

SMART HOME AUTOMATION :

INTELLIGENT CONTROL FOR MODERN LIVING

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ABSTRACT

This project, "Smart Home Automation: Intelligent Control for Modern Living," delivers an intelligent platform to modernize home management, directly addressing the inconvenience and inefficiency of traditional manual switches. It provides a centralized hub that enhances user convenience through two primary control methods: a remote web interface for control from any location and an integrated voice command module for hands-free operation. The system's architecture is built for reliability, featuring dual online/offline functionality. This is achieved using an ESP32 web application provides a responsive user interface. By integrating these technologies with IoT sensors, the projec offers a practical and accessible solution that significantly improves convenience, energy efficiency, and overall intelligent control for modern living. The implementation leverages an ESP32 microcontroller for hardware management, including relays and IoT sensors, programmed via the Arduino IDE. This hub communicates in real-time with a Firebase cloud backend, which is, in turn, controlled by a Reactjs user application. A key feature is the system's dual-mode functionality, ensuring reliable operation both online and offline