Project Vision: Finock

Introduction:

The fingerprint door unlock system aims to provide a secure and convenient way of controlling access to doors. By utilizing fingerprint recognition technology and Arduino Uno, along with a 12V solenoid lock and 5V relay, the system ensures that only authorized individuals can gain entry. This project aims to create a reliable and user-friendly solution for enhancing security in residential or commercial settings.

Background (Survey):

Prior to developing the fingerprint door unlock system, a survey of existing access control systems and their limitations will be conducted. This survey will help identify the strengths and weaknesses of current solutions, enabling us to create an improved and innovative system.

Objectives and Targets (with Gap Analysis):

1. Objective: Develop a remotely unlockable door

- Target: Connect this system with Wi-Fi module which enables us(Primary user of device) to unlock this door from anywhere

2. Objective: Design an efficient hardware interface using Arduino Uno.

- Target: Create a reliable and seamless integration between Arduino Uno, the fingerprint sensor module, the 12V solenoid lock, and the 5V relay.

3. Objective: Implement user-friendly registration and management features.

- Target: Enable users to easily register their fingerprints and provide administrators with intuitive tools for managing user profiles.

4. Objective: Enhance system security and data protection.

- Target: Implement encryption mechanisms for storing fingerprint data and incorporate additional security measures to prevent unauthorized access.

5. Objective: Develop a user interface for system configuration and monitoring.

- Target: Create a web-based or mobile app interface that allows users to configure system settings and view access logs.

Semester Milestones with Timelines:

- Milestone 1: Research and Survey

- Tasks: Conduct a survey of existing access control systems and technologies.

- Timeline: 2 weeks

- Milestone 2: Hardware Setup and Integration

- Tasks: Connect Arduino Uno, the fingerprint sensor module, the 12V solenoid lock, and the 5V relay.

- Timeline: 1 week

- Milestone 3: User Management and Security Implementation

- Tasks: Create user registration and management features, implement Wi-Fi mechanisms, and enhance system security.

- Timeline: 3 weeks

- Milestone 4: User Interface Development

- Tasks: Design and develop a user-friendly interface for system configuration and monitoring.

- Timeline: 2 weeks

- Milestone 5: Testing and Debugging

- Tasks: Perform comprehensive testing, identify and fix any issues or bugs.

- Timeline: 2 weeks

- Milestone 6: Documentation and Presentation

- Tasks: Prepare project documentation, including system design, implementation details, and user manuals. Present the project findings and outcomes.

- Timeline: 1 week

Future Scope:

The fingerprint door unlock system lays the foundation for further enhancements and expansions. Some potential areas of future scope include:

1. Integration with smart home systems: Connect the fingerprint door unlock system with other smart devices to enable seamless integration and control.

2. Multi-factor authentication: Combine fingerprint recognition with other authentication methods, such as PIN codes or facial recognition, to further enhance security.

3. Cloud connectivity: Implement cloud-based storage and management of user data and access logs for remote access and monitoring capabilities.

4. Voice control: Integrate voice recognition technology to allow users to control the system through voice commands.

5. Integration with surveillance systems: Link the system with CCTV cameras or other surveillance devices to capture and record access events