

# Voice Controlled Home Appliances

<sup>1</sup>Vipin Joshi, <sup>2</sup>Priyanshi Vishnoi, <sup>3</sup>Avni Agarwal, <sup>4</sup>Bunty Singh, <sup>5</sup>Jagatpal Singh

<sup>1</sup>Joshivipin196@gmail.com, <sup>2</sup>vishnoi.priyanshi@gmail.com, <sup>3</sup>avniagarwal112@gmail.com, <sup>4</sup>1t3sagar@gmail.com, <sup>5</sup>Jagatpalsingh91@gmail.com

Electrical Engineering Department,

Moradabad Institute of Technology, Moradabad, Uttar Pradesh, India

**Abstract**-The key objective of our system design is to provide easy means for normal, handicapped and old age persons control and operate home appliances. Since home automation is gaining popularity day by day in today's world, we require a system which is affordable and simple to implement. Both these qualities are present in our designed system which has the capability to replace existing technologies. Practical voice recognition kit is utilized in order to store and recognize the user's voice. Moreover, this system also helps in efficient use of the electricity which is an important constraint in day to day life.

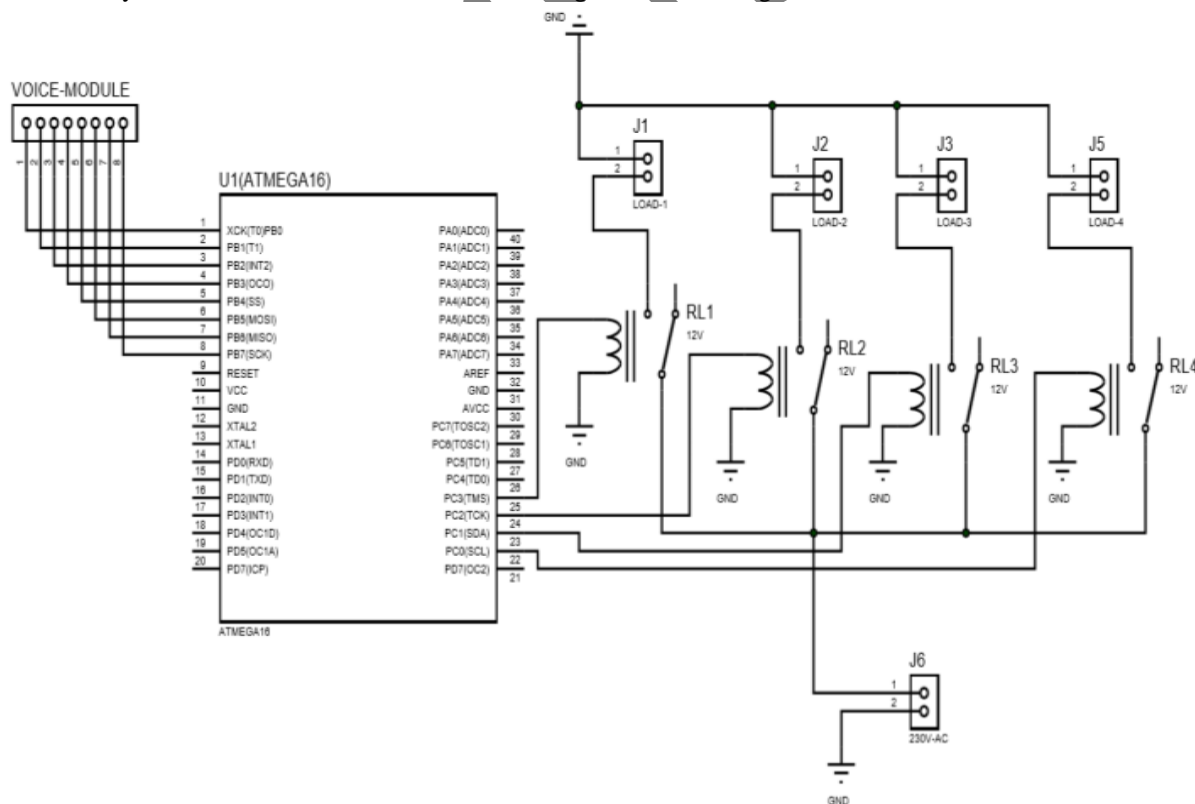
**Keywords:** Home automation, Microcontroller, Voice Recognition (HM2007), Power Supply.

## 1. INTRODUCTION

Today's world is a global hub due to advancements in technology. Inventions and evolution in technology have made this possible. Home automation has an important role in people's life when it comes to their standard of living as it provides convenient and hassle free environment. We require the intelligence of a microcontroller to control the devices and home appliances. There are various existing technologies available for similar purposes, but their cost and complexity is a major disadvantage. In this system, we have designed an affordable and simple to use system that takes the input from the voice recognition module and uses the microcontroller's intelligence to operate different devices.

## 2. PROPOSED SYSTEM

Here in our system, we have used microcontroller along with voice recognition module kit HM2007.



**Fig1: Complete Connections of Proposed System**

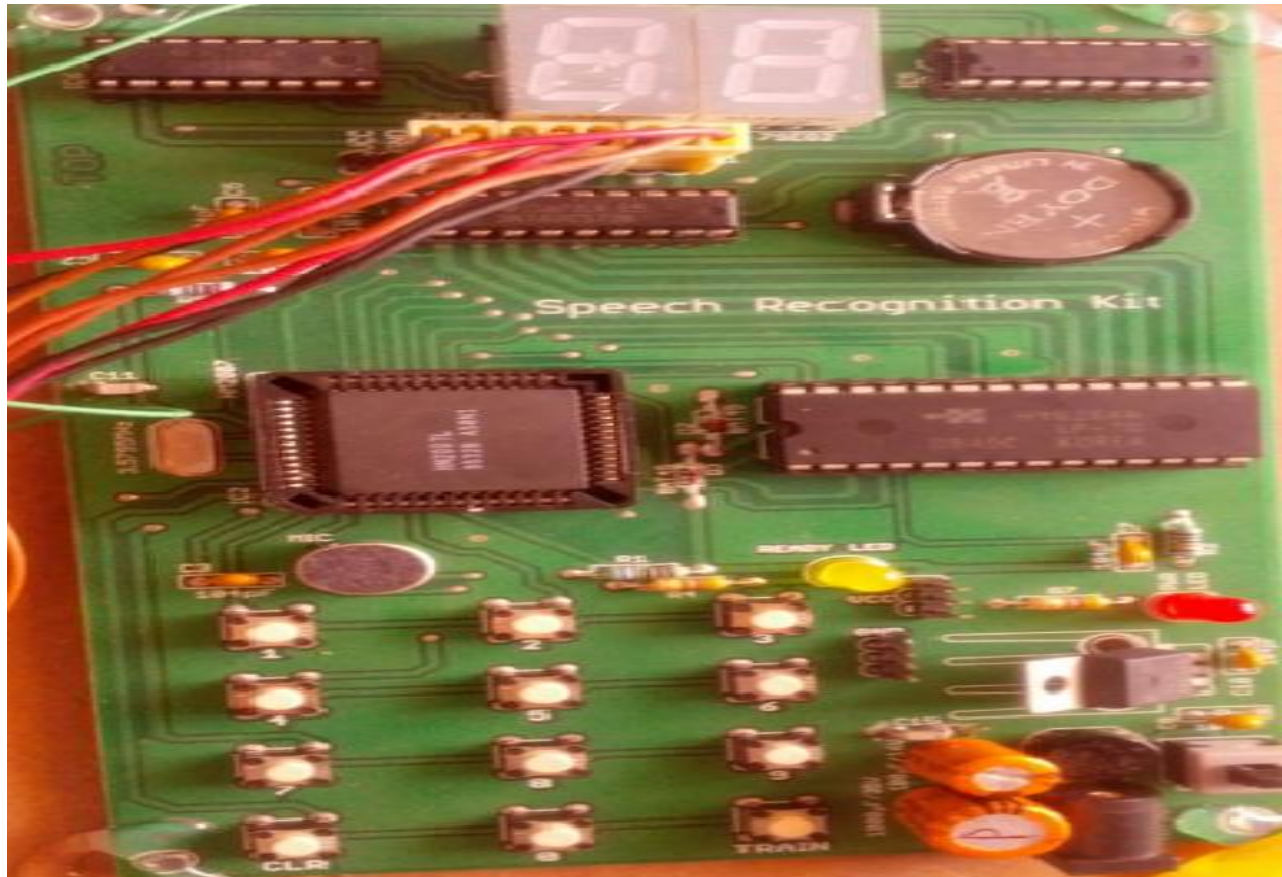
## International Journal of Technical Research & Science

The performance of microcontroller is best when interfaced with voice recognition technology. HM2007 is the cheapest and yet efficient voice recognition technology. Minimum number of components are used in this system. First the user has to store the commands and then speak again so that the HM2007 can recognize that particular command to operate accordingly.

Fig 1 shows the complete connections in the proposed system. Software used for programming of microcontrollers Code Vision AVR and interfacing was done using 8 bit data output.

### 2.1 HM2007

It is a practical voice recognition system that is easy to train and implement. It means that the circuit will recognize the words when we train it by giving voice commands.



**Fig2: HM2007 KIT**

#### 2.1.2 Microcontroller

It is a part of Atmel's Mega AVR family. It is an 8-bit microcontroller with high performance and has less power consumption. Atmega16 comprises of enhanced RISC architecture. The Maximum frequency on which it can work is 16MHz.

### 3. WORKING OF THE SYSTEM

Firstly, 230V AC supply is converted to 5V DC using 12V step down transformer, Round bridge rectifier, smoothening circuit and LM7805 Voltage regulator. The working principle of speech recognition comprises of the fact that command given by any person generates vibrations or disturbances called as sound pulses. These analog waveforms are converted to digital form and decoded to appropriate commands including words and sentences.

Initially, train the voice recognition module HM2007 with the suitable commands and say the commands after that. The commands will be stored in binary form and fed to microcontroller through 8 bit data bus using latch IC.

The microcontroller operates according to the program fed into it. Port B is used to take input from voice recognition module and Port C is used to control output devices. According to the program fed, microcontroller will respond to the instructions and will turn on/off the devices as and when required.

## RESULT

The voice recognition system was first tested in a quiet room with one user. All commands were correctly recognized by the system. Next we tested it with a different user on whom the system was not trained. About 5% errors occurred here, for example words like “accept” were recognized as “except”. This was because the recognizer heard a different pronunciation. Although, if the person had spoken the command multiple times the recognizer had sufficient examples to properly determine what pronunciation the person spoke.

Then we tested the project in a noisy room by turning on some music in that room. When the sound was light there was no problem in correctly recognizing the words but when we increased the volume the recognizer found it difficult to recognize the user’s voice and often took commands from what it heard in the song.

With the knowledge of operation of the system was tested step by step to the transistor output and the load was connected across the collector terminal of the transistor.

## CONCLUSION

The prototype of system which is used for controlling devices through human voice is proposed and implemented and several changes can be done in this to suite different applications and scenarios. Following learnings were provided by this system: Speech recognition module operation, Interfacing Speech recognition module to microcontroller and Relay working principle.

## REFERENCES

- [1] [http://en.wikipedia.org/wiki/Atmel\\_AVR](http://en.wikipedia.org/wiki/Atmel_AVR)
- [2] [http://www.sunrom.com/p/speech recognition-system-hm2007](http://www.sunrom.com/p/speech%20recognition-system-hm2007)
- [3] [https://www.uni due.de/~h1271st/Lehre/SMR/cvavr\\_manual.pdf](https://www.uni-due.de/~h1271st/Lehre/SMR/cvavr_manual.pdf)
- [4] Voice Controlled Electrical Appliances International Journal of Electrical Electronics & Computer Science Engineering Volume 1, Issue 1 (February 2014), ISSN: 2348 2273