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Development of a Lower-Cost Surveillance System Using an ESP32-Cam, IoT, and Twilio Application Programming Interface

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Abstract

Security is a contentious issue in society and the globe as a whole. It is hard to exaggerate the importance of safety in a world plagued by vandalism and crime, yet it is critical. While the use of video surveillance equipment has increased significantly in recent years, the cost of video surveillance equipment has increased relative to places of low income across Africa. This research work aims to develop a lower-cost, a real-time security monitoring system that combines the ESP32 with an OV2640 (OV) camera to detect motion via a pyroelectric infrared (PIR) sensor and the Internet of Things in order to monitor activity and alert the user via SMS text in the event of an intruder and subsequently transmit the video captured through the use of the TWILIO application programming interface (API). On deploying and testing the system, the result indicates that as long as the visual representation of data on the Ismart platform corresponds to the actual video taken in real-time in the overage area and the motion sensor unit functions properly, resulting in a lower-cost operational surveillance system. The time required to send data is dependent on the volume of traffic on the network and the speed of the internet connection. It is concluded that the proposed system is less expensive than alternatives while still retaining its efficiency.

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