ABSTRACT

Various problems that always threaten the security of home owners are cases of theft. This concern makes people increasingly want to protect their personal belongings at home, one of which is by using a safe or cupboard. However, because there are still many traditional methods used in safes such as cards or physical keys which have potential weaknesses because they can be lost or damaged. This often does not provide an adequate solution. Therefore, to overcome this problem by carrying out updates by implementing a double security system for safes using QR Code and Face Recognition technology which makes it possible to prevent data manipulation. The QR Code scanner and face detection tool uses the ESP32-Cam microcontroller, and can view security status via integrated Telegram. By utilizing these two technologies, it can help reduce people's concerns and provide a double security system for safes. The research results show that the ESP32-Cam can only detect QR Codes in valid/invalid status at a distance of 15-30 cm. The success results in the suitability of the ESP32-Cam function for facial recognition is 100%, where the ESP32-Cam can recognize registered faces, the selenoid will open the safe door, and when the face is not registered, the selenoid will not open, but in sending telegram notifications all messages are successfully sent. Testing of QoS results shows that the test produces very good index values in accordance with ITU-T standards with an average throughput value of 89,665 Kbits, packet loss of 0% and delay of 36 ms for QR Code and 59.39 ms for face recognition.

Keywords* : *Safe, ESP32-Cam, Face Recognition, QR Code, Telegram