ABSTRACT

Theft of livestock, especially goats, is a common problem that often occurs in rural areas. This happens because there is no good maintenance system and a lack of attention. Security that is often used generally only uses a padlock. The use of these padlocks makes them very vulnerable to being damaged easily. Therefore, a good and effective security system is needed so that livestock owners can protect their livestock from theft. In the research that will be carried out, an Internet of Things (IoT)-based tool will be designed that aims to detect the goat pen security system in real time using PIR sensors, hall effect sensors, and ESP32CAM as the control center. The research results show that the PIR sensor succeeded in detecting human objects at a distance of 1 to 7 meters and successfully sending notifications via telegram. The ESP32CAM managed to respond well by taking pictures when the PIR sensor detected an object or movement. And it will immediately send the results of the image capture to Telegram. Then the hall effect sensor produces a voltage value of 0.11V to 0.12V when the sensor detects a magnetic field. On the other hand, it will produce a voltage value of 3.5V when the sensor does not detect a magnetic field. The sensor successfully sends a notification to Telegram if the sensor does not read the magnetic value around it. Testing shows that all hardware and software components can work according to their functions. Then, the Telegram notification test produced very good Quality of Service (QoS) values, with an average value for the throughput parameter of 16Kbits/s and 21Kbits/s and an average delay value of 0.09ms.

Keywords **:** *ESP32CAM, PIR Sensor, Hall Effect Sensor, Telegram*