IoT Based Outdoor Smart Intruder Alert System

P.S. Aagash and R. Vaishali*

Department of Physical Science, Faculty of Applied Science, University of Vavuniya, Sri Lanka.

*rvaishali@vau.ac.lk

The intruder alert systems are intended to be used in private, restricted, and domestic home areas to alert people when someone enters the designated locations. By notifying the owner through the mobile application when the system detects an intruder in the area, the intruder alert system prevents theft and unauthorized entry of people to restricted places. We propose an IoT-based intruder detection system to prevent people from entering target places without permission. The suggested system uses a PIR sensor and an Arduino UNO to detect intrusions, and the cloud-based Blynk application is utilized to alert the user of the incursion. A warm body can be detected by the PIR sensor; however, it could be either a human or an animal. When PIR detects motion, the system is triggered to use an ESP32 camera module to take a real-time image of the area in order to properly recognize the warm body in the motion. The system tries to identify whether a human is present in the real-time image using Python, OpenCV, and the background removal technique. When a human is detected, the device declares it to be an intruder and uses the Blynk application to alert the owner's mobile device. Due to the widespread accessibility of the internet today, the mechanism included within the Arduino UNO will deliver the message utilizing a wireless network module. The owner will receive a notification with the alarm message and a time and date-stamped video. An image that was collected by the system is stored in the cloud for subsequent use.

Keywords: Arduino, Background Subtraction, Intruder Detection, IoT, OpenCV