Voice Controlled Home Automation System

Abstract

This project demonstrates controlling electrical appliances using voice commands. Using NodeMCU, a relay module, and Google Assistant, we build a home automation system that is user-friendly and accessible. The system is ideal for reducing human effort and is especially helpful for the elderly and disabled.

Objectives

- Voice-based control of appliances
- Improve home convenience and automation
- Introduce IoT technology in everyday life

Components Required

- NodeMCU (ESP8266)
- 4-Channel Relay Module
- Jumper Wires
- AC Appliances (Bulb/Fan)
- Android Smartphone
- IFTTT and Adafruit IO Accounts
- Power Supply

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Working Principle

The user speaks a command (e.g., 'Turn on the light') to Google Assistant.

IFTTT captures this command and triggers a webhook or Adafruit IO feed.

NodeMCU reads the feed and activates the relay to switch the appliance ON/OFF.

This communication happens over Wi-Fi, and the system responds instantly.

Circuit Diagram (Concept)

[Google Assistant] -> [IFTTT] -> [Adafruit IO] -> [NodeMCU] -> [Relay] -> [Appliances]

Voice Commands Examples

- 'Turn on the fan'

- 'Switch off the light'

- 'Activate night mode'

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Conclusion

The voice-controlled appliances system proves the effectiveness of IoT and automation in modern homes. It enhances comfort, reduces manual work, and opens doors to smart home innovations.

Future Enhancements

- Add mobile app with status feedback
- Include sensors for automation (motion, temperature)
- Add scheduling and energy monitoring