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VOICE CONTROL BASED HOME APPLIANCES USING ANDROID DEVICES ON ARDUINO

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ABSTRACT

The main aim of the project is to control the home applications voice using Android OS smart phones with an Arduino board. This is an advanced technology in the home automation, so houses are getting smarter. Usually conventional wall switches are located in different parts of the house and often require persons for their operations and, thus, manual pressing turn the on and off. It becomes very difficult for the elderly or physically handicapped people to operate them. This system is enhanced to control the home applications through an Android application of smart/ tablet phones by entering the selected number for corresponding load. A Bluetooth is interfaced to the Arduino board using Rx and Tx pins for communication. The electrical loads are controlled by the relay which is connected to the Arduino board .relay act as a switch operation. Then the respective device connected to the circuit will be turned on or off depending on the voice command given .At the output side of Home Appliances Controlling using Android Mobile via Bluetooth.

Keywords : Arduino Uno, HC-05 Bluetooth Module, Home Automation, Smartphone, Voice Control, Arduino software.

I. INTRODUCTION

The foremost aim of technology has been to increase efficiency and decrease effort. With the advent of 'Internet of Things' in the last decade, we have been pushing for ubiquitous computing in all spheres of life. It thus is of extreme importance to simplify human interfacing with technology. Automation is one such area that aims that achieves simplicity whilst increasing efficiency. Voice controlled House Automation System aims to further the cause of automation so as to achieve the goal of simplicity.

II. COMPONENTS

Android Based Phone :

Android is a mobile operating system (OS) based on the Linux kernel and currently developed by Google. With a user interface based on direct manipulation, the OS uses touch inputs that loosely correspond to real-world actions, like swiping, tapping, pinching, and reverse pinching to manipulate on-screen objects, and a virtual keyboard. We have used the Android platform because of its huge market globally and it's easy to use user interface [5]. Applications on the Android phones extend the functionality of devices and are written primarily in the Java programming language using the Android software development kit (SDK).

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The voice recognizer which is an in built feature of Android phones is used to build an application which the user canoperate to automate the appliances in his house. The user interface of the application is shown below:

2.1 Introduction to Arduino:

Overview:

Arduino/Genuine Uno is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computerwith a USB cable or power it with a AC-to-DC adapter or battery to get started.. You can tinker with your UNO without warring too much about doing something wrong, worst casescenario you can replace the chip for a few dollars and start over again.

"Uno" means one in Italian and was chosen to mark the release of Arduino Software (IDE) 1.0. The Uno board and version 1.0 of Arduino Software (IDE) were the reference versions of Arduino, now evolved to newer releases. The Uno board is the first in a series of USB Arduino boards, and the reference model for the Arduino platform; for an extensive list of current, past or outdated boards see the Arduino index of boards.

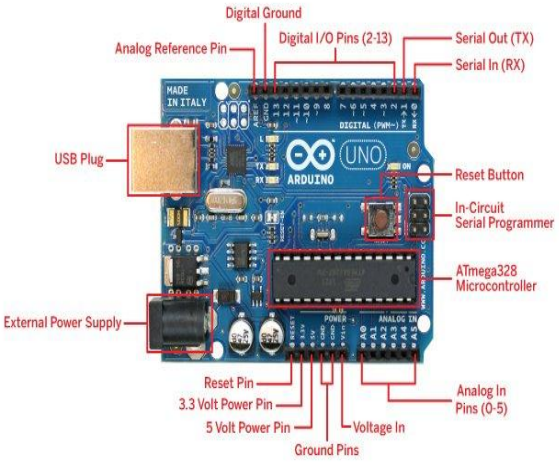

Fig2 shows Arduino Uno board with electrical input output pins

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2.3Bluetooth module (HC-05):

Bluetooth wireless technology is becoming a popular standard in the communication. it is one of the fastest growing fields in the wireless technologies. It is convenient, easy to use and has the bandwidth to meet most of today's demands for mobile and personal communications. Bluetooth technology handles the wireless part of the communication channel; it transmits and receives data wirelessly between these devices. It delivers the received data and receives the data to be transmitted to and from a host system through a host controller interface (HCI). The most popular host controller interface today is either a UART or a USB .Here, I will only focus on the UART interface, it can be easily show how a Bluetooth module can be integrated on to a host system through a UART connection and provide the designer an optimal solution for Bluetooth enabled systems.

2.4 Relay unit:

Relays are switches that open and close circuits electromechanically or electronically. Relays control one electrical circuit by opening and closing contacts in another circuit. As relay diagrams show, when a relay contact is normally open (NO), there is an open contact when the relay is not energized. When a relay contact is Normally Closed (NC), there is a closed contact when the relay is not energized. In either case, applying electrical current to the contacts will change their state.

2.5 LED'S:

A light emitting diode (LED)is a semiconductor device that emits visible light when an electric current passes through it. The light is not particularly bright, but in most LED's it is monochromatic, occurring at a single wavelength.

- **Low power requirement**: Most types can be operated with battery power supplies.
- **High efficiency:** Most of the power supplied to an LED or IRED is converted into radiation in the desired form, with minimal heat production.

III. METHODOLOGY

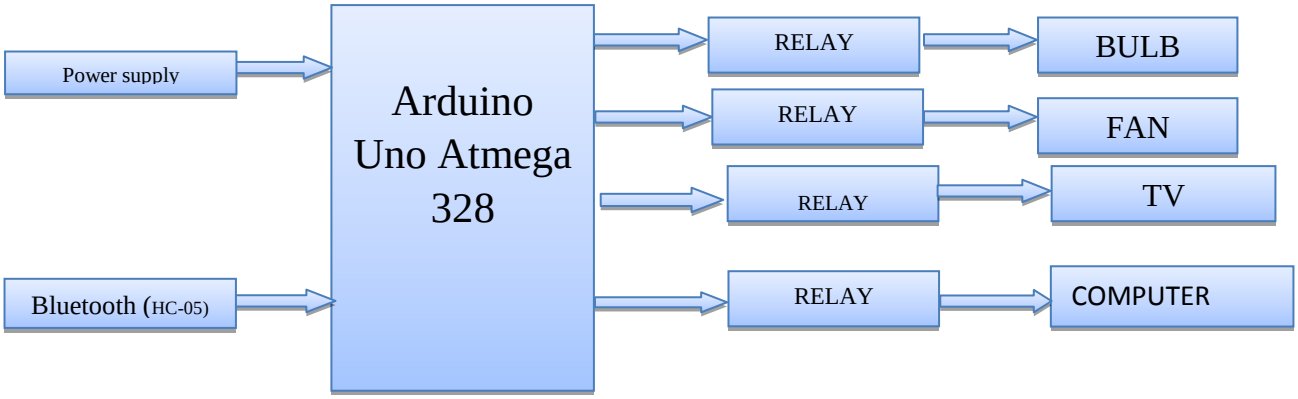

Fig3: Shows block diagram of voice control based home appliances using android devices on Arduino

In this block diagram we have two sections are there. Firstly Bluetooth is communicating with at mega 328 microcontroller.

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IV. APPLICATIONS

Voice control based home automation using android devices on Arduino uno is used in home, industry, company, like in many applications controlling from long distance over the range of Bluetooth communication.

V. CONCLUSION

We conclude that the home appliances which are used in our home, industry, company and etc., are controlled by our voice using android devices and Arduino.

VI. ACKNOWLEDGEMENT

We would like to thank the Principal & Department of Sri Sivani College of engineering, Srikakulam for supporting us in this work.

VII. EXPERIMENTAL RESULTS

Fig: 4 prototype output

REFERENCES

[1] Mohamed Abd El-LatifMowad, Ahmed Fathy, Ahmed Hafez "Smart Home Automated Control System Using Android Application and Microcontroller" International Journal of Scientific & Engineering Research, Volume 5, Issue 5, May-2014 ISSN 2229-5518

[2] Arduino Uno Projects: http://arduino.cc/en/Main/arduinoBoardUno

[3] Datasheet Bluetooth to Serial Port Module HC05: http://www.electronica60norte.com/mwfls/pdf/newBluetooth.pdf

[4] Armando Roy Delgado, Rich Picking and Vic Grout "Remote- Controlled Home Automation Systems with Different Network Technologies" Centre for Applied Internet Research (CAIR), University of Wales, NEWI, Wrexham, UK

[5] Arduino Uno R3 DIP edition (revision 3), schematic, Arduino, available at : http://www.jameco.com/jameco/products/prodD/2151486%20schematic.pdf