International Journal of Research in Engineering, Science and Management
Volume-2, Issue-4, April-2019
www.ijresm.com | ISSN (Online): 2581-5792

IoT based Wireless Security System

Mandar Hate[1], Manjunath Gowda[2], Kaustubh Kubal[3]
[1,2,3]*Student, Department of Electronics and Telecommunication Engineering, Thakur College Of Engineering and Technology, Mumbai, India*

***Abstract*: The advancement in Automation technology has made life more simple and convenient in all aspects. In today's world Automatic systems are superior over manual systems. Also the rapid increase in the number of users of internet over few decades has made Internet a daily habit, and IOT is the latest and ongoing internet technology. Internet of things is a rising network of everyday object-from industrial machine to consumer goods that can share information and complete tasks on behalf of the user.**

Wireless Home Automation system that uses IOT is a system that uses computers and mobile devices to control basic home functions automatically through internet from any part of the world. So an automated home can be called a smart home. So electric power and human energy is saved. The home automation system is different from other system as it allows the user to operate the system from anywhere around the world through internet connection.

In this project we present and display a Home Automation system using microcontroller and a Security system that employs a mixer of array of sensors, wireless communication and to provide the user with remote control of various lights, fans within their home. The security features added to home/small scale workplaces are through remote control and an exclusive Fingerprint scanner.

***Keywords*: Automation, security, fingerprint scanner, sensor**

1. Introduction

Homes of the 21st century will become more and more self-controlled and automated due to the comfort it provides, especially when employed in a private home. A home automation system is a means that allow users to control electric appliances of varying kind. Many existing, well-established home automation systems are based on wired communication. This does not pose a problem until the system is planned well in advance and installed during the physical construction of the building. But for already existing buildings the implementation cost goes very high. In contrast, Wireless systems can be of great help for automation systems. With the advancement of wireless technologies such as Wi-Fi, cloud networks in the recent past, wireless systems are used every day and everywhere. In recent years, wireless systems like Wi-Fi have become more and more common in home networking. Also in home and building automation systems, the use of wireless technologies gives several advantages that could not be achieved using a wired network only.

2. Motivation

As India is developing in terms of technology very rapidly, it is quite important that the devices which are introduced need to be updated on a regular basis. Nowadays, all the devices are more dependent on digital technology rather than analog technology.

So home automation results in a smarter home and is used to provide a higher and healthier standard of living. The beauty of a home automation system is that it is highly scalable, flexible also compatible with the security system which provides a secure network to a user's resources. Also with the IOT regulation just around the corner, it is high time we move towards widespread adoption of such a system.

3. Objective

With today's trend and rise in technology, it is important that the security of network not be compromised. Smart phones which are already perfect in feature and compatible that can be used to communicate to any other devices in an ad-hoc network with the help of various connectivity options. Our system will provide proper notifications to users for any type of thefts or accidents in house and alert them via sending messages on their mobile phone with a central control of all appliances in the house. Smart home is a very promising area, which has various benefits such as providing increased comfort, security and safety to people. This integration of security parameters and home automation modifies one's home to perform a set of different tasks automatically. This enables the user to be in control of the system, operate it and also secure its system, also one can eventually control all the devices that one has at home regardless the distance of the user.

4. Methodology

In this project a IOT based home automation system with security is developed by using IOT concept and Arduino controller. Arduino is main controller, IR sensor are used to detect human in the house depending on presence of human's light or fan can be turn on automatically, also by using app user can control light and fan.

The LPG sensor is used to detect the gas leakage, if there is any gas leakage then buzzer will turn on and notification will be sent to android app using Wi-Fi module. For security purpose we have added two level security in which main door

can be operated using app and internal doors of house are opened by fingerprint sensor.

In the start front door/gate of house can be open by using app. For internal room there will be fingerprint based security. User has to first set his fingerprint for authentication then whenever user want to access the room he has to scan his finger print. There will be also alternate option to open the door using Passcode which is set by using keys. There will an IR sensor which will sense the presence of human and depending on the presence it will give signal to controller to turn on the light and fan. An app is also designed for opening the front door and to turn on or off light/fan automatically. There will be wireless communication between Android app and controller using Wi-Fi module. We have connected a LPG gas sensor which will sense the LPG gas leakage in the house, If LPG leakage is detected then buzzer will be turn on and a notification will be sent to Android app.

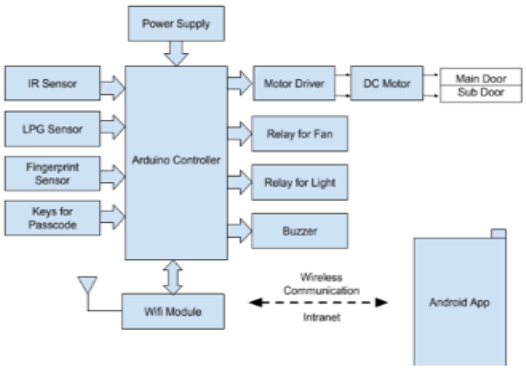

Fig. 1. Layout

A. Components

- Arduino Uno Controller
- Wi-Fi Module
- Fingerprint Module- R305
- LPG gas Sensor- MQ-6
- IR sensor
- DC Motor, Motor driver
- Key switch
- Relay
- Power supply
- Arduino IDE- Arduino Programing (software)
- Android Studio- Android App (software)
- Diptrace- PCB design(software)

5. Result and discussion

The designed system monitors the sensor data, like temperature, gas, light, motion sensors, as well as actuates a process which meets the requirement, for example switching on the light. It also keeps the sensor parameters in the cloud (Gmail) in a timely processed manner. This will help the user to measure the condition of various parameters in the home anytime.

Also this work of project presents a home-mobile security system which can dial out a preprogrammed mobile phone number, stored in the user's database and send a message when the system's sensor detector is triggered. This provides a sense of security for any house owner, small business shopkeepers, warehouses etc. because it provides high level of security, low cost, ease of use, easy maintenance and robustness of the system.

6. Conclusion

The home automation integrated with security parameters and operated on the basis of Internet of Things have been experimentally proven to work in harmony on connecting simple appliances and also the devices were successfully controlled through internet. Hence the project proposed above can help with modernizing the homes as well as take care of the security aspect.

Acknowledgement

We sincerely thank our guide Mrs. Rashmita Kumari Mohapatra for her guidance and constant support and also for the stick to our backs. We also thank the project coordinators for arranging the necessary facilities to carry out project work. We thank the HOD, Dr. Vinit Kumar Dongre, Dean Academic, and Dr.

R. R Sedamkar, Vice Principal, Dr. Deven Shah, The Principal, and Dr. B. K. Mishra and the college management for their support.

References

[1] S. Dey, A. Roy and S. Das, "Home automation using Internet of Thing," *2016 IEEE 7th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON)*, New York, NY, 2016, pp. 1-6.

[2] V. M. Reddy, N. Vinay, T. Pokharna and S. S. K. Jha, "Internet of Things enabled smart switch," *2016 Thirteenth International Conference on Wireless and Optical Communications Networks (WOCN)*, Hyderabad, 2016, pp. 1-4.

[3] Sharmad Pasha, "ThinkSpeak Based Sensing and Monitoring System for IoT with MATLAB Analysis", International Journal of New Technology and Research, vol. 2, no. 6, pp. 19-23, June 2016.

[4] Surinder Kaur, Rashmi Singh, Neha Khairwal, Pratyk Jain, "Home Automation and Security System", ACII, Vol. 3, July 2016.

[5] K. Venkatesan and U. Ramachandraiah, "Networked Switching and Polymorphing Control of Electrical Loads with Web and Wireless Sensor Network," 2015 International Conference on Robotics, Automation, Control and Embedded Systems, Chennai, 2015.

[6] K. N. Vinay Sagar, S. M. Kusuma, "Home Automation Using Internet of Things," International Research Journal of Engineering and Technology, vol. 2, no. 3, pp. 1965-1970, January 2015.