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BIOMETRIC DOOR LOCK IOT SYSTEM

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ABSTRACT

Traditional door lock systems have limitations and can be vulnerable to break-ins and unauthorized access. With advancements in technology and the emergence of the Internet of Things (IoT), there is an opportunity to develop smarter and more secure door lock solutions. By integrating IoT capabilities, such as biometric authentication, remote monitoring, and encrypted communication, it is possible to create a robust and convenient smart door lock system. This project aims to address the shortcomings of traditional locks and explore the potential of IoT technology in improving home security. This system will utilize hardware and software to achieve the objective. The hardware for this project use, Fingerprint sensor to provide easy and simple way to enter the house, RFID reader, for using a card to get in the house, and keypad lock for a more secure way to enter the house by entering using own's password. These sensors work in the same way by using a more secure way from traditional key to lock or unlock door houses. For the software, using IoT, the system can be use by using an application from the smartphones to unlock or lock the door, other than that is to monitor the system by displaying notifications. Therefore, the project contributes to the advancement of smart home security and offers practical insights for biometric door lock systems.

Keywords— Door lock, IoT, Biometric door lock, RFID, Fingerprint

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1.1 Introduction

In an age where technological advancement has revolutionized various aspects of life, security systems have remained a critical area of focus. The project "Biometric Door Lock IoT-based" is designed to address contemporary security challenges by integrating advanced technologies into traditional locking mechanisms. This approach combines the reliability of biometric authentication with the flexibility and control offered by IoT technology, aiming to provide a comprehensive solution to modern security needs.

This project aims to navigate these challenges by introducing a sophisticated locking system that harnesses the security and precision of biometric authentication, particularly fingerprint recognition. The uniqueness of an individual's fingerprint offers an unparalleled level of security, making unauthorized access exceedingly difficult.

Traditional locks, while common, have several vulnerabilities. An experienced burglar can quickly pick a standard lock or snap a deadbolt, leading to a break-in within seconds. This presents a major security concern as it highlights how traditional locks might fail to effectively deter criminals. Furthermore, the inconvenience of managing physical keys, which can be lost or forgotten, adds to the practical challenges of traditional locks. In fact, studies like the "Lost & Found Survey" by Pixie indicate that Americans spend a considerable amount of time each year just looking for misplaced items, including keys. This can lead to situations where accessing one's own home becomes a hassle, especially in emergencies where quick entry is crucial. Comparatively, smart locks offer several advantages over traditional locks. They can be operated remotely, do away with the need for physical keys, and are not affected by power outages as they are usually battery-operated. Additionally, smart locks provide enhanced features like biometric recognition, adding an extra layer of security.

Moreover, the integration of IoT technology into this system propels it into the realm of smart