



IMPLEMENTATION OF COST EFFECTIVE IOT BASED HOME AUTOMATION SYSTEM

Sulu V, Steffy Ann Kuruvilla, Vibisha R.V, R.Kalaiselvi

Department of Computer Science & Engineering, Noorul Islam Centre for Higher Education, Kumaracoil, KanyaKumari ,
Tamil Nadu, India

ABSTRACT

This project presents the implementation of cost effective IOT based home automation system. Idea of home automation system will improve the normal living status in home. The fundamental control system uses a wireless WI-FI device which gives a wireless access to smart phones. It gives safer usage to switches with low voltage. Easy to install, easy to use and cost effective. The switch mode are used to control the home appliances.

KEYWORDS: IOT-Internet Of Things

1. INTRODUCTION

IOT Based Home automation system is getting popular and widely used in a IOT of house worldwide. It has tons of advantages to users even more to the handicapped and/or elderly users which it will make it easier for them to control their home appliances. Home automation systems can be labeled to two medium in which how it is connected and they are either wired or wirelessly connected. The main difference between these two kinds is that home appliances are linked wirelessly a central controller if it a wireless home automation system. On the other hand, the appliances are connected to a central controller if the medium use wired communication method. Wireless system had been introduced in order to dispose of wired communication among home

appliances. Arduinobased, Wi-fi based home automation will be applied. Nowadays, everyone cannot be separated from their smartphones. a number of five thousands individuals from USA, UK, South Korea, India, China, South Africa, Indonesia and Brazil took a survey regarding which was done by Time magazine. The result proved most of them is inseparable from their smartphones, eighty four percent allegedly claimed that survive without their smartphones. Another study shows that seventy five percent of the market share is Android and a total of one hundred and six million android smartphone were shipped in the second half of 2012. Android smartphone became the top operating system in the market in the present time worldwide and it became the most popular operating system known to man.

2. RELATED WORKS

2.1 Home and Office Automation System Using Human Activity Recognition

The recent years have witnessed significant progress in the automation of human activity recognition in order to realize intelligent environments which are capable of detecting users actions and gestures so that the needed services can be provided automatically and instantly for maximizing the user comfort and safety as well as minimizing energy. If a person enters into the room and sits/stands/lies down then the fan or AC should be automatically turned on. If a person comes and walks away or keeps roaming around, then they should not be turned on thus saving energy.

2.2 A Low-Cost Smart Home Automation to Enhance Decision-Making based on Fog Computing and Computational Intelligence

This work proposes STORM, a solution for decision-making in a residential environment that combines fog computing and computational intelligence. In this scenario, STORM is able to collect, treat, disseminate, detect and control information generated from the sensor nodes to the decision making process. With this in mind, STORM is based on the development of an ensemble of classifiers to enhance precision in the decision-making process, as well as on the use of the fog computing paradigm to manage and process the actions in the residence in real-time. The idea is to provide computational resource closer to the

end-users, processes them locally before transmits them to the cloud. When compared with the classical approaches adopted in the literature for classification, the results show that, as well as providing a high degree of accuracy in the classification, the STORM maintains a high stability in the decision-making process.

2.3 Improving Smart Home Security: Integrating Logical Sensing Into Smart Home

This paper explains various security issues in the existing home automation systems and proposes the use of logic-based security algorithms to improve home security. This paper classifies natural access points to a home as primary and secondary access points depending on their use. Logic-based sensing is implemented by identifying normal user behavior at these access points and requesting user verification when necessary. User position is also considered when various access points changed states. Moreover, the algorithm also verifies the legitimacy of a fire alarm by measuring the change in temperature, humidity, and carbon monoxide levels, thus defending against manipulative attackers. The experiment conducted in this paper used a combination of sensors, microcontrollers, Raspberry Pi and ZigBee communication to identify user behavior at various access points and implement the logical sensing algorithm. In the experiment, the proposed logical sensing algorithm was successfully implemented for a month in a studio apartment. During the course

of the experiment, the algorithm was able to detect all the state changes of the primary and secondary access points and also successfully verified user identity 55 times generating 14 warnings and 5 alarms

3. SYSTEM ANALYSIS:

3.1. EXISTING SYSTEM

Currently, the FIBARO system is the best building automation solution available on the market. Based on Global Standard Z Wave technology It offers a non-invasive installation process, which eliminates the need to run meters of cables. Our miniaturized modules can be installed in any wall switch box, behind a light switch, roller blind switch, etc., and are compatible with every electrical system. It is the only system available on the market capable of controlling LED lighting or fluorescent lights in electrical systems without a neutral wire (oldtype electrical systems).

Fibaro devices do not connect permanently to building's infrastructure. Simply take out any given module from the wall and install it in a new location. Thanks to mesh network, the module will update its location and resume cooperation with remaining system components.

Drawbacks

- Equipment and installation cost
- If any damages occur the entire system will crash
- Human errors

3.2 PROPOSED SYSTEM

IoT based home automation project is done using low cost ESP8266 ESPino ESP-12 Wi-Fi Module, It uses relays and few simple components. You can control four electrical devices and also you can monitor temperature. ESP-12 is low cost module we are using here. With advancement of Automation technology, life is getting simpler and easier in all aspects. In today's world Automatic systems are being preferred over manual system. With the rapid increase in the number of users of internet over the past decade has made Internet a part and parcel of life, and IoT is the latest and emerging internet technology. Internet of things is a growing network of everyday object-from industrial machine to consumer goods that can share information and complete tasks while you are busy with other activities. Wireless Home Automation system(WHAS) using IoT is a system that uses computers or mobile devices to control basic home functions and features automatically through internet from anywhere around the world, an automated home is sometimes called a smart home. It is meant to save the electric power and human energy. The home automation system differs from other system by allowing the user to operate the system from anywhere around the world through internet connection.

Advantages

- Cost Effective
- Can be fixed with in the switch board itself
- Can be controlled through internet anywhere throughout the world
- Graphical Interface is available

4.RESULT:



Fig .4.1:Final Design

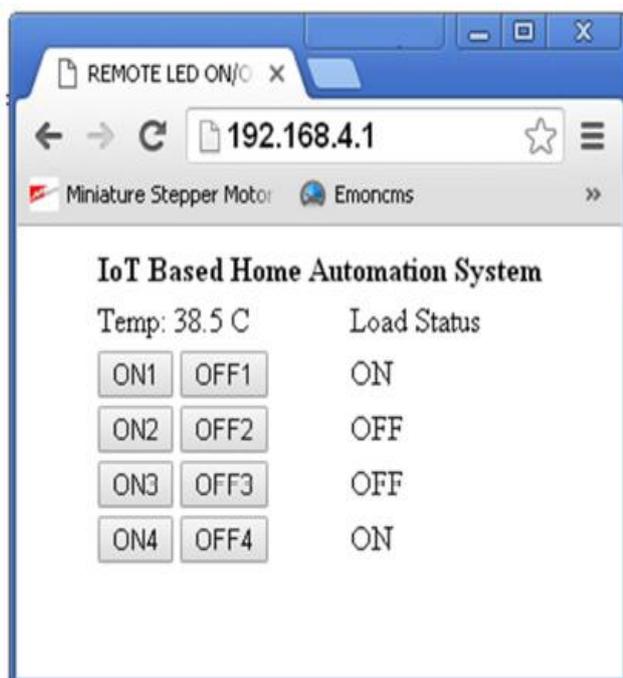


Fig.4.2: Web Page On Browser

5. CONCLUSION AND FUTURE WORKS

This chapter confers on the conclusion of IoT Based Home Automation System Using Android Phone and discusses some future recommendation.

5.1 CONCLUSION

It can be concluded that HOME AUTOMATION SYSTEM USING ARDUINO was a success This system consists of a Wi-Fi Module, power sockets, home appliances and an webapplication. It is user friendly and it is cost effective.Also it can be concluded that the objectives of this project has been successfully met and they areas follows:

- Constructed a wireless home automation system controlled by a smartphone and PC.
- Designed and implement cost effective home automation system yet an efficient one.
- Designed a user friendly and a safe system to control home appliances especially aimed to aid the elders and handicapped.

5.2 FUTURE ENHANCEMENTS

There are some recommendations for Future works. Some of them are:

1. Try to find a way to amplify the Wi-Fi module signal to work in greater distance.
2. Test each and every component before using them especially the relays for safety purposes.

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