



A Felicity of Configurable Automatic Ubiquitous Cloud Based System Using IFTTT Model

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ABSTRACT: Today's world has seen rapid and lucent spread of Android App. Our project presents the design of home automation Framework based on the popular web service called IFTTT. Wireless Home automation is growing widely; this is powered by the need to provide systems. The GPS does not require the user to transmit any data, and it operates independently of any telephonic though these technologies can enhance the usefulness of GPS positioning information. The residential extension of building automation and controlling of lights, AC, Fan, etc. A web/Android application is used by the users to give configurable command to these systems. This system can make use of a host of communication methods such as Wi-Fi, G-map through android app. This app will be working with the help of Voice Recognition using Google speech synthesizer and IR sensors as they detect Obstacle also Internet of things. These framework has been carried on the Google App Engine platform, a Raspberry Pi board, and Arduino board as I/O units.

KEYWORDS: Internet of things, Home automation, Voice recognition, Software framework, Opensource, RaspberryPi.

I. INTRODUCTION

As the mobile devices are continuously increasing in its popularity and also for its smooth functionality the demand for advanced and responsive mobile applications is increasing day by day in people's daily routine. Web services utilization is the most open and also practical way for providing App service access or enabling the applications to make them communicate with each other. The people who present automatic control on home automation including internet. because of rapid development in internet and internet of things, we all are highly integrated at an uneven scale. Internet Of Things often abbreviated as IOT refers to the interconnection of different devices or any appliances through any possible mode. It let the end user to create, customize and enable self decision and automatic controlling. Our system can recognize the voice command inside home and automatically control using Google speech synthesizer. The other idea used in this app is an infrared sensor emits and/or detects infrared radiation to sense to its surroundings. This similar method of speech recognition will be used in this app to control the home appliances. In our system these appliances communicate the RESTful protocol Between the cloud server and device.

II. RELATED WORK

Home automation system is a kind of automation systems, which are used specifically for controlling the home appliances and devices mechanically with the help of variety of control systems. The home automation systems are used for controlling the indoor & outdoor lights, fan, AC, air conditioning in the house, to control. Early home automation began with labour-saving machines. In 1900s, self-contained electric or gas powered home appliances came into existence with the introduction of electric power distribution resulting to the introduction of washing machines (1904), water heaters (1889), refrigerators, sewing machines, dishwashers, and also clothes dryers.

The first general purpose home automation network technology, X10 was developed in 1975. It was considered as a communication protocol for electronic devices. For the purpose of signalling and control, it primarily make use of

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electric power transmission wiring, here the signals will provide brief radio frequency bursts of digital data, and remains most widely available.

III. PROPOSED SYSTEM

In today's world everyone has shortage of time and in this era of technology there should be a mobile app that could be used to control the home appliances with the help of GPS location, voice recognition, IR sensor which senses to detect the obstacle, control and monitor the devices. In this project the Arduino ATmega 328 and the Raspberry pi have been used to implement the smart home cloud-server. Raspberry pi is an open-source electronics prototyping platform based on flexible, easy-to-use hardware and software. The Arduino ATmega 328 microcontroller board is based on 14 analog input/output pins. Scheduling tasks and setting automatic control The BLE is interfaced to the Arduino via the Arduino SPI pins. Low voltage switching relays were used to integrate the devices with the Arduino for demonstrating the switching varies functionality. In this proposed project a mobile app is created and it includes all the features of controlling the home appliances with the help of speech recognition and inter connectivity of devices. The mobile app that is created, contains all the commands like switching on/off the AC, Fan, Washing machine, etc. Thus this concept basically contains the smart appliances in a home that can be controlled by Wi-Fi and Bluetooth and connected wireless with the mobile phones.

The mobile app in the mobile phone will be containing the options to give different commands to the appliances and controlling it with our mobile app. In this app self analyzing is done by the device which makes self decision and control appliances automatically. Near field devices are controlled through voice command.

RESTful protocol is used for communication between the cloud server and the devices. Periodic refresh of distance is maintained in order to avoid data loss. UART interface with programmable baud rate with integrated antenna and edge connector. Their functions of data are stored in cloud-server.

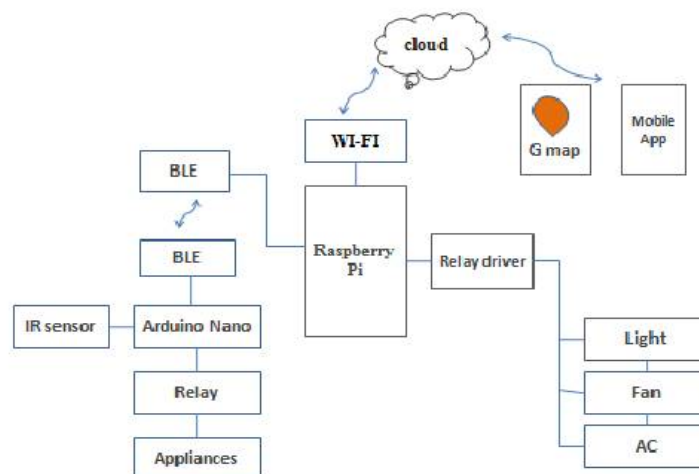


Figure 1. Block diagram of automatic home control design

As shown in figure 1, a low cost smart home system for controlling and monitoring the smart home environment is represented. The Raspberry Pi acts as a master that hosts and performs the actions which are necessary to be carried out. The master controller that has the raspberry pi interface between cloud server running consists of relay driver with other hardware such as HC-05, IR sensor which is used to communicate and coordinate actions with the Arduino



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nano. It's act as a slave of the home environment these also interconnect to the cloud server. All the actuators/relays and sensors are directly interconnected to the main controller. Using the smart home app, from a remote location it is possible to control. The system consists of an app which is shown in figure 2 to be developed using Android platform and by using Arduino Ethernet based.

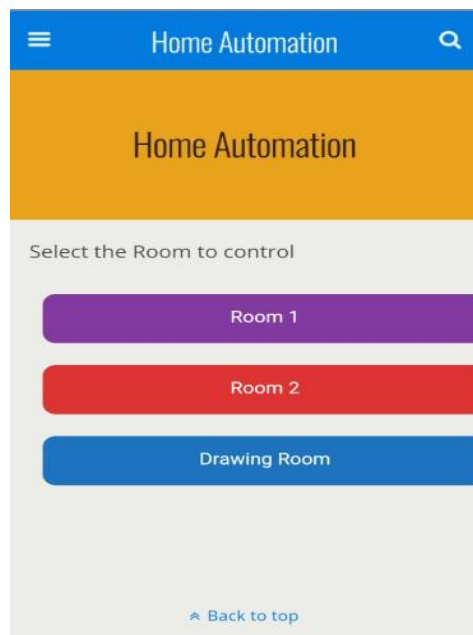


Figure 2. Mobile application for Android Platform

A. Software development of the Android platform app

There are several platforms for developing smart phone applications such as Windows Mobile, Raspbian, iOS and Android. In the proposed system, the Android platform app is developed as most of the phones and handy devices support Android OS. Java programming language using the Android Software Development Kit (SDK) has been used for the development and implementation of the smart home app.

The SDK includes a complete set of development tools such as debugger, libraries, and a handset emulator with documentation, sample code and tutorials. Eclipse (running on Windows 10 development platform), which is the officially supported integrated development environment (IDE) has been used on in conjunction with the Android Development Tools (ADT) Plug-in to develop the smart home app. This project will use the home appliances and will be powered with the Raspberry pi and the Wi-Fi making an interconnectivity between the devices and creating an internet of things.

B. HC-05 Bluetooth Module:

This module is an easy to use Bluetooth SPP (serial port protocol) Module, designed for transparent wireless serial connection setup. The HC-05 Bluetooth module can be used in a Master or Slave configuration, making it a great solution for wireless communication. In figure 3, Bluetooth module is interfaced with Arduino Nano to communicate the status of the appliance to the Raspberry Pi. UART interface with programmable baud rate with integrated antenna and edge connector. Auto-connect to the last device on power as default permit pairing device to connect as default.

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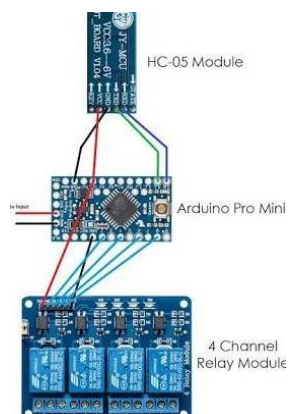


Figure 3. Interfacing of slave module.

IV. RESULT AND DESCRIPTION

User configurable command is given to android app that makes decision automatically for functioning various appliances by using Google Speech Synthesizer, IR Sensor, Location based (GPS) . The hardware setup of our model is shown in figure4.



Figure 4. Hardware setup

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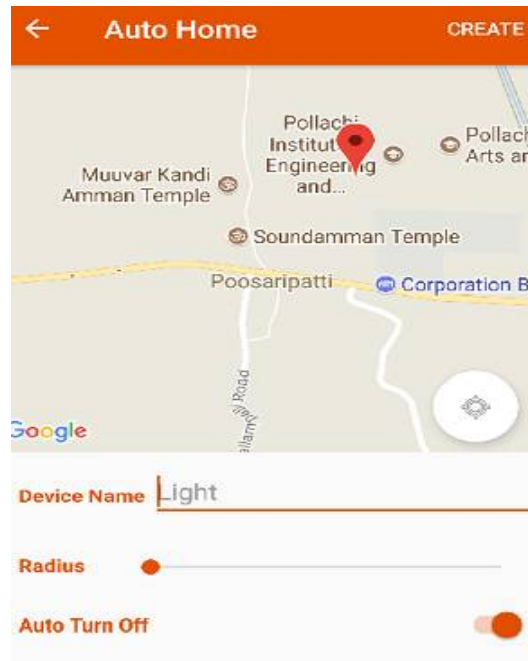


Figure 5. GPS based app for home automation control

The Android based smart home app communicates with the cloud-server via internet using the RESTful based web service. In this android supported device can be used to install the smart home app, and control and monitor the smart home environment. RESTful protocol is used for communication between the cloud server and the master device of Raspberry pi through wireless and their data stored in cloud-server can be analyzed at anytime and anywhere. It is Shown in Figure 5 and the Periodic refresh of distance is maintained in order to avoid data loss.

V. CONCLUSION AND FUTURE WORK

In this paper, an internet based smart home system that can be controlled Android app upon user authentication is proposed and implemented. A low cost smart home system has been developed which does not require a mobile as all processing is handled by the Raspberry Pi The system also uses the Google speech synthesizer the need for an external voice recognition module and IR sensor used as a Obstacle detector to transmit an infrared signal bounces from the surface of an object and the signal is received at the infrared receiver. Infrared transmitter is a light emitting diode (LED) which emit infrared radiation in near field devices.

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