



Electronic Design Project 415 (ECD811S)

# Automatic Door with Remote Control Locking

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# Objectives

- ❖ Design and implement an automatic door system with remote control locking
- ❖ Key Components: Raspberry Pi 3, ultrasonic sensor, keypad
- ❖ Purpose: Enhance security and convenience in access control systems

# Project Design

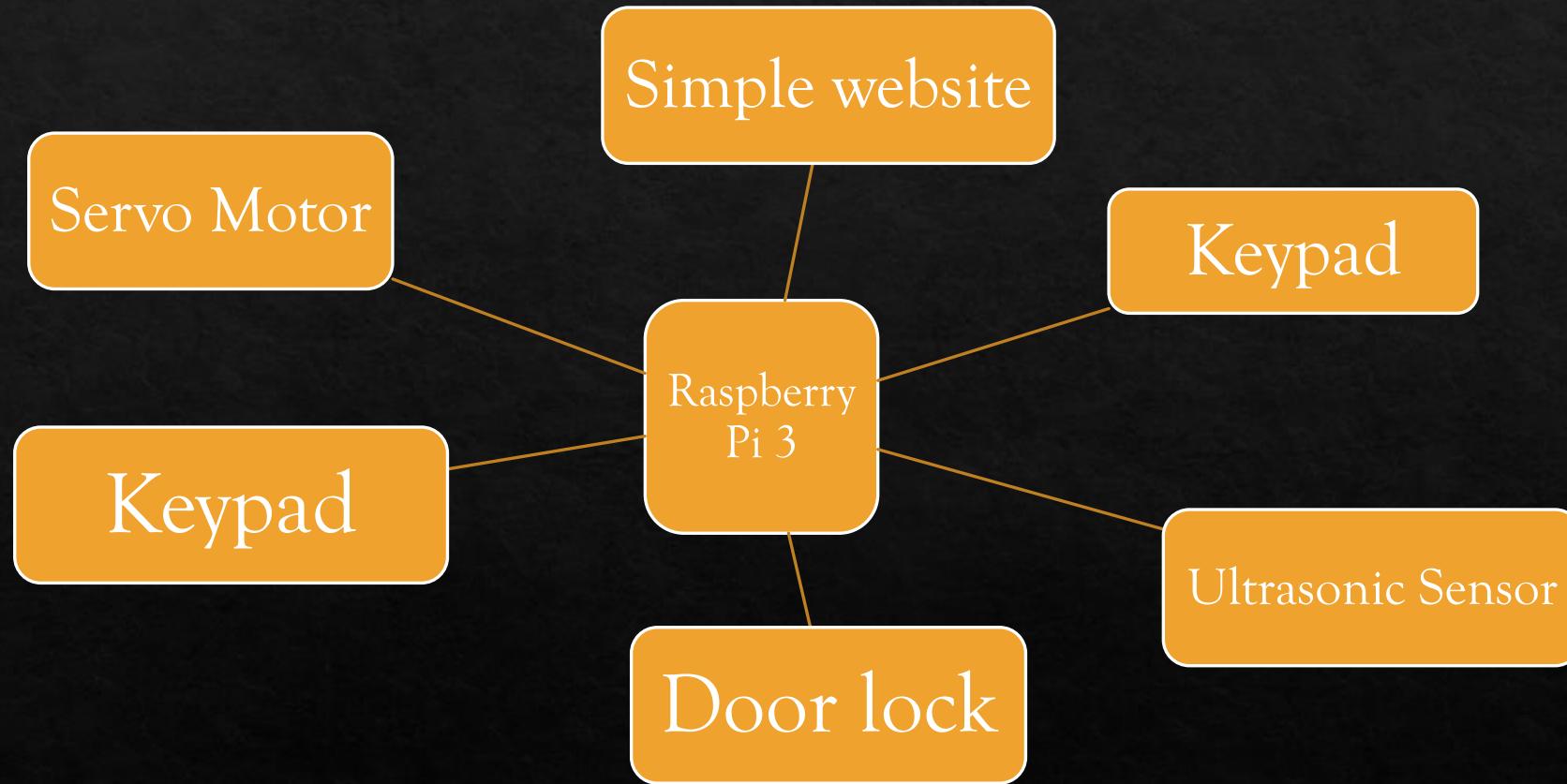
- ❖ Hardware Components

hardware components involved in the project, such as Raspberry Pi 3, ultrasonic sensor, keypad, and servo motor.

- ❖ Software Components

Python programming language, Flask framework for web interface.

# Project Design (Cont.)



# Results

- ❖ Functionality Overview

Key functionalities of the automatic door system, keypad input validation, remote control via web interface, and proximity detection with the ultrasonic sensor.

- ❖ Performance Specifications

Quick response times, high accuracy, and continuous operation without failure.

# Analysis

- ❖ Implications

- Enhanced security and convenience

- Practical applications in various settings, including homes, offices, and public buildings

- ❖ Comparison

- existing systems, don't or not cost-effectiveness and are with no added functionality.

- ❖ Limitations

- The shift from Blynk to a web-based interface.

- Solenoid lock mechanical problems

# Recommendations

- ❖ Integration of Facial Recognition Technology

Description: Incorporate facial recognition to enhance security by ensuring that only recognized and authorized individuals can gain access.

Benefits: Adds an additional layer of security; improves user experience by providing a contactless entry method.

- ❖ Voice Control Integration

Description: Implement voice control features using technologies like Google Assistant or Amazon Alexa.

Benefits: Enhances user convenience by allowing hands-free control of the door; useful for accessibility purposes.

# Recommendations (Cont.)

## ❖ Battery Backup and Power Management

Description: Implement a battery backup system to ensure continuous operation during power outages.

Benefits: Ensures the system remains functional in case of power failure, maintaining security and accessibility.

## ❖ Scalability and Customization

Description: Design the system to be easily scalable and customizable for different types of doors and environments.

Benefits: Broadens the potential application areas; allows for easy adaptation to both residential and commercial settings.

# Conclusion

- ❖ By incorporating these recommendations, the automatic door system can be further enhanced to provide superior security, convenience, and integration with modern smart home technologies. Continuous improvement and adaptation will ensure the system remains relevant and effective in addressing the evolving needs of users.

# References

- ❖ Ogunnusi, A. O., et al. (2019). Design and Implementation of an Automatic Sliding Door System.
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- ❖ Smith, J. (2018). Raspberry Pi Automatic Door Opener.
- ❖ Patel, K. (2020). Raspberry Pi Smart Door Lock