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IOT BASED VOICE CONTROLLED SMART HOME AUTOMATION

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Abstract: The aim of this is to Control home appliance with your voice through an android app. controlling home appliances through application is a vital one. In this work we are going to use a Bluetooth module to establish the goal, an arduino mega board is used for controlling the relay through which an appliance is switched on/off. Bluetalk application is used to send a voice command.

I. INTRODUCTION

In olden days people used to control their appliances manually. But due to advent of technology situation has changed rapidly. In these days everyone are using Smartphone for their personal use and fun purpose. In general most conveniently used device is cell phone. So controlling home appliances from an android application is not a cost effective. 10 years prior controlling appliances wirelessly would have cost us more. But these days that's not the case. We can easily control the appliances by using commands. Today most of the people using android mobile system [1]. All mobile supports the android OS. We can easily process the voice information in android. Because it is Linux based OS.

Here we used arduino mega 2560, but any arduino development board can be used. The HC05 is a Bluetooth module is a major part of our model. The Bluetooth is used to receive a command from bluetalk command. The bluetalk is an android application. For developing android application, MIT app Inventor is used. This application is available on all play stores.[3]

II. SOFTWARE:

Pair of software programs is used in this project. One is arduino sketch for the microcontroller and another one is Android application [2]. For developing android application, MIT app inventor has used [4]. Bluetalk application uses Google speech recognition and transmits the text to the arduino via a connected Bluetooth. The HC-05 Bluetooth used here [5].

The key component of this work is:

- 1) Android Phone
- 2) Bluetooth
- 3) Arduino UNO
- 4) Relay

III. WORKING:

The circuit consists of arduino mega 2560 board for comparing the input string received through Bluetooth with the stored string to give output to digital pin 6 of board to control the relay. Bluetooth module HC-05 transmits and also receives data serially via arduino board. A relay is used here to control only one appliance though you can use a multichannel relay board to control multiple appliances. Mega 2560 has 54 digital pins, each of which can be used to control appliance. The arduino can be programmed to compare the relative strings [1].



Fig 1. Model of Home Automation

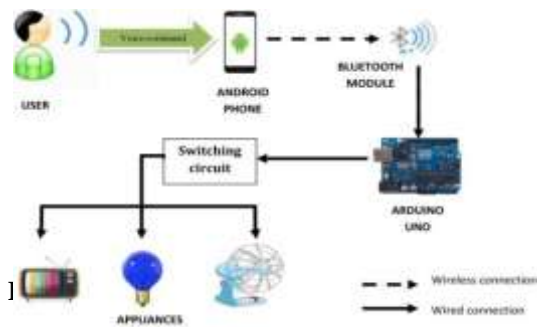


Fig 3. FlowChart of Working Module

VI. CONCLUSION:

The Proposed project will give the idea for controlling appliances in the single point without manual intervention to use home appliances. The bluetooth distance level is 100 m, if the user needs to increase the load level it can be done by simply saying the appliance name assigned to that particular appliance, and telling it to on or off

VII. REFERENCES:

[1] F. J. Owens, *Signal Processing of Speech*, New York, US: McGraw-Hill Inc, 1993.
 [2] "XBee-2.5-Manual," ZigBee RF communication protocol. (2008). Minnetonka: Digi International Inc.
 [3] (2010) Home Automated Living website. [Cited 2010 14th Oct]. Available: <http://www.homeautomatedliving.com/default.html>
 [4]. Akshay Mewada, Ayush Mishra, Manoj Gupta, Rahul Dash, " Journal of Advanced Research in Computer Science and Software Engineering," Volume 6, Issue 3, March 2016.
 [5]. Karudaiyar, G, Deepak. C "MULTIPLE HOME AUTOMATION BY USING SINGLE RASPBERRY PI" Published in Springer

Connect Arduino board to the PC via serial cable. An LED on Bluetooth module will start blinking rapidly which indicates it is not connected. Once HC-05 module is connected via the smart phone the LED will blink just twice after some delay. Check the data on the serial monitor of arduino IDE. After confirming that you are receiving data from HC-05 Module. Make sure the Baud Rate is 9600[5].

IV. CONSTRUCTION AND TESTING:

Power on arduino board using a 9v DC battery to wireless control of your home appliances via speech. Upload bluetalk.ino sketch into arduino board install bluetalk.apk on your android phone. Pair Android Bluetooth to HC-05 Module. It will prompt to enter password. Default passwords 1234. open the app and connect to HC-05 again. Now the system is ready to work [5].

V. FLOWCHART OF THE SYSTEM:



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