Crime in Indonesia is still relatively high. Data from Badan Pusat Statistik (BPS) shows that in 2018 there were 90,757 burglaries of houses in Indonesia. On the other hand, the other hand, the movement of community activities has a higher mobility so often have to leave home. To overcome the crime of theft against a relatively house, it is necessary to develop a Security and Home Automation system that can be controlled remotely using IoT technology.

The method used is to design and create a prototype of the IoT Security and Home Automation system. Users can monitor or control their homes wherever they are. Users communicate with devices through cellular networks connected to the IoT system using PIR sensors. The PIR sensor will detect if there is movement and send image data from camera to an email. While aspect of control we are using an Android application. This application can control the LED lamp, and servo motor used for a door. System testing is done through functionality, network quality (Quality of Service) and tool endurance test.

The results showed that the system designed and made capable of functioning in terms of PIR sensor can detect motion at distances of 2 meters, and 5 meters in both dark and bright conditions. Android application can control LED and servo motor. Based on network quality testing, from 5 test sites it was found that average bandwidth 8.692 Mbps, throughput was 99.82%, delay of 27.121 ms, and had a packet loss of 1%. Referring to the TIPHON standard, the network quality test results are included in the very good category. The results also showed that at leisure time had better network quality compared to busy hours. Whereas based on the results of the instrument endurance test, it was found that the device was made could meet the requirements by IBM standards, with service level uptime of 98.248%.

Keywords: *Security and Home Automation, IoT, Raspberry Pi, cloud, PIR sensor, Android.*