ABSTRACT

Enhancing security in military facilities such as weapons storage warehouses is crucial to prevent unauthorized access and potential misuse. In this final project, a facial recognition-based security system was developed, integrated with a camera and Raspberry Pi 5 microcontroller to control entry and exit to the weapons warehouse. The system uses YOLOv8 for real-time face detection and Local Binary Pattern Histogram (LBPH) for identity verification based on pre-registered face data. When an authorized face is recognized, the system automatically unlocks the door using a relay module and electric drop bolt lock. Test results show that the system has high precision in rejecting unauthorized access, with a response time of 1–2 seconds. However, accuracy decreases when the user is more than 0,5 meter away from the camera or when wearing accessories such as hats or glasses. This system is considered effective in replacing conventional methods, as it significantly improves efficiency and physical security in access control processes for weapons storage facilities.

Keywords: weapons warehouse security, face recognition, YOLOv8, LBPH, Raspberry Pi, automatic access control.