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A Review on Voice Control Home Environment to Ease of Use for Disabled Persons

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***Abstract*—** This era is famous for digital automations which turned our lives more comfortable and effective. Almost every home appliances control through remote device or automatic accordingly. It's very easy to put remote aside and use when required but for disabled person whose life is not easy as we have. They survives in their daily lives which indeed harder than normal people. So, we require more intelligent systems which may control through voice command with high level of accuracy which turn their life easier. We have so many home appliances which require turning off or on timely to aware from any casualty. This paper proposed an intelligent system which is able to turn home appliances control through voice commands. This paper also reviewed the existing systems which are based on voice control feature.

***Keywords*—** Voice Control, Automations, Digital, Disabled Person,Speech Recognition, Arduino

I. INTRODUCTION

The system of controlling home appliances using voice command or by remote control or smart phone is getting popular day by day and it become enhanced at every level of control. Disable or handicapped people require this kind of system keeping their difficulties on mind. This system helps a lot not only handicapped people but also Veterans (elderly people). We require this system indeed with high level of accuracy.

Fig. 1 Voice Control for Disabled

II. RELATED WORK

The system which has been proposed in this paper is based on LabVIEW and Windows Speech Recognition. They use both of them to control light for turning off or on and control curtain through voice commands. But Windows Speech Recognition is not yet most popular for voice recognition or it can be stated as the accuracy is not yet effective especially for Indian native speakers due to accent variations [1].

Fig.2.1 System Overview

The system which has been introduced in this paper is based on android application as well as Google Voice Recognition feature. They proposed to control light and fan through voice command by the help of android phone and Google Voice Recognition. But the problem is that if you are using mobile phone to control your light bulb and fan through voice commands then why not it would be better to control through button on your android application instead of voice command. Here android phone works like a remote control device [2].

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Fig. 2.2 System Overview

The system which has been proposed in this paper is also based on Windows Speech Recognition. An interface has been designed to control light bulbs and fans using Windows Speech Recognition. They stated as it is very helpful for handicapped people to make their life easier. But it has been tested that Windows Speech Recognition is not effective for Indian Native Speakers because of pronunciation or accent. Failure rate is higher for them. That is why it has not been much popular for speech recognition. We need a system that can work for whole world [3].

Fig. 2.3 System Interface

The system which has been proposed in this paper is based on android application; it means that home appliances like television, light bulb and fan control through android application connecting via Bluetooth. Arduino Bluetooth device has been used in this system which is required to place in all desired home appliances to control through android application by the help of voice command as well as touch features. All devices required connecting with android phone and connection should not be loose during communication. But connecting many devices via Bluetooth is never been effective because Bluetooth has not been considered a strong connection and it is bit slower than other wireless connections [4].

Fig 2.4 Application Interface

Fig 2.5 Arduino Bluetooth Control Application

The system which has been proposed in this paper is based on Hidden Markov Model (HMM) for voice recognition to control home appliances through voice commands. This Hidden Markov Model is a technique which is generally used in MATLAB for voice recognition on the basis of speech parameters. By the help of Hidden Markov Model we can identify the speaker on the basis of their voice but the failure rate of this technique is high because sometime it accepts every voice command which should not be accepted. In this paper they also produces a connection among all the devices

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through either by internet or local phone connection to communicate with all devices [5].

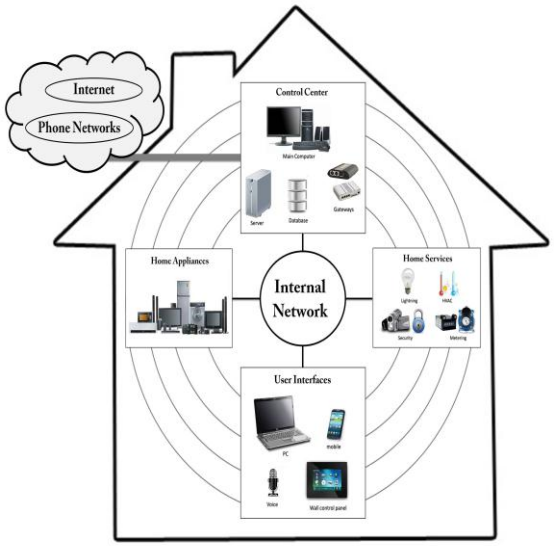

Fig 2.6 Smart Home Contents

The system which has been introduced in this paper is based on hand gesture recognition control. It means that home appliances like Television, bulb, fan, cooler and many more can be controlled through hand gesture recognition. They uses the method of Kinect and X10 to recognize hand gesture by the help of Depth Sensing cameras. But placing camera with right angle and providing proper gesture from anywhere in a room and especially for disabled or handicapped people is not possible and not convenient as well [6].

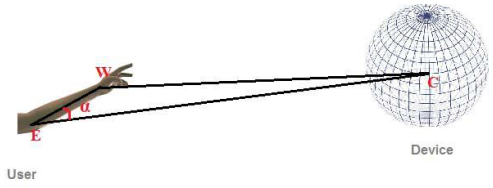

Fig 2.7 Hand Gesture Control

The system which has been proposed in this paper is based on android phone along with wireless connection to control home appliances as well as electricity. They used Wi-Fi as communication medium to contact with the Wi-Fi embedded devices for controlling features. But placing Wi-Fi device in all home appliances is bit costly and connecting all these with single smartphone is complicated which may break few connections during communication [7].

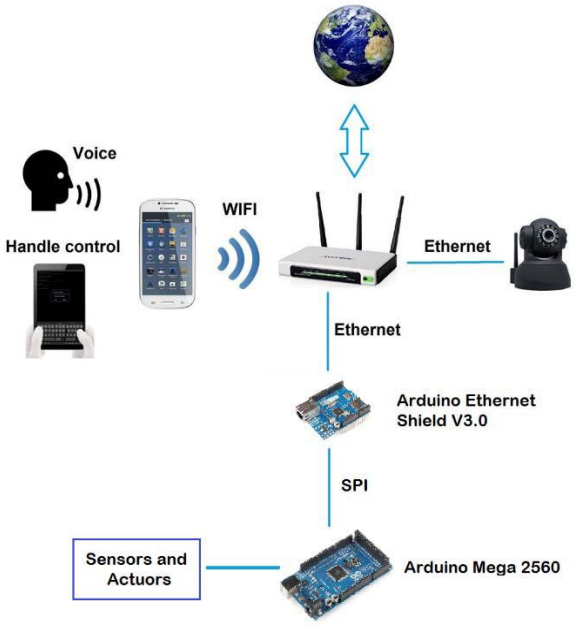

Fig 2.8 Communication System

III. PROBLEM IDENTIFICATION

Most of the existing systems are based on android application which requires a connection either by Bluetooth or Wi-Fi. Some of the system requires internet or local area connection to communicate with the home devices to control through voice or button. All these systems work like a remote control which already been discovered and very much cost effective. And few systems are based on weak techniques which are not able to recognize voice correctly especially for Indian speakers. So, we require a system that should be cost effective as well as best at accuracy level.

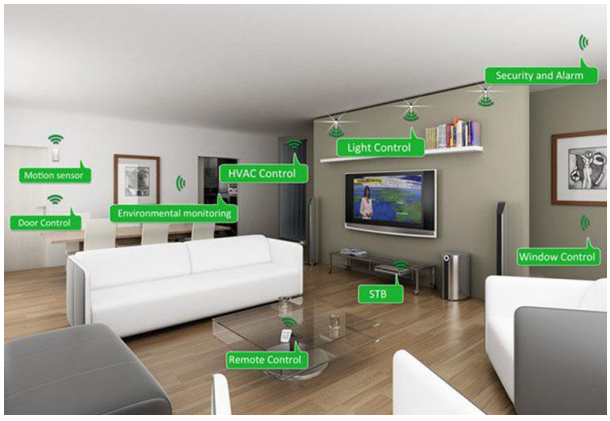

Fig 3.1 Wireless Control

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IV. CONCLUSION AND FUTURE SCOPE

Thus the survey of all these systems concluded at a point of enhancement of control home appliances by the help of voice commands which make life easier especially for disabled or handicapped people. We need a system which should be cost effective and works with high level of accuracy. The current proposed concept of Voice Control Home Environment gets enhanced in future by making voice recognition more accurate especially for Indian native speakers or in any accent or language like Hindi and many more.

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