

IoT-enabled Secure Access Smart Door Lock with Biometric Authentication and Remote Connectivity

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The Smart Door Lock System utilizes IoT technology to revolutionize safe access control, integrating biometric authentication and remote connectivity. With a focus on enhanced security, convenience, and seamless integration, the system aligns with existing research in the field. Fingerprint sensors ensure accurate and user-friendly biometric recognition, while GSM modules enable remote access and control. Acknowledging limitations such as GSM network dependence and biometric recognition constraints, the system emphasizes user-friendly operation and hardware integration. Overall, the Smart Door Lock System offers a valuable contribution to IoT-based secure access control, aiming to enhance security, convenience, and user experience in the era of smart and networked objects. The Smart Door Lock System employs high-precision fingerprint sensors – AS608 Fingerprint Scanner Module, utilizing advanced capacitive or optical technology to capture and analyze fingerprint patterns for accurate user identification. Integrated SIM900L GSM Module (Global System for Mobile Communications) enable remote communication via mobile networks, facilitating convenient access and control from anywhere with cellular coverage. Additionally, the system enhances security with HC-SR501 Passive Infrared (PIR) Motion Sensor that sense movement near the door, triggering alerts to deter unauthorized access. Door position sensors-MC-38 Magnetic Reed Switch Sensor provide real-time feedback on the door's status, augmenting situational awareness for comprehensive security monitoring. Through the seamless integration of these technologies, the system ensures robust access control while prioritizing user convenience and safety.

Keywords: *Smart door lock; Remote access door; Fingerprint lock; IoT integrated lock*