International Research Journal of Engineering and Management Studies (IRJEMS)
Volume: 03 Issue: 04 | April -2019 ISSN: 1847-9790 || p-ISSN: 2395-0126

VOICE CONTROL HOME AUTOMATION USING ARDUINO NANO

Yadav Aditya[1], Gupta Pusushottam[2], Pisal Suraj[3]

[1]B.E. Student, Department of EXTC, ARMIET, Mumbai University, Mumbai, India.
[2] B.E. Student, Department of EXTC, ARMIET, Mumbai University, Mumbai, India.
[3] B.E. Student, Department of EXTC, ARMIET, Mumbai University, Mumbai, India.

Abstract - *This report presents the development of home appliances based on voice command using Android. This system has been designed to assist and provide the support to elderly and disabled people at home. Google play store application has been used as voice recognition and process the voice input from the smart phone. In this report, the voice input has been captured by the android and will be sent to the Arduino Nano. Bluetooth module in Arduino Nano received the signal and processed the input signal to control the light and fan. The proposed system intended to control electrical appliances with relatively user-friendly interface and ease of installation. We have demonst rated up to 15 meter of range to control the home appliances via Bluetooth.*

***Key Words*: Android, Voice Recognition, Arduino IDE, Arduino Nano, Bluetooth module, Relay.**

1.INTRODUCTION:

Remote control of home appliances getting common these days Remote control using voice commands possible through voice applications in Smartphone Smartphones have in-built Bluetooth An extra Bluetooth module used at receiving end.

1.1 LITERATURE REVIEW

With voice controlled home automation everyone can lead a more comfortable life. Running around the house to turn on all the lamps can be tire some, it would instead be easier to use your voice. For people with disabilities the benefit might be even greater since they can now do things that they, due to their disability, could not do before. This kind of voice-controlled system could improve their quality of life, while decreasing the need of assistance .The idea of combining speech recognition with home automation into a voice-controlled home system is not new. This concept has been seen multiple times in movies and other popular culture. A cursory look online reveals a multitude of existing solutions. On the one hand there are the commercial home-automation products using speech recognition with the goal to be user friendly. On the other hand there are the home-built prototypes with the goal to be inexpensive .Both types of voice-controlled home systems are important but there is a lack of combination .This project focuses on finding a solution to combine these two types.

1.2 EXISTING SYSTEM

In existing system voice controlled home automation system microcontroller and arduino uno is used for controlling the home appliances but we are using arduino nano which is compact in size and cheaper than microcontroller and arduino uno

1.3 PROPOSED SYSTEM

In this paper we propose a system with following stages:

1) Initialization
2) Voice detection
3) Connections
4) Programming

2. Initialization

Voice controller home appliances is not a new concept there are a lot of project available in market but are expensive as they use arduino uno atmega328 and Microcontroller. To make it cheaper as well as compact in size we are using arduino nano.

2.1 Speech Recognition

Speech Recognition which is also known as automatic speech recognition (ASR) and voice recognition recognizes the spoken words and phrases and converts them to a machine-readable format. By converting spoken audio into text, speech recognition technology let users to control digital devices by speaking instead of using conventional tools such as keystrokes, buttons, keyboards etc.

2.2 Connections

We needs to connect the pin of arduino nano to the Bluetooth module and appliances which we want to control. Rx & Tx pins are used for transmitting and receiving signal. Both arduino nano and Bluetooth consist to these Rx &Tx pins which are connected simultaneously. Digital pins of arduino nano are used to control the appliances , there are total 13 digital pins in arduino nano.

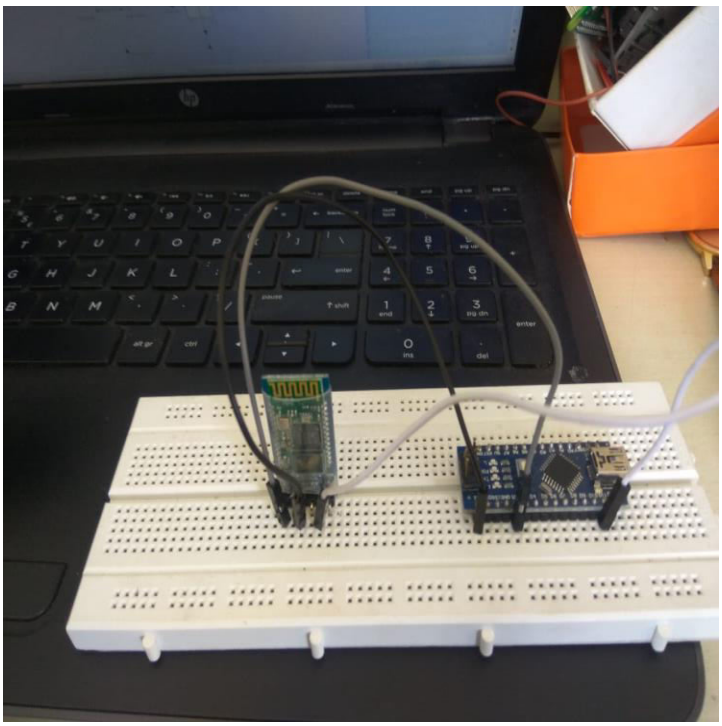


Fig-1: Basic connections HC05 with arduini nano

2.3 Programming

Arduino programs are written in the Arduino Integrated Development Environment (IDE). Arduino IDE is a special software running on your system that allows you to write sketches (synonym for program in Arduino language) for different Arduino boards. The Arduino programming language is based on a very simple hardware programming language called processing, which is similar to the C language. After the sketch is written in the Arduino IDE, it should be uploaded on the Arduino board for execution.

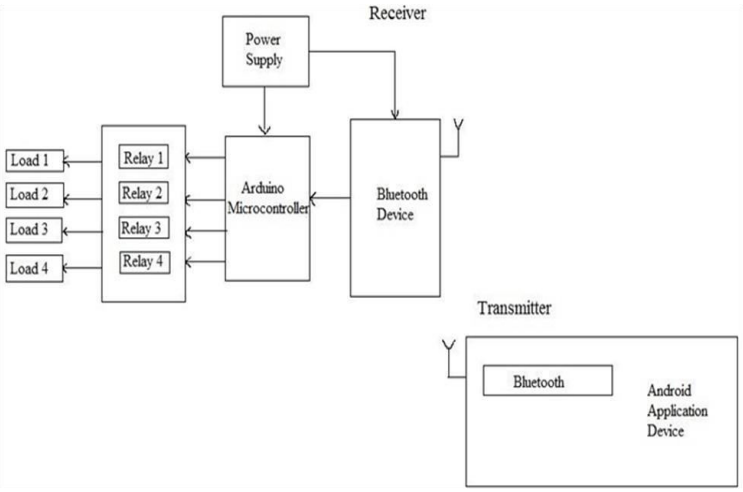
3.Working Technology

Basically, the concept of home automation works by connecting smart devices and sensors (wired or wireless) to a system which act as the main control, and lastly to a graphical user interface for . Examples for smart devices/sensors are like humidity sensors, proximity sensors, brightness sensors, etc. that supports the relevant communication protocols (if required). While the control system may be represented by logic controllers (like PLC or similar devices) as well as SCADA and HMI to provide logical processing and graphical interface for end user's interaction.

The basic working concept for home automation can be summarized as:

- Smart device such as brightness sensor installed in the house will detect the current environment's brightness.
- When the environment's brightness is lower than required set value, it will trigger the controller.
- The controller system will then identify the action needed (i.e. switch on the lights).
- The system will then trigger signal to the lights and switch them on.

4. SYSTEM DESIGN AND ARCHITECTURE



5. CONCLUSION

Overall, it seems that voice controlled home automation systems can be useful – but in a limited fashion and most of the time, only when being used with a standard control setup such as iViewer.

Most of the time it really would be just as easy to press the button for the desired action (or macro of commands) on a button panel or graphical user interface. Saying the voice command, waiting for it to be acknowledged and the command sent is simply slower than pressing a button.

It is also much easier to set an exact level such as a volume, light level or temperature via a GUI. You can quickly and easily set these levels via a simple slider – to the exact setting that you want. Removing the need to say "Turn volume up" multiple times.

5. ACKNOWLEDGEMENT

I am thankful to **Prof.S.M.Hundiwale**, HOD, Electronics and Telecommunication Engineering Department of Alamuri Ratnamala Institute of Engineering and Technology, Shahapur for his encouragement, guidance and support for my project.

I am thankful to Principal & Vice-Principal, Alamuri Ratnamala Institute of Engineering and Technology for their encouragement and providing outstanding academic environment.

References

https://www.electronicshub.org/voice-activated-home-automation/

www.wikipedia.com

https://www.quora.com/What-is-future-of-home-automation-in-india

https://www.arduino.cc/

http://www.commandfusion.com/blog/2013/12/17/voice-control-in-home-automation-fad-or-future

https://electronicsforu.com/electronics-projects/voice-controlled-home-automation-system#construction