

A Review Paper Design And Development of A Smart Mirror Using Raspberry Pi

Prof. Vaibhav V. Joshi¹, Narender R. Salaria², Roshni Suryajoshi³

¹Assistant professor, Dept of Electronics And Telecommunication

^{2,3} Dept of Electronics And Telecommunication

^{1,2,3} SITRC, Nashik SSPU, Pune

Abstract- Each day we are aiming for a relaxing and more laid back home. Technology plays a major role in making our homes more automated and hence laid back. This research aims to design and implement a cost effective but yet flexible, adaptable, and secure Home automation system. Paper presents design and prototype implementation of a basic home automation system based on Alexa Voice technology. When automating a home load not available in the visible range, fault identification system in this design helps the user to ensure that their home appliances had gone exactly ON or OFF. Automation of 2 loads such as fan and light has been tested by giving voice commands through personal Assistance Alexa.

Keywords- Alexa Voice technology, WIFI module, Raspberry, AVS (Alexa voice services).

I. INTRODUCTION

Home automation systems are gaining popularity day by day due to their ease of use and wide operation capabilities. Integrating voice technology and personal assistance to home automation systems make the system more user friendly and easy to operate. Some require home automation system to satisfy their need and comfort while for physically challenged people it can provide great Assistance. The system uses Wi-Fi so we can easily control indoor application.

This paper presents the implementation of a home automation using raspberry pi. This project can help to control home appliance using AVS. The many benefits of this project is to make life easier. The project helps in developed smart house with voice automation using AVS technology. Every day we turn on and turn of switches multiple times. the project also helps to keep and record of Weather of city, latest updates of news and headlines and many more things.

There have been some researches and developments on the home automation systems. The voice recognition based home automation system [4] uses the Microsoft speech API running on PC to recognize the voice commands. The RF trans receiver is used to send these commands to the controller to

control the various electrical devices and system. The use of computer makes this system more expensive and difficult to handle.

Intelligent home navigation system for disabled and elderly person [5] proposed a system which uses voice recognition module SR-07 for the speech recognition process, an Arduino controller, a wheel chair and a navigation module. The Arduino receives the command from the voice recognition module and move the wheel chair accordingly thus eliminating the need of any third person's assistance.

The voice recognition based home automation system [6] uses Lab VIEW to perform speech recognition and ZigBee module with a controller is used to control the devices wirelessly. The Limitation of the system [4] [6] is the use of the computer which **makes** system costlier.

[7] Proposed a home automation system which comprises a DSP processor for the voice recognition function, a microcontroller and relay module for the appliances control function like switching lights on-off etc. ZigBee wireless module is used which eliminates the need of additional wiring required for the signal transmission.

[8] Proposed a home automation system for elderly and physically challenged people which can control the home appliances by two methods by voice commands or by using mobile as remote controller. The voice recognition is done by the android application and thus given to the controller to control the devices.

The home automation system [9] proposed two ways to control home appliances that are by using timer or by using the voice commands. The software environment is developed on Virtual Basics 6.0 on PC and devices are controlled using PC parallel ports.

[10] Proposed a Bluetooth based home automation system which comprises of a remote controller interfaced with microcontroller which is additionally interfaced with the Bluetooth module to provide wireless control of the

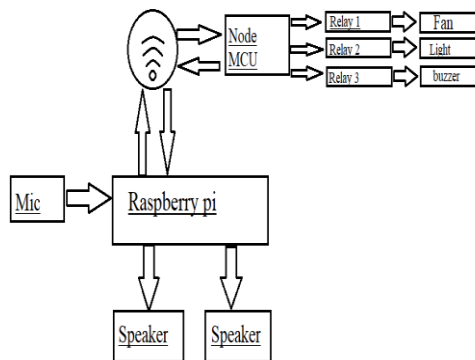
appliances. When key on the remote controller is pressed the controller sends the command via Bluetooth module to the receiver and corresponding action on the receiver side is taken.

[11] Proposed system which uses PC to convert the voice commands to text and send this converted text to the cellular network via mobile phone, on receiver side the text is received by another mobile phone and this command is read by the microcontroller and corresponding control action is taken

II. LITERATURE SURVEY

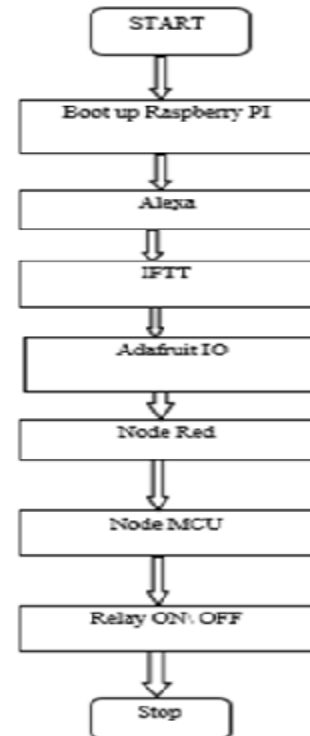
The AVS is used in various ways. The most popular is talk back services. Each idea is nearly same but the minor difference in it. Controlling home appliances is our basic part for designing a home automation with Node MCU, Raspberry Pi, and AVS. The implementation of project is possible with a help of cloud.

III. PROPOSED WORK



Block diagram of project

IV. FLOW CHART



Flow chart of project

VI. ADVANTAGES

- Due to use of Raspberry pi power requirements are also low.
- Here a single device is capable of handling multiple inputs.
- Due to the use of IOT we can access the system through internet.
- There will be a central hub which will be collecting all the data.
- No need of staying dependent on smart phones.
- The user can use the system hands free, i.e. no need of wearing special sensors and identification modules.
- Requirement of Manpower become less.

V. APPLICATINS

- As a personal assistant in homes. Alexa can help in recipe for kitchen it can help you with any question you ask as it is linked with web.
- Due to its news and alerts feature it can be used globally by all (officials, doctors, engineers, sportsmen). Alexa can give u daily news and information about Whether.
- It is very useful for Physical Challenged People in any Field (Contraction site, In Court, In collage and school,)
- It can be used in Industrial area to reduce, energy usage as no need to go to the switch we can directly turn it off

remotely and also for improving the Quality and efficiency of any system.

VII. CONCLUSION

- The proposed system uses Alexa for speech recognition and decision-making to give answers which are fed directly from web (google)
- Thus by implementing this project we create a smart environment in which we automate are surroundings, with the help of our voice
- We proposed a smart and efficient way for home automation which can also talk back when asked any questions
- Our projects can give latest news and weather report details when asked

VIII. FUTURE SCOPE

- Multiple voices recognition
- Voice detection for security
- Door lock system using Alexa
- Controlling intensity and speed

REFERENCES

- [1] Mukesh Kumar & Shimi S.L., "Voice Recognition Based Home Automation System For Paralyzed People", International Journal of Advanced Research in Electronic and Communication Engineering, volume 4, Issue 10, oct 2015
- [2] Amrutha S, Aravind S, Ansu Mathew, "speech recognition based wireless automation of home loads E-home IJESIT Vol.4 issue 1, jan 2015.
- [3] Siri Silla Manohar, D Maheshkumar, "Email interactive home automation system", IJCSMC, vol.4, issue 7, july 2015.
- [4] T.Kirankumar and B. Bhavani, "A Sustainable Automated System for Elderly People Using Voice Recognition and Touch Screen Technology," International Journal of Science and Research (IJSR), vol. 2, pp. 265-267, August 2013.
- [5] Rajesh Khanna Megalingam, Ramesh Nammily Nair, and Sai Manoj Prakhya, "Automated Voice based Home Navigation System for the Elderly and the Physically Challenged," in International Conference on Advanced Communication Technology, Seoul, pp. 603-608, February 2011.
- [6] Arthi.J.E and M.Jagadeeswari, "Control of Electrical Appliances through Voice Commands," IOSR Journal of Electrical and Electronics Engineering, vol. 9, pp. 13-18, February 2014.
- [7] Parameshchhari B D, Sawan Kumar Gopy, Gooneshwaree Hurry and Tulsirai T. Gopaul., "A Study on Smart Home Control System through Speech," International Journal of Computer Applications, vol. 69, pp. 30-39, May 2013.
- [8] Norhafizah bt Aripin and M. B. Othman, "Voice Control of Home Appliances using Android," in International Conference on Electric Power, Electronic, Communication, Control, And Informatic Systems, Malang ,pp. 142-146, August 2014.
- [9] .S. M. Anamul Haque, S. M. Kamruzzaman and Md. Ashraful Islam1, "A System for Smart-Home Control of Appliances Based on Timer and Speech Interaction," in Proceedings of the 4th International Conference on Electrical Engineering & 2nd Annual Paper Meet 26-28 , pp. 128-131, January, 2006.
- [10] Jia-Ren Chang Chien, Cheng-Chi Tai, "The Information Home Appliance Control System—A Bluetooth Universal Type Remote Controller," in Proceedings of the 2004 IEEE. International Networking, Sensing & Control. Taipei, Taiwan, vol. 1, pp. 399-400, March 21-23. 2004
- [11] N.P.Jawarkar, Vasif Ahmed and R.D. Thakare., "Remote Control using Mobile through Spoken Commands," in IEEE - International Consortium of Stem Cell Networks (ICSCN) 2007. 22-24, pp.622-625, 2007
- [12] Mardiana B., Hazura H., Fauziyah S., Zahariah M., Hanim A.R., Noor Shahida M.K., "Homes Appliances Controlled Using Speech Recognition in Wireless Network Environment," ICCTDInternational Conference on Computer Technology and Development, vol. 2, pp.285- 288, 2009
- [13] A.K.Gnanasekar, and P.Jayavelu, "Voice Based Wireless Industrial Automation with Enhanced Feedback System", in Proceedings of the International. Conference on Advances in Computer, Electronics and Electrical Engineering, pp. 51-55, 2012.
- [14] Faisal Baig, Saira Beg, and Muhammad Fahad Khan., "Controlling Home Appliances Remotely through Voice Command", International Journal of Computer Applications, vol. 48, June 2012.