Voice Controlled ESP32 Smart Switch Board

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Introduction

- Smart homes have become increasingly popular over the past few years.
- They offer a level of convenience and control that was previously unavailable.
- Our project is designed to take smart home automation to the next level.
- The ESP32 Switch Board is a low-cost, low-power, wireless switch board that can control various electrical devices in the home.
- Apart from the convenience and ease-of-use benefits, our project also has social and environmental benefits.

Methodology

- Hardware Design
- Software Develpoment
- Cloud Integration
- Testing and Optimization

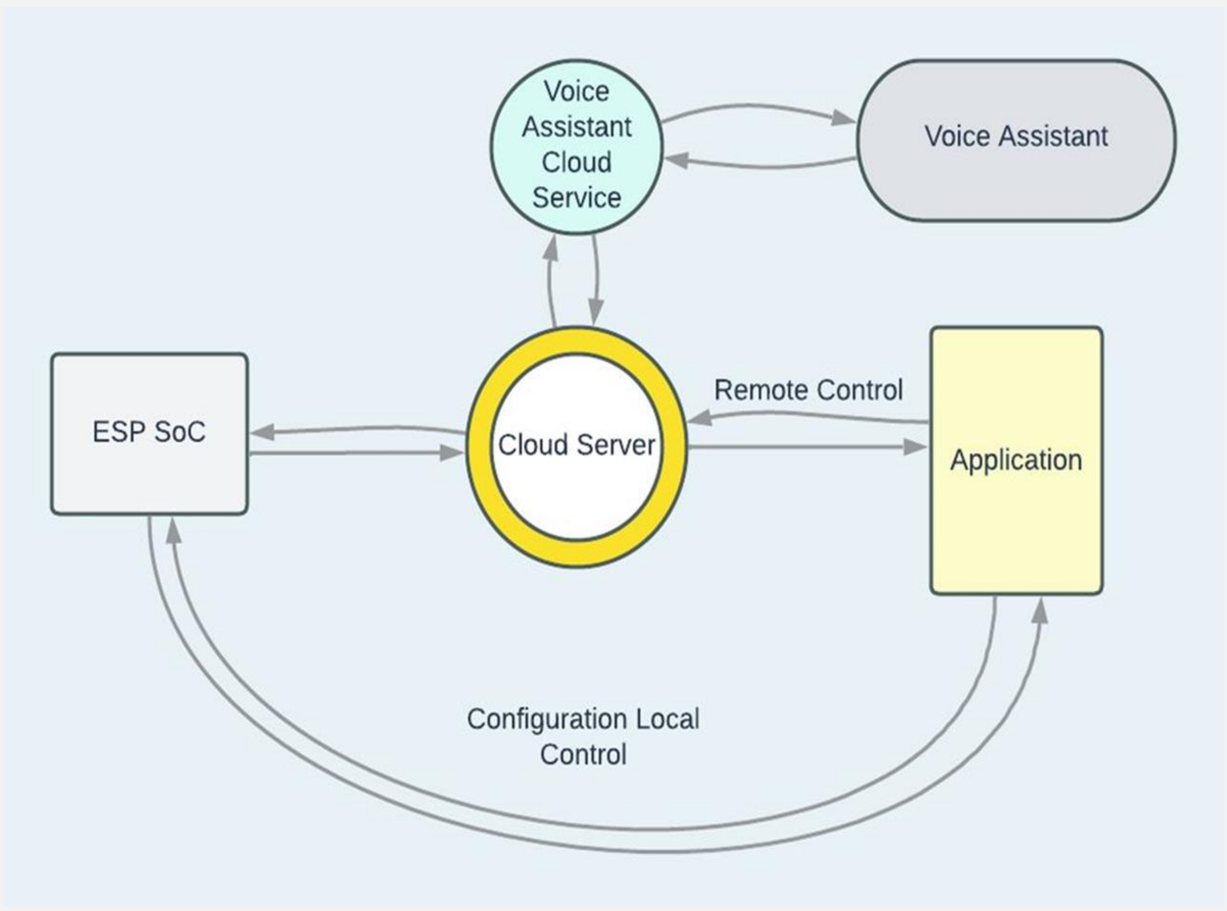

Fig. 1: Flow Chart of the model

Conclusions

- A voice-controlled smart home automation system can provide many benefits, including convenience, energy efficiency, and enhanced security The system allows users to control their home devices using their voice without replacing old traditional switchboards.
- Other important considerations include cost, data privacy, and security.
- Additionally, advancements in AI technology and the integration with other smart home devices and platforms offer exciting opportunities to level up the system and create a more advanced, user-friendly, and intelligent system.

Future Work

Fan Speed Manual Controller:

We are planning to implement manual fan speed regulation in our ESP32 controlled smart switch board.

Objectives

- Cost Effectiveness
- Ease Accessibility
- Better Connectivity

Societal Impact

- The novelty of Voice-controlled ESP32 Switch Board with Amazon Alexa/Google Home Integration lies in its ability to integrate two popular voice assistants, Amazon Alexa and Google Home, with an ESP32-based smart switch board
- The ESP32 microcontroller is a powerful and low-cost solution that can control a wide range of sensors and actuators, making it an ideal platform for home automation projects. The switch board can be operated through voice commands as well as on a manual basis without replacing old traditional switch boards.

Experimental Results

- Voice Controlled Devices and Appliances
- Integration with Smart Home Systems
- Customizable Settings and Preferences
- Energy Efficiency
- Remote Access

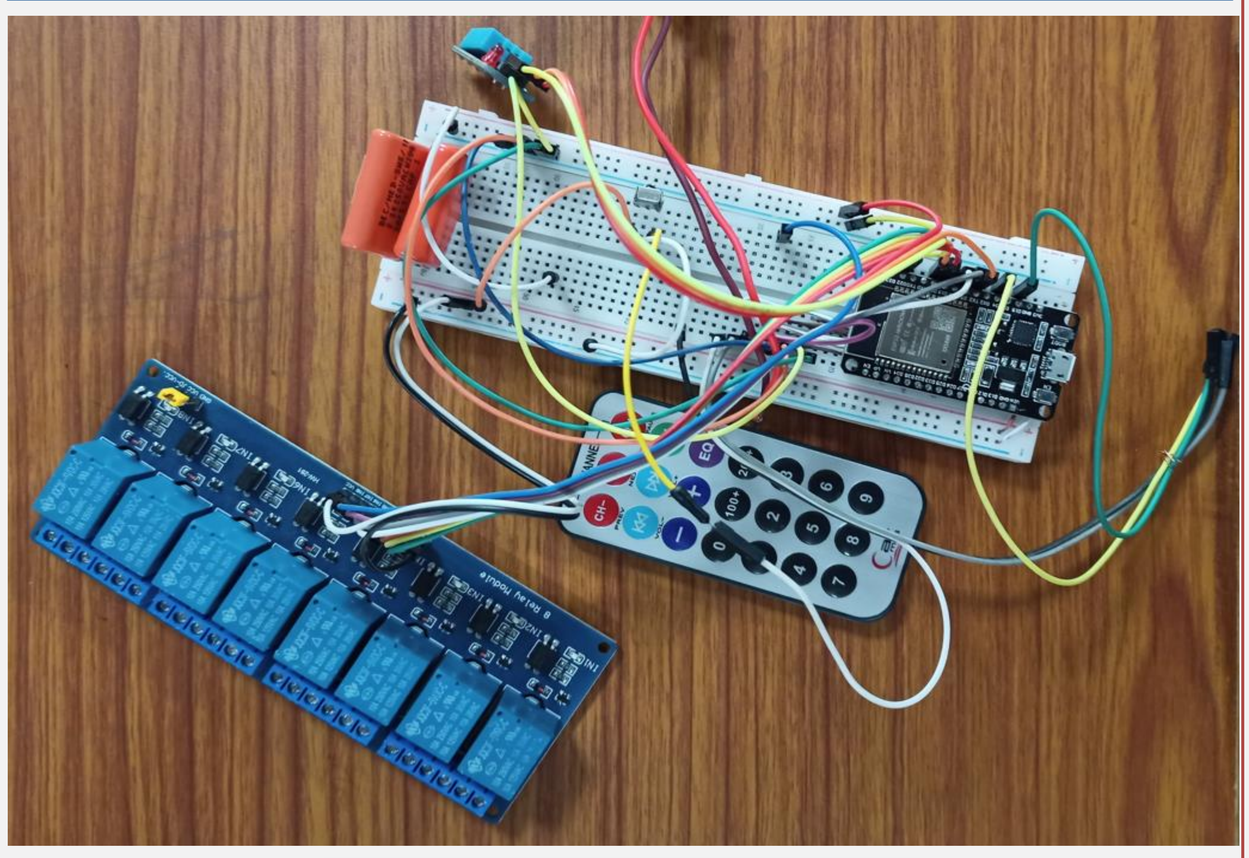

Fig. 2: sample figure

References

1. Mohamed Abd El-LatifMowad, Ahmed Fathy, Ahmed Hafez “Smart Home Automated Control System Using Android Application and Microcontroller” International Journal of Scientific & Engineering Research, Volume 5, Issue 5, May-2014 ISSN 2229-5518
2. Delgado, Armando Roy et al. “Remote-Controlled Home Automation Systems with Different Network Technologies.” (2006).
3. S. Folea, D. Bordencea, C. Hotea and H. Valean, "Smart home automation system using Wi-Fi low power devices," Proceedings of 2012 IEEE International Conference on Automation, Quality and Testing, Robotics, Cluj-Napoca, Romania, 2012, pp. 569-574, doi: 10.1109/AQTR.2012.6237775.
4. N. Singh, Shambhu Shankar Bharti, R. Singh and Dushyant Kumar Singh, "Remotely controlled home automation system," 2014 International Conference on Advances in Engineering & Technology Research (ICAETR - 2014), Unnao, India, 2014, pp. 1-5, doi: 10.1109/ICAETR.2014.7012867.