Development of a Secure IoT-Based Home Automation System

Miss. Priya Dhule

P.G. Student Computer Engineering Department

Gokhale Education Society's,

R. H. Sapat College of Engineering, Management studies and Research, Nashik,

Savitribaiphule Pune University, Pune

Abstract: *Advances in technology such as internet-of-things (IoT) and its wide-ranging applications have made it necessary to have smart homes. The ease with which home appliances can be remotely monitored and controlled improves the standard of living, as automatic processes are used to replace manual efforts to perform some basic functions in the home. The busy schedules of individuals have heightened the pressing need for intelligent homes. Household owners tend to pay more for electricity consumption even though they were not physically present at home, but their devices were either intentionally or ignorantly left ON when not in use. Elderly people and physically challenged individuals find it hard to execute fundamental tasks manually, such as switching ON/OFF lights, fan, TV set, and other home appliances. In this work, a smart home that can remotely automate the operation of home appliances and smartly make decisions without human interference is proposed. In addition, this paper presents a smart home system that has an interactive graphical user interface on an android device to allow the user to choose whether to remotely control and monitor the home from their android device or to enable automatic control using sensors that are interfaced with a home-based PIC microcontroller. The temperature sensor, the light sensor, the passive infrared sensor (PIR) and the Wi-Fi module, which enable internet connection between the microcontroller and the Android application, are all interfaced with the PIC microcontroller at the receiving end, while at the transmitting end, the graphical user interface application on the android device sends commands to the microcontroller to which the sensors and loads are interfaced. The proposed system will be very helpful in energy conservation, while ease of remotely operating home appliances is also provided to both physically challenged and healthy individuals..*

Keywords: Internet-of-things, microcontroller, sensors, smart home