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CONTROL OF HOME APPLAINCES THROUGH VOICE COMMANDS

HemapriyaNandhinee S[1], Bharkavi V[2], Bhuvaneswari S[3], Priya M[4]

1,2,3 - Students, Department of Electronics and Communication Engineering
Prathyusha Engineering College
4 – Associate Professor, Department of Electronics and Communication Enigneering
Prathyusha Enigneering College

Abstract:
Voice Recognition is an important method used for automation. Speech is the most common mode of communication between human beings, and in this work the home appliances are efficiently controlled by human voice. The voice commands are used to turn the lights ON/OFF and control the speed of appliances. This control mechanism is very useful for the aged and physically disabled person. The graphical program(GUI) system developed using LabVIEW is useful for interacting with real world and also for developing custom applications. Thus the methodology of control of home appliances is enforced usingLabVIEW. With this voice recognition technique, accuracy of over 90%is achieved.

Keywords: Automation, Voice Recognition, LabVIEW, Data Acquisition, Speed Regulation.

I.INTRODUCTION:

Controlling appliances is the main part in automation. In future, voice recognition technique is an important method for dominant appliances, computers and robots. Voice recognition is standalone and more cost-effective technique to control home appliances. Aged population worldwide is increasing and this automation processhelps the disabled and aged population.A set of voice commands are functionally reminiscent of the set of switches that is employed to regulate the wheelchair.

Homeappliances are mostly controlled by Bluetooth baseddevice. Keypad is interfaced to a microcontroller which isinterfaced to Bluetooth module to provide wireless interface for the remote to communicate with the appliances management module. A Voice-Input Voice-Output Communication Aid (VIVOCA) acknowledges the disordered speech of the user and builds messages that are regenerated into artificial speech. The speech is processed and recognized by a speech recognizer. Mean recognition accuracy is 67%.

A mobile application is developed that converts the user voice commands into SMS and is sent through GSM network.Wireless Home Automation System(WHAS) controls all home appliances in a home or workspace using voice commands with low-power RF Zigbee wireless communication modules. Controlling home appliances is done by using a computer and computer interface to regulate the appliances. Twodifferent approaches are required for management of home appliances. Multiplatform system for home automation is created using LabVIEW. Through this the coded signals are sent through the home's wiring to switches and retailers that are programmed to control appliances and electronic devices in each part of the house.

II. VOICE RECOGNITION TECHNIQUE:

Voice Recognition is the technology by which sounds, phrases spoken by people are transformed into electrical signals and these signals are converted into cryptography patterns to which meaning is assigned. This idea could be referred to as sound recognition or speech recognition.

Principle of voice recognition is shown in Fig.1.

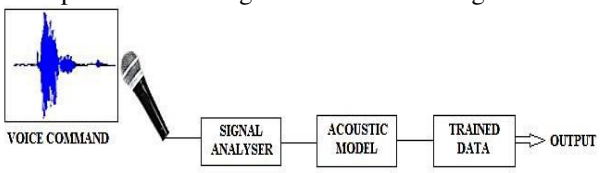

Fig.1. Principle of voice recognition

The first component that is required for voice recognition is the assortment of speech data. Information of speech data is constructed from multiple speech samples. Then those samples of the specified speech data is recorded and kept. The signal instrument passes the information from the speech sample to the acoustic model for identification.Samples of accomplishable speech data is passed into language models. These prospects are compared with previous results from the trained models. The speech knowledge with the very best chance of a match is chosen as being the right knowledge and given as output.

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III.LabVIEW:

NI LabVIEW software system can be utilized very effectively in applications and industries. LabVIEW can be used for creating custom applications that act with real-world information or signals in fields like science or engineering. Cyber web results of utilizing the tool LabVIEW is of higher quality

a. G Language

The G programming language is central to LabVIEWknown as "LabVIEW programming." Using this programming language, the information acquisition, analysis, and logical operations are easy and also it can be processed quickly. From a technical viewpoint, G is a graphical information flow language during which nodes (operations or functions) operates on data. One can lay out the "flow" of information through the appliance graphically with wires connecting the output of one node to the input of another. LabVIEW contains a strong optimizing compiler that examines the diagram and directly generates economical computer code, avoiding the performance penalty related to understand or cross-compiled languages.

The compiler determine segments of code with no information dependencies (that is, no wires connecting them) and mechanically split your application into multiple threads which will run in parallel on multicore processors, yielding significantly faster analysis and additional responsive management compared to a single-threaded, successive application.

IV.Hardware:

LabVIEW Support for thousands of hardware devices, including scientific instruments, information acquisition devices, sensors, cameras, motors and actuators, acquainted programming model for all hardware devices, moveable code that supports many targets. Labview makes the method of desegregation hardware abundant easier by employing a consistent programming approach regardless of what hardware is mistreated. A similar initialize-configure-read/write-close pattern is continual for a large style of hardware devices, information usually come during a format compatible with the analysis and reportage functions, and one is not forced to perforate instrument programming manuals to seek out low-level message and register-based communication protocols.

V.PROPOSED DESIGN:

An input voice is directly given to the mike, which converts the voice command into electrical signal. The signal from the mike is fed into voice recognition module.

The block diagram for the proposed methodology is shown within the Fig.2.

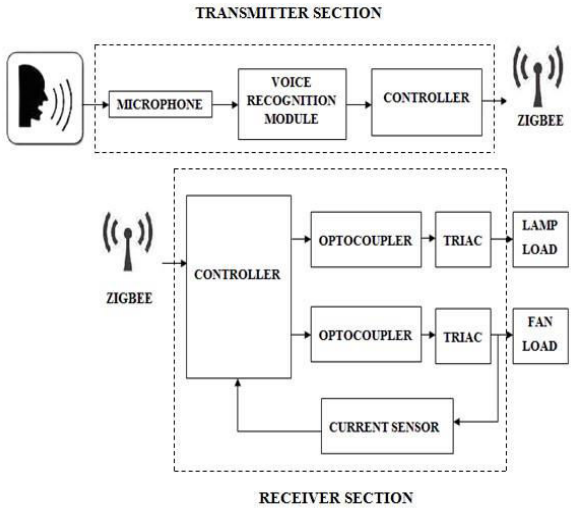

Fig 2: Regulate appliances mistreatment voice recognition technique

The initial step in voice recognition is that the person needs to speak a word or phrase through mic.

Since every person's voice is completely different, new user's voice should be trained first within the program as an input before that user's voice will be recognized by the program. With the trained voice an applied math average of the multiple samples of identical word is analyzed by the program and stores the averaged sample as a model in

exceedingly program organization. Once the averaged sample matches with the already hold on sample then the corresponding signal is given to the controller. The device management program holds on within the controller memory to manage the devices. From the controller, the desired signal is transmitted through Zigbee. Upon receiving the signal, by program dominant the signal is given to TRIAC through an optocoupler driver circuit to drive the load.

Hidden mathematician Model (HMM) formula is employed for training. It's a statistical Markov model within which the system being shapely may be a mark off process with unobserved (hidden) states. The observation is turned to be a probabilistic operation (discrete or continuous) of a

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state rather than a matched correspondence of a state. Appliances speed will be controlled with the assistance of Pulse-width modulation. The reasons to use PWM is to control motor speed that is, it does not generate extra heat and it improves dependableness and also it improves the acoustics of the load with high-frequency driving signals.

PWM is the technique of applying a square wave signal to a load which is able to vary its speed dynamically through the duty cycle of the signal. PWM signal is employed to manage a switch that delivers the facility required to the load; it does not directly drive the load. Four completely different duty cycles to manage speed is shown in Fig.3. Duty cycle is usually used in electrical devices, e.g., shift power provides. In a device, a seventieth duty cycle corresponds to power ON amount and half-hour corresponds to power OFF amount of the time.

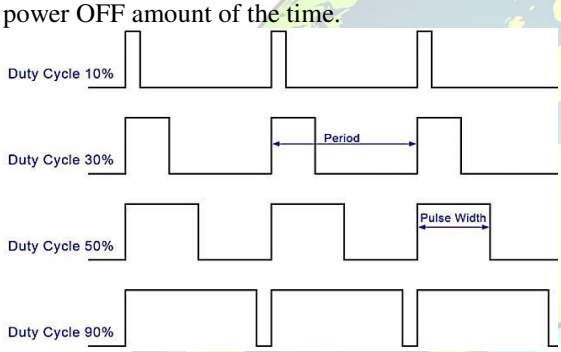


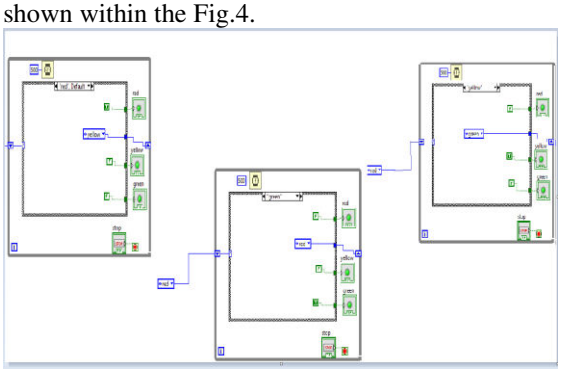
Fig.3. Four different duty cycles to control speed

$$Duty\ cycle = \frac{Pulse\ Width}{Period} X\ 100$$

Four completely different duty cycles are used to manage speed. A low duty cycle provides low speeds and high speeds square measure made by high duty cycle. Full force of the load will be employed by dominant a load with PWM signal. This is often the most advantage of dominant a load with PWM rather than a true analog signal.

VI.EXPERIMENTAL SETUP IN LABVIEW:

The simulation diagram for shift lights ON/OFF is shown within the Fig.4.



The words to be hold on in speech initializer is given to the phrases. The action "Light ON" is dead once the word from the mic is matchedwith the already hold on command within the speech initializer block. Fig.4. Simulation diagram for ON/OFF management. The diagram for speech initializer block is shown within the Fig. 5

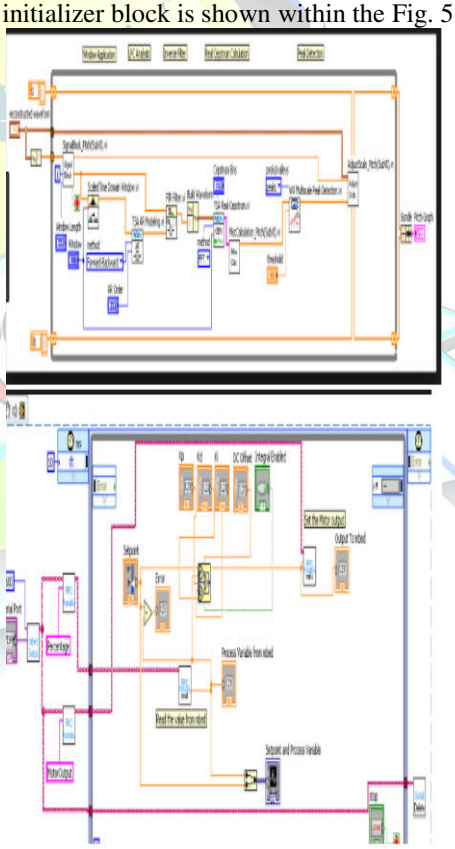


Fig.5. Simulation diagram for speech initializer block

The words from the string square measure is given to the training method that is shown within the simulation diagram of speech

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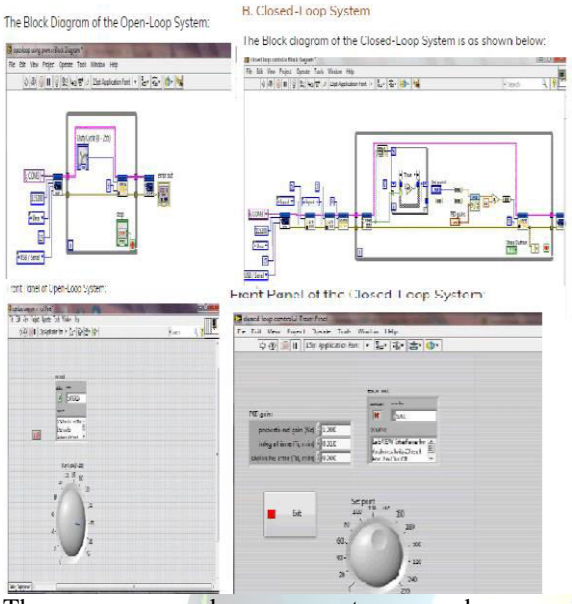
initializer. Once multiple samples of same word is recognized then that word is taken as model and it checks for the already hold on word. The simulation diagram for speed regulation is shown within the Fig.6



The speed management commands square measure given to the speech initializer block. The voice commands 1, 2 and 4 square measures regenerate into word by speech initializer block and it is compared with the words within the phrases.

VII. RESULTS AND DISCUSSIONS

a. On/off management:

Simulated output for ON/OFF management is shown within the Fig.7.

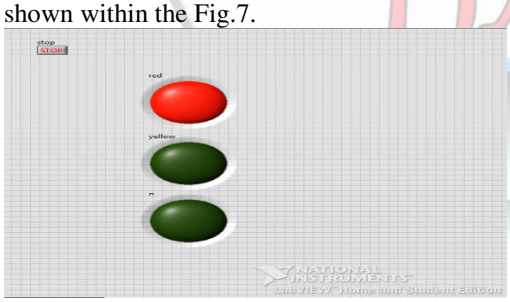


Fig.7. Output for ON/OFF management

For ON/OFF management, word is displayed in command with the assistance of voice recognition technique and it compares with the already hold on word in phrases, if it matches it makes the sunshine to modify ON otherwise it will not respond. The worth of the score provides the accuracy of every spoken words by voice recognition.

b. Speed regulation:

In speed regulation, for the known word PWM pulses square measure are generated and also the corresponding firing angle is given to the TRIAC and also the voltage is given across the load for every word "ONE", "TWO" and "FOUR". The simulated output for speed management is shown within the Fig.8.

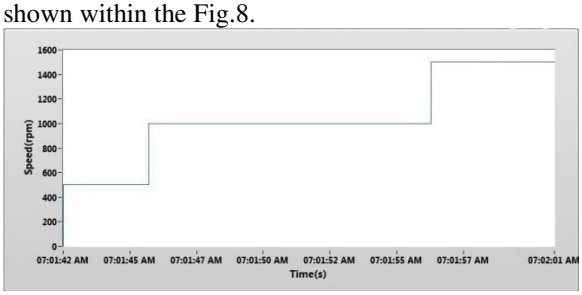


Fig.8. Output wave shape for speed management by voice recognition technique.

The commands and their several speed in rate square measurement is as follows: One – five hundred rate, 2 – one thousand rate and 4 – 1500 rate. The input command that is employed for this result's one, two, four and also the speed wave shape is generated in keeping with the command given as per the time shown within the system

VIII.CONCLUSION:

Control of appliances done by voice recognition technique is simulated using LabVIEW software package and also the results are discussed. The system is used to modifylights ON/OFF, then it is used to vary the speed of any appliances. The amount of speed isfound to vary for every command and also the speed level is displayed within the simulation. This technique acknowledges the input commands and gives a response. This technique can be applied for home appliances fan, fridge, cooling system, television, etc. In future work it is proposed to perform tests with amassive knowledge set of voice command and the amount of appliances to be controlled will be increased. The accuracy of voice command can be increased by using neural networks for training.

REFERENCES

[1]Richard.C, Simpson and Simon.P.Levine, "Voice management of a steam-powered Wheelchair", IEEE Trans. Neural systems and Rehabilitation Engineering, vol. 10, no. 2, pp. 122-125, June 2002.

ISSN2394-3777 (Print)
ISSN2394-3785 (Online)
Available online atwww.ijartet.com

[2]Laisa.C.P, Nichholas S. Almeida, Ana G. D. Correa, RoseliD.Lopes, Marcelo K.Zuffo, "Accessible show style to regulate Home space Networks", IEEE Trans. client physical science, Vol.59, No.2, pp. 422-427, 2013.

[3] Mark S. Hawley, Stuart P. Cunningham, Phil D. Green, Pam Ender by, Rebekah Arnold Daniel Palmer, Siddharth Sehgal, and Peter O"Neill, "A Voice-Input Voice-Output Communication Aid for individuals with Severe Speech Impairment", IEEE Trans. Neural systems and Rehabilitation engineering, vol. 21, no. 1, pp. 23-31, , Jan 2013.

[4]Gnanasekar. A.K, Jayavelu.P, Nagarajan.V, "Speech Recognition primarily based Wireless Automation of Home masses with Fault Identification", IEEE International conference on communications and signal process (ICCSP), Vol. 3, pp.128-132, 2012.

[5] Faisal Baig, Saira Beg and Muhammad Fahad Khan, "Zigbee primarily based Home Appliances dominant Through Spoken Commands victimization hand-held Devices", International Journal of good Home Vol. 7, No. 1, pp. 19-26, Jan 2013.

[6]Jeyasree Tagore, l.Gayathri, KaminUttamambigai.S.P, "Implementation of Wireless Automation of Home masses supported Microsoft SDK", International Journal of Science and Technology, Vol. 2, No. 5, pp.402-404, 2013.

[7]Y.Usha Devi, "Wireless Home Automation System victimization Zigbee", International Journal of Scientific & Engineering analysis, Vol. 3, pp. 1-5, 2012.

[8] S. M. AnamulHaque, S. M. Kamruzzaman and Md. Ashraful Islam, "A System for Smart-Home management of Appliances supported Timer and Speech Interaction", Proceedings of the fourth International Conference on engineering Annual Paper Meet, Vol.2, pp. 128-131, Jan 2006.

[9] Basil Hamed, "Design & Implementation of good House management victimization LabVIEW", International Journal of soppy Computing and Engineering (IJSCE), Vol. 1, Issue-6, pp. 98-106, Jan 2012.

[10] I.K. Hwang, D.S. Lee and J.W. Baek, "Home Network Configuring theme for All home appliances victimization ZigBee-based Integrated Remote Controller", IEEE Trans. client physical science, vol. 55, No. 3, pp. 1300-1307, August 2009.