ABSTRACT

In the present day of modern era, automation technique for home appliances has become a crucial and important area in the contemporary research of present Technology as information science and technology is growing up very fast from the computing to communication. In this present work, research has been emphasized to design and develop a common platform for providing the accessibility of people over the household electrical devices not only locally, but also remotely in a secured, reliable and efficient way. The present designed system contains two main working modules. The first module is the server module that includes the core part of the system which manages controlling and monitoring of the household electrical devices available in the entire system. Another part is hardware interface module that provides an electronic circuit with a microcontroller which is responsible for triggering the proper actions to the relay drivers connected with the devices of the entire home automation system. In the server side, an integrated database is created for storing the command actions along with the time, date and the user's information for controlling different electrical devices. Then the command actions will be sent to the second module i.e. hardware interface module for firing. Hence, it can be claimed that the present work is providing the accessibility for the remote user to send their request through four different communication mechanism like SMS, Web, speech, Wi-Fi in the reference of Internet of Things and then it will stored in the common database followed by the command actions to be applied in the home electrical appliances. GSM communication is designed with the help of AT command while the web communication need internet with a web server. The Speech communication is designed with the help of an Interactive Voice Response system where the sample voice data is recognized and tested with help of two different recognizing tools like HTK and Sphinx. Both of the recognizing tools use Hidden Markov Model for recognising voice commands. A comparison study between the two tools in terms of efficiency is done also here. The final addition to this integrated system is Wi-Fi based with reference to IoT through a Wi-Fi enabled mobile using a static IP address. However, it will be better to expose the need of database server that some learning techniques can be applied based on the previous actions performed by individual user. The most emerging facility over the other home automation system is scalability such way that if one of the four communication mechanisms fails, then the another one remains operational.

Through the integrated common database, the all users can control the remote devices using all communication mechanisms. Besides, the design of the present system is emphasized on the security of the system so that the unauthorized user cannot handle it.