

The Survey on IoT Based Home Automation

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ABSTRACT: Internet of things (IoT) has nowadays become a emerging and trending technology. It is a system of physical things embedded with sensors, software, electronics and connectivity to allow it to perform better by exchanging information with other connected devices, the operator or the manufacturer. Home automation based on IoT allows users to accessing and controlling of various home applications remotely using smart phones. It is mainly useful for physically disabled people and also to provide security to our house. It improves the standard and quality of people's living. And also make our home and life safer.

KEYWORDS: IoT, Home Automation, Security, Sensor, Smart phones.

I. INTRODUCTION

IoT is a new technology that has an unlimited potential to improve our lives by "command and control" strategy. It combines real virtual and digital environments to create a smart environment of home automation. It is the revolution of internet that makes object themselves recognizable. IoT based home automation system allows user to monitor and control various electrical and electronic application remotely using smart phones. User will be able to control applications like lights, fans, TV, etc. The main aim of this project is to provide user a smart home where the user can control his entire house environments by just one click on his smart phone and also to provide security to user's house by providing some unique feature like thief detection feature. This system also provide voice recognition feature which would be useful for physically disabled people. This aim is completed by using various sensors; IoT based various devices, smart phones and many more devices.

II. RELATED WORK

1. Dhakad Kunal has used asp.net for designing dynamic web services, web pages and web applications. He used web server which handle status of appliances. User will access devices by using web site. The user will be able to check and change status of devices.
2. Pooja Pawar has used two interface modules that is hardware interface module and software interface module.
3. Kaushik Ghosh has used wireless technology for automated home. It comprises of 3 main components i.e. Arduino, web-server and android application.
4. Amul Jadhav has used universal XML format to design automation system which can be easily ported to any other mobile devices.
5. R.Piyare has introduced design and implementation of a low cost, flexible and wireless solution to the home automation.
6. Jitendra R implemented a system with the ZigBee network and showed how to eliminate the complication of wiring in case of wired automation.

III. IMPLEMENTATION

The Home Automation System mainly focuses on monitoring and controlling household appliances through the Internet. The system consists of two main parts: A hardware interface module and a software communication module.

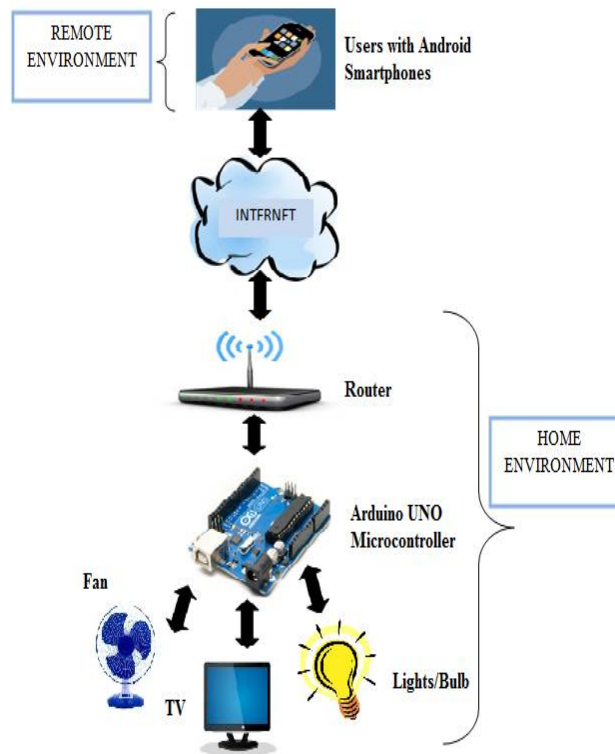


Figure 1. Concept of our System.

Remote Environment represents authorized users who can access the system on their Smart phone app using the Internet via Wi-Fi or 3G/4G network.

Home Environment consists of hardware interface module such as router, Arduino UNO, various sensors to detect the state of appliances and various home appliances.

The system components allow us to sense and actuate the state of application by just one command through our smart phones.

Following are the steps that portrayed the working of our system:

Consider the example that the user wants the blue lights of his house should get on whenever he switch on the TV.

1. Firstly, the user will switch on his TV by giving command by his smart phone.
2. The IR sensor connected to TV will detect that TV is ON and will send this info to Arduino UNO.
3. Arduino UNO will switch on the blue lights of house through relays.

In this way, our system works.

IV. COMPONENT DETAILS

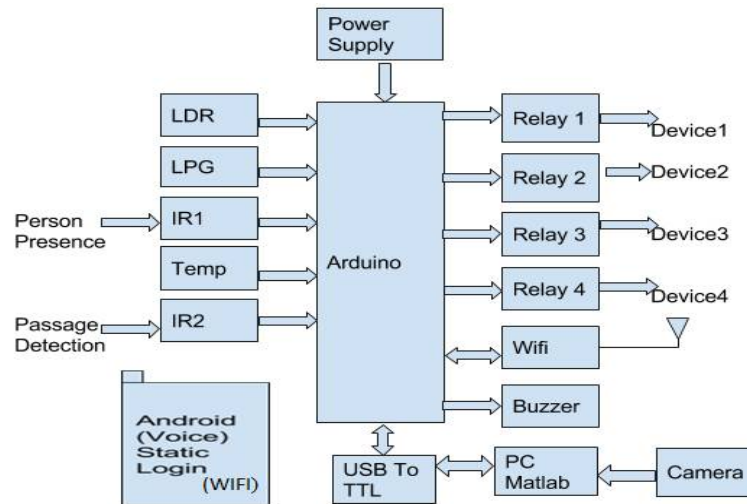


Figure 2. Block Diagram of our System.

V. FEATURES

1. Thief Detection

This feature is related to security of home. When all the members are not in home they will switch on the thief detecting switch. Whenever there is any movement or detection of person's presence at home and the thief detecting switch is on. Then the buzzer will get on, camera will capture the image of that thief, store that image and will also send notification to all house members.

2. Gas leakage detection

This feature uses LPG sensor to detect gas leakage. When there is any gas leakage notification is send to user's smart phones and buzzer gets ON.

3. Temperature detector

This temperature sensor is used to detect temperature of house.

4. Smoke and Fire detector

This sensor is used to detect smoke and fire. When there is smoke and fire, notification is send to user's smart phones and buzzer gets ON.

5. LDR sensor

This sensor switch off the lights when not required for example at day time. It also switches on the lights using relays when it is required.

6. Switch ON and OFF various home appliances

This feature allows user to switch ON and OFF various applications like fans, lights, TV using various sensors and relays.

VI. ACKNOWLEDGMENT

We would like to express our sincere gratitude to our project guide Prof. Jayant Sawarkar at Datta Meghe College of Engineering whose timely inputs and suggestions, helped in the completion of the project. We would also like to thanks the Library and Computer Engineering Department of our college for allowing us to carry out our research. Finally, we are thankful for having been given this opportunity to learn something new about the world of technology.

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

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Vol. 7, Issue 2, February 2018

VII. CONCLUSION

IoT based Home Automation system enhanced monitoring and controlling all home appliances without users actual presence at home. Home Automation System provides security to user's house and provides various features like thief detection, gas detection, etc. It is very helpful for physically disabled people as it has voice recognition feature and text to speech feature.

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