ABSTRACT

Based on the type, the majority of crime cases that occurred in Indonesia in 2023 were theft with aggravation (curat), namely 30,019 cases. Referring to Law Number 1 of 2023 concerning the Criminal Code (KUHP), theft is theft committed under certain circumstances so that the punishment becomes more severe. Then in second place is the crime of ordinary theft with a total of 20,043 cases. Home is one of the targets of theft. Through a survey that has been conducted, as many as 97.7% of Indonesians still use manual locks. The survey shows the problems that people have felt when using manual locks including not knowing the condition of the door when traveling, and keys left behind or lost.

As a solution, this project developed a Raspberry Pi*-based system and mobile application that can replace the manual lock into a digital lock that can monitor the condition of the door and who is accessing along with the type of authentication using facial recognition. This system is designed to provide a more efficient and simple way to replace manual locks. With this system, it is expected to help residents of the house, especially parents and the elderly in home security and ease of accessing the door.*

System testing shows good performance on face recognition with an optimal configuration of 40% training, 10% validation, and 50% testing, with a batch size of 128 and 50 epochs. In addition, UPS *power endurance testing proved its reliability in providing backup energy during a 10-hour power outage, ensuring the system remained operational without interruption. Although performance degraded in low light, the integration between the mobile app and the* backend *was effective for data management and notifications.*

Keywords: *Backend, Digital lock, Face recognition,* Firebase*, Mobile application,* Pi *camera,* Raspberry Pi*, Theft, and* UPS*.*