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(57) Abstract :
ABSTRACT The evolution of Internet of Things (IoT) technologies has revolutionized the control and monitoring of household electronic devices, providing users with the convenience of seamless operation at their fingertips. This technological progress has significantly enhanced the overall comfort of individuals. Notably, elderly individuals and those with disabilities have found immense value in voice-assisted home automation systems, enabling them to effortlessly manage their devices through uncomplicated voice commands. However, the prevalent reliance on cloud-based services, exemplified by platforms like Google and Amazon, has introduced vulnerabilities to cyber threats within these systems. The necessity for a stable internet connection and a secure environment devoid of cyber-attacks becomes imperative for ensuring the reliable functionality of these systems. Unfortunately, the substandard quality of internet services in developing countries poses a barrier to accessing the full spectrum of services offered by these systems. Moreover, the absence of localization in voice assistants further impedes the widespread adoption of voice-assisted home automation systems in these regions. To tackle these challenges head-on, this research proposes the implementation of an offline home automation system. By eliminating the dependency on the internet and cloud services, this offline system can execute its fundamental functions securely, guarding against cyber-attacks and ensuring prompt responses. Beyond these core capabilities, the system introduces supplementary features such as power usage tracking and the optimization of interconnected devices. In doing so, it aims to provide a comprehensive solution that transcends the limitations posed by internet quality and localization issues, particularly in developing countries.

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