**Intensify Home Security System Using IOT through Human Kinesics**

Madhu Gaur (Research Scholar) International School of Informatics & Management, Jaipur, (RTU, Kota Rajasthan)

gaurmadhu91@gmail.com

Dr. Priyanka Mathur (Research Supervisor) International School of Informatics & Management, Jaipur, Rajasthan

[Priyanka.mathur@icfia.org](mailto:Priyanka.mathur@icfia.org)

***Abstract- The role of technology is never-ending as the smart home is required not only for a luxurious life but also due to its numerous of advantages. It is especially useful for senior citizen and children with disabilities. Once a dream, home automation is slowly but surely becoming a part of daily lives around the world. The process of managing the home apparatus spontaneously & remotely is called home automation system. The technique of generating devices that works on automatic with least human interaction. Home Automation systems are thoroughly in demand for a better life. Along with we are living in the generation of everlasting development of the internet and its applications so, the point of a home automation system is becoming more dominant because of its innumerable advantages. Home automation is attained by using gesture for managing appliances. IoT is taking part a major role in generating such systems IOT based home automation system permit the end user to use home appliances via internet. Overall the system builds on three major parts that are Hardware, Software/Applications, and Communication protocols. This paper focuses on the learning and reviews of multiple researches held in the home automation system designed for disabled people.***

***This research also seeks to design and implement a voice based system that helps user to operate the home appliances via android mobile phones. Using android phones in controlling the appliances could provide several benefits to the user such as system security where the system can validate the specific voice that belong to the system owner, accessibility where the system can be used by people that have disabilities as (blindness, deaf, dumb). The aim of this paper is to find future directions in gesture & voice-control user interfaces. It can also manage home appliances like lights, fans, air conditions, and smart security locks, etc. Wi-Fi or Bluetooth is used for remote control of things. The idea of smart home refines the standard of living at home which makes life more convenient. Some people belief that technology is preceding an enormous part of our lives. As we are living in a modern age where smart and intelligent system are needed to be there, so that we can make our lives easier and much better, for example, we can do many things quickly, finer, and more exact.***

**Keywords: Home Automation System; Gesture & Voice control, IoT, Application Software, Focus on Disability**

1. **INTRODUCTION**

Home automation was first established in the 1970s, but it was not successful to embellish the lifestyle of its customer due to some cause. Home automation is one of the essential areas that are spreading all over to modify the way of people living. There are various home automation systems available in market that focuses on people with exceptional needs like elderly and disabled people [2]. Group of interconnected devices works in home automation systems for managing various functions within a house. A better user interface is providing through mobile phones in a home automation system, as a result the transportability and the wide range of proficiency in the house, so there is no need for customer to access the central control panel, or no need to use laptop, but the only thing to make use of mobile phone that is normally placed closer to the user, user can get trouble-free access it. Also when the customer is far away from the house, if he/she might want to look over or inspect lock of their house so it can be feasible by using these systems [30].

We are standing on the edge of a new generation with real omnipresent computing and communication where many gadgets surrounding us. In the contemporary years, with the evolution of wireless sensor devices have been made in IoT with a broad span of application [5]. There are considerable advantages of evolution and also in applications in IoT, which also put in several circumstances of human life. In IoT different information observing devices and technologies are mentioned such as sensors, GPS, Infrared sensors, laser sensors, etc. It also gather countless stipulation information, including sound, light, heat, gesture, location, electricity, biology, mechanics etc. The motive of IoT is to establish a connection between machine to machine, machine to man, and also man to man. Now a day’s mobile phones are consistently growing in its popularity also its effortless functionality. The demand for the newest and amenable mobile applications that increasing day by day is becoming source of attraction for all. This review paper share out with an easy interacting system developed for the old generation people, physically challenged, disabled people, and also small children at home [4]. Home automation system is also come up with for those people with special needs by commanding that system it can respond through voice commands, gesture etc. And also controlling the home appliances [30].

In India, percentage of people with disorder in the general population is 2.2 percent with 2.3 percent in rural and 2 percent in urban areas. The main intention of the survey was to approximate indicators of incidence and prevalence of disorder, cause, age at onset, facilities available to the person with difficulties faced by them in accessing, using their daily required appliances. The present survey covered 1.18 lakh household across India.

 Due to its various advantages smart homes has come very much in use now a day in our day to day life. It could be possible by modifying traditional wired system into wireless system. So that user can run the whole system via android application based devices by using Bluetooth connections. An economic system that can easily installed in our home by only using a Bluetooth connection in our Smartphone to make connection between appliances of our house. Home applications controlled by using eye/face scanner, body/hand gesture, or voice control in the system. Speech recognition is another idea used in this system. One of the best means of communication for all of us is human voice. The problem of communication with the system conducts huge research on speech/voice recognition before the communication between user and system was easy to click technique which was satisfactory but researchers’ wants more enhanced and facilitated communication system for the betterment of people and also the thin obstacle between the user and the system should be disappear. App development uses these kinds of methods of speech recognition and also controlling the home appliances through the user’s voice.

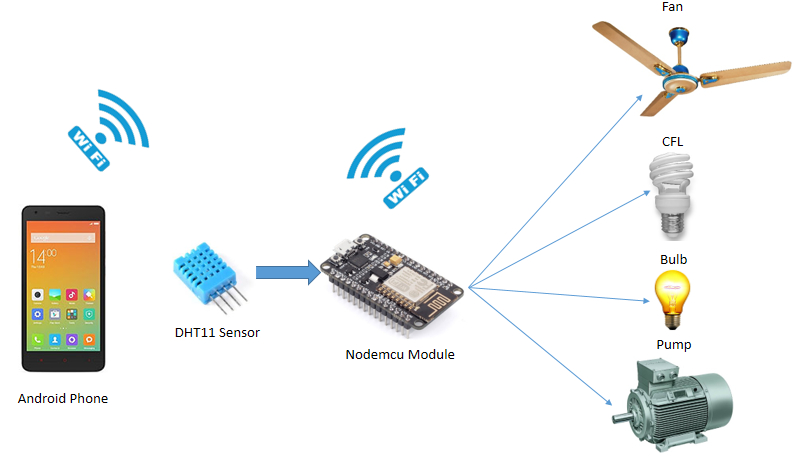


The arrangement of the paper is as follows. Section 1. Outlines the introduction, Section 2. Focuses on the System overview. Section 3. Review of literature survey. Section 4. Problem Statement. Section 5. Including with a conclusion and the future work and last it describes the references.

1. **SYSTEM OVERVIEW**

Home Automation System is the topics which are growing very rapidly now days by using IoT. Because of its various advantages so that people can do their work in an easily and fruitful manner. The paper deals with discussion of various home application techniques and how all the home appliances can be controlled manually through voice and gesture movements. This technique plays a very important role in the society for every human and especially for the physically impaired people [28].

The concept of smart home becomes extra reliable and acceptable. Basically it is mentioned the purpose of applying the body gestures with voice recognition to control and interact with our home appliances. Physically challenged people also old people can get benefit through this as it becomes uncomplicated for them to make use of voice or body gestures such as hand movements, voice control, Eye detection and other biometrics. This paper also mentioned voice recognition face recognition through the android application by using Smartphone when connected to home appliances which become trouble free and simple to use for physically disabled or elderly person and even little ones can get benefits from that system. There is numerous wireless technologies are forthcoming into existence. The most popular systems in home automation based on internet and connectivity. Earlier large and heavy computers needed to monitor and control the smart home when it is connected to internet. It was tough to carry out and to perform any action. For that now mobile phones and tablets are being in use through which we can control the appliances easily. There are different wireless communications protocols available in the market such as Blue-tooth; GSM etc are used by home automation system where installation cost reduced, human efforts reduced and become more flexible for old age people. Home automation based on Android aid the user to come up with a secure and safe home automation system [25].



**Figure 1**. System Overview Design

**Pros and Cons of earlier home automation system /wired system.**

**Pros:**

* It was reliable the system doesn’t have to rely on the sensors that communicate through radiofrequency.
* Wired technology was less to be failed as compared to the smart or wireless home security system.

**Cons:**

* It is generally installed by professionals and can be costly while installing.
* It can easily be attacked by unauthorized aspects.
* It is always in control throughout the process.
* It also increases the value of our home systems.
* The smart home security system saves more energy and money or electricity bill.

1. **REVIEW OF LITERATURE**

As per this review, there are many techniques where android based mobile phones and tablets are controlling home appliances using network. Every technique has its infrequent characteristics and also there are many companies which are providing advanced as well as better home automation [25]. Following models describes the research being performed by other researchers.

1. Mohd Nor Azni, et al [4] proposed a home automation system with android applications. Their research indicates an effortless home automation system where user can control home appliances through wireless technology. The technology they used in this system firstly a web server is being used and second method by using the Smartphone based on android applications. The web interface uses a framework known as Restful API and functions of that system controlled by Raspberry pi. The Raspberry pi which is an inexpensive computer, it is compact and also a intelligent computer that has been came about to provide an easy interface as well as the availability of Linux software which can comfortably connects to the internet and also support variety of programming languages. They use Android platform as their major Smartphone application as android development application tools which are free to download from SDK, used java programming language as the main language. The application screen comprises of functions like lights and fan control. The system is sustainable for Environmental consideration, Safety, and Health, Cultural, and benefit. In conclusion the system is handy for everyone and especially for disable and elderly people. A low cost and user-friendly future system can be improved by adding more features such as gases, sensors, motion sensors, temperature sensors, and other functions like push notifications in mobile applications.

1. Dr. V. Chayapathy et al [5] discussed the resulting work done in the expantion of IoT where they used Raspberry Pi. Based on the Python platform where customer interacts with household appliances by using voice and motion commands. They also aim to build an impressive personal assistant by using Raspberry pi. That uses Google’s speech recognition API that converts spoken text to write that is in python strings. Some more improvement needed like the quality of voice and far-field voice recognition. They tried to make easy interaction with household appliances they used python language as a platform. In conclusion Amazon has developed the Echo with the large numbers of features that not covered by Raspberry Pi. Hence it is simply an Endeavour to exhibit all possible field of development.

1. Moniruzzaman Bhuiyan et al. [11] and Rich Picking present a review paper on the history of gesture and voice control system. They investigate different types of motion, its users, applications, technology, issue occurred. The paper also provides a research framework for gesture control for old and disables people. The future goal is to develop a rich user interface that connects appliances and to control them using human voice and gesture.

1. Saeed Faroom et al. [10] in their research reviewing various home automation systems that are designed for handicaps and old age people were their major concern was to review already existing home automation system. The research would help in the selection for the well performing and useful home automation systems for elderly and disable people with the feature easy to use, Security, Scalable in this paper they made a comparison among various research according to some measure. Due to its low priced, easy to operate home automation is making its position in the market. There are many latest technologies which can be a part of home in the nearby future.

1. Tanish Sehgal and Shubham More [12] designed a system where an app is developed using the Android platform by using Arduino based web server. The home appliances can be controlled and managed through the voice of human using voice/speech recognition. They proposed a system where the app is developed using Android platform as most of the phones support Android OS. SDK (Software Development Tool Kit) has been used for the development and implementation of the smart home app. The application created contains all the commands like switching on/off AC, Fan, Lights, etc. The application is customized manually or using a voice by the user. They finally conclude that any Android supported devices can be used to install the smart home app and control and monitor the smart home environment.

1. Amirah’ Aisha Badrul Hisham et al [13] the project Bluetooth based Home Automation System Using an Android Phone that presents the design and implementation of a low-cost prototype of home automation system using Android phone. Android application is developed to provide a user-friendly graphical user interface (GUI).In this paper the review of literature done on the Home Automation System, Android OS, Bluetooth technology, Arduino. They mainly divide this project into two parts 1. Hardware Implementation 2. Software development. The Android application /is developed in java programming using Eclipse IDE. The proposed system was successfully implemented. It is concluded that they develop a low cost and high-reliability home automation system.

**Figure 2.**System Design

1. Rohit Kumar and Mohit Yadav [25] explained the model of home automation which is required to have a very easy installation. It consist of 4 main modules Raspberry Pi, Android Application, Wi-Fi, Relay circuit. A User interface created by using android so that home appliances can be easily controlled by the end user. The Android platform also provides other user interface for interacting such as dialogs, notification and menus. The user interface allow user to view the status of device and how can one control the appliances easily.
2. Bhaumik Vaidya, Ankit Patel et al. [30], proposed a home automation system to keep in mind which is specially designed for old age people. It is based on python language and raspberry pi server which control the Open CV, raspberry pi computer and android application, which operates by user commands such as touch and voice, collect from the mobile phone. The objective of this paper, a door monitoring system designed that works on face detection technology and recognition done by a camera installed outside the main door, which can be accessed by using android application. One fascinating feature that has been added is that, all the appliances can also be controlled via voice of user. Python programming language used to write software code which used for Face detection and open CV for activity detection. Dedicated application is expanded through which devices can be control and stature can be seen. An automatic door controlling system using USB camera, python, raspberry pi and android application is proposed for controlling and security purpose. It can especially help to the old and disable person living alone in their houses. The proposed system is low cost system, it is uncomplicated to build, and facile to execute.
3. **PROBLEM STATEMENT**

As we deliberate the Remote controlling system in home appliances is not that useful for elderly and disabled people. This is because of some reasons behind that like they might be illiterate which they don’t understand about the words that are label in the remote control. By the side of if someone having eyes sight problems, they are not able to read a small label that sticks in the remote control. Thus, make use of the voice controlling system will be the best way to solve those problems and also can make them control the home appliance more easily. Due to the physical device place in different height or position, the wireless voice controlling system is being implemented [9].

**Example**

When Steve O’Hear a person with disability, he was lame when he moved into his new home in London fifteen year back, he couldn’t turn the lights on and off. O’Hear make use of an electrical wheelchair, and despite the fact that the switches were fabricated lower than common for his convenience, but they were still too high to reach out, he need to be depend on other person to turn the lights on-off that is until he introduced Internet- associated lights that he could turn on with his cell phone using voice or by application installed in it by this he need not be depend on other for his regular routine work. [29].

An old lady who faced difficulty bowing can make use of her cell phone to turn a fan on and off. People with low eye sight could make use of a voice initiated TV manual for change channels. What’s more obviously for individual with strong dystrophy, squeezing a catch on their cell phone is simpler than mishandling for minor light switches [29].

There are 57 million Americans facing the disability as per Mark Perriello a representatives for the American association of people with disabilities. However just 5.6 million shrewd home stages – the product required to work machines from a telephone – have been introduced comprehensively as per research firm. [29].

1. **CONCLUSION**

Automation has always been considered as an option to make our home more suitable and comfortable. With the world getting busier day by day, there has been increased in the demand of automation. This paper shows the use of IoT for easy controlling of home appliances by the people having disabilities. Integration of Android Application and Wi-Fi Bluetooth technology in controlling home appliances can assist and improve the way of life of all user groups especially to disable and elderly people in terms of well-being and compatible. The elderly and disable people who are living alone in their houses it is beneficial for them. In this review paper, the survey of the IoT for people with disabilities is provided the pertinent application scenarios and main benefits are still to be described. The research problem has discussed. These exploration issues remain vast for future investigation.

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