INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH IN ENGINEERING AND MANAGEMENT (IJSREM)
VOLUME: 08 ISSUE: 04 | APRIL - 2024 SJIF RATING: 8.448 ISSN: 2582-3930

Smart Power Saving and Safety System

Sonali Nagdeve
Student
Department of Electronics and Telecommunication Engineering
Priyadarshini College of Engineering, Nagpur.

Shweta Mahalgave
Student
Department of Electronics and Telecommunication Engineering
Priyadarshini College of Engineering, Nagpur.

Saloni Janglekar
Student
Department of Electronics and Telecommunication Engineering
Priyadarshini College of Engineering, Nagpur

Ms. J.C Kolte
Ass. Professor
Department of Electronics and Telecommunication Engineering
Priyadarshini College of Engineering, Nagpur.

.

***Abstract*— Comfort is becoming a major priority in the 21st century. So, the revolutions of computing and smart environment came into existence. Some technologies like Ubiquitous/pervasive and ambient intelligence satisfy the maximum need of smart world but these technologies are not tightly coupled with the internet, so the people need another technology extension. Automation based on energy saving and safety is an ideal buzzing technology to influence new world technologies. In this project, an overview of smart automation systems is discussed. This project presents a design and prototype of the Automation system, With Motion sensor, LDR sensor, Fingerprint and smart theft detection system is introduced. In addition to that, LCD display would be used which will allow the user to monitor their devices smartly and gets information of security.**

***Keywords*— Automation, Arduino Controller, LCD display, sensors, Load, Buzzer etc.**

I. INTRODUCTION

In today's life it becomes very necessary to save energy. Environmental problems such as climate change and global warming are various issues caused by the excessive use of energy. Electrical energy in terms of light accounts 20 percent of word's total energy consumption. The most energy waste is caused by the inefficient use of the consumer electronics, in a light account. The paper focuses on energy efficient indoor LED light control system based on user's state and surroundings. The designed system uses control unit, sensors, LED driver and wireless sensor technology. It introduces a new LED Lighting Control System designed to reduce energy consumption. This system allows automatic control of household lighting system through situation awareness such as user movement or the brightness of surrounding. For increasing the efficiency of lighting system, we briefly discuss the various energy saving solutions. The proposed system use multi sensors and wireless communication technology in order to control an LED light according to the user's state and the surrounding light illumination. The proposed system provides high energy efficiency and user satisfaction as compared to that of the existing lighting system in market. It measures total energy consumption to verify the performance.

The Industrial Automation System (HAS) is extension of current activities performed inside the Industrial and this Industrial Automation System can be developed easily now a days, because of powerful computational devices and wireless sensor network (WSN), to IoT-Based Smart Bank to Achieve Industrial Automation with Gesture Detection and Control. The main objective of this project is to develop a Industrial automation system using an ESP8266 board being remotely controlled by any Android OS Smartphone. Modern houses are gradually shifting from conventional switches to centralized control systems, involving remote controlled switches.

Ever thought of a life where you could just command your Industrial appliances to work as you need just by using your voice. Coming days, we are going to use automated houses which are activated. This project will demonstrate, controlling Industrial electronic appliances like T. V., fans, lights etc., using the internet and your voice and that too low budget. Today's, smart objects in the Internet of Things (IOT) are able to detect their state and share it with other objects across the Internet, thus collaboratively making intelligent decisions on their own. Humans always find alternatives around them to carry out their work smoothly.

In this project, an overview of smart automation systems is discussed. This project presents a design and prototype of the Automation system, With Motion sensor, LDR sensor , Fingerprint and smart theft detection system is introduced. In addition to that, LCD display would be used which will allow the user to monitor their devices smartly and gets information of security.

II. PROBLEM IDENTIFICATION

Energy-saving solutions are very essential in recent years because of environmental issues such as climate change and global warming. According to conservation of energy, energy can neither be created (produced) nor destroyed by itself. It can only be transformed. Environmental problems are very important issues and these problems are largely caused by the excessive use of energy. Taking care of the environment is a responsibility that everyone should feel accountable for. Most of us are already aware of environmentally friendly processes such as recycling to minimize the amount of waste we produce and reduce our carbon footprint. The existing systems are designed without considering user satisfaction. But user's satisfaction is important factor due to saving energy. So, the system should be designed considering both energy efficiency and user satisfaction.

III. OBJECTIVES

- Develop an automation system for energy saving.
- Improving smart safety system using Sensor based automatic assistant.
- To design goals for the new smart control system using multisensory technology.
- To designed to improve energy efficiency and user satisfaction.
- Results and Conclusion.

IV. LITERATURE SURVEY

- Tan, Lee and Soh (2002) proposed the development of an Internet-based system to allow monitoring of important process variables from a distributed control system (DCS). It proposes hardware and software design considerations which enable the user to access the process variables on the DCS, remotely and effectively rent designations.

- Potamitis, Georgila, Fakotakis, and Kokkinos, G. (2003) suggested the use of speech to interact remotely with the home appliances to perform a particular action on behalf of the user. The approach is inclined for people with disability to perform real-life operations at home by directing appliances through speech. Voice separation strategy is selected to take appropriate decision by speech recognition.

- In the year 2006, S. M. Anamul Haque, S. M. Kamruzzaman and Md. Ashraful Islam proposed a system entitled "A System for Smart-Industrial Control of Appliances Based on Time and Speech Interaction" that controls the Industrial appliances using the personal computer. This system is developed by using the Visual Basic 6.0 as programming language and Microsoft voice engine tools for speech recognition purpose.

- Appliances can be either controlled by timer or by the voice command. Jawarkar, Ahmed, Ladhake, and Thakare (2008) propose remote monitoring through mobile phone involving the use of spoken commands. The spoken commands are generated and sent in the form of text SMS to the control system and then the microcontroller on the basis of SMS takes a decision of a particular task.

- Prof. Era Johri in (2001) have successfully completed the project on "Remote Controlled Industrial Automation". Withing's is a consumer electronics company is the leader in the connected health revolution. The Industrial camera alerts the user to many motions or noise while out of the House. It also tracks the indoor air quality, notifying the user if dangerous levels of voltaic organic compounds are detected. It has taken security, privacy and Industrial health to the next level through a partnership with IFTTT, a service that allows rule-based actions and triggers between a range of devices and services. Users can enhance their Withing's Home, a HD security camera equipped with environmental sensors, by connecting with IFTTT app to make household automation a reality.

V. PROPOSED SYSTEM

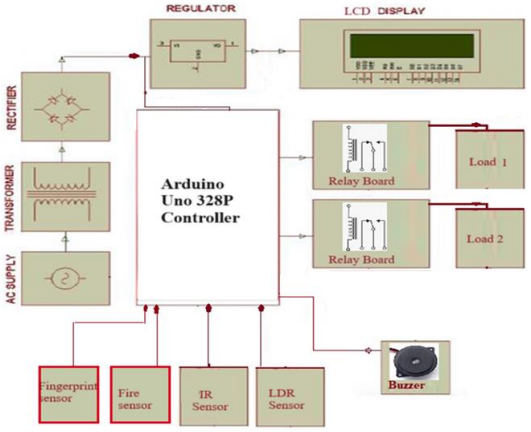

Fig.1. Block Diagram of System

- In this project work the basic signal processing of various parameters which are LDR, PIR motion sensor, Fingerprint sensor for Theft detection system and Fire sensor for any fire situation.
- For measuring various parameters values, various sensors are used and the output of these sensors are converted to control the parameters.
- The control circuit is designed using micro-controller. The outputs of all these parameters are fed to a microcontroller.
- The output of the micro-controller is used to drive the LED light as shown in block diagram. Light sensor module is used to control intensity of led light.
- The proposed LED system can autonomously adjust the light intensity value to enhance both energy efficiency and user satisfaction.
- The proposed system provides intelligent mechanism for effective energy management using multi sensors and technology to control LED light and security according to user's state and surroundings.

VI. APPLICATIONS

- This program works in Industrial and Office buildings.
- The system can be installed on the doorstep of the house or office.
- This program is very useful in libraries where light is very important. If no one is found, turn off the lights.
- This program is also useful for shopping malls, shops.
- This system can be used for Exterior and Infrastructure namely, street lights, industrial unit lights, parking space and warehouses, corridors.

VII. ADVANTAGE

- Light control: The system can continuously control the light intensity of the environment.
- Intelligent Dimmer: The system can detect the surrounding light continuously and adjust the light intensity
- Delay control: If the movement is not detected by the sensors, all the light will turn off automatically without delay.
- Remote monitoring and control: By using the light application room light can adjust as per the user's comfort.

VIII. CIRCUIT DIAGRAM

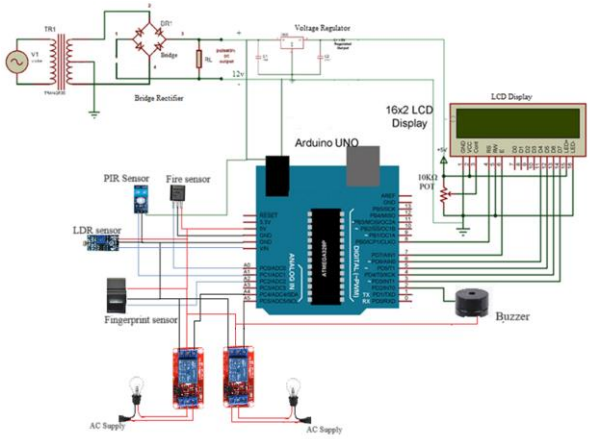

Fig. 2. Circuit Diagram of system

IX. RESULTS AND DISCUSSION

The proposed system uses multiple sensors and wireless communication technology to control the LED light depending on the user's environment and environment. The proposed system can automatically adjust the amount of light energy to improve both energy efficiency and user satisfaction. With rising energy costs, this program is an effective way to save energy. The energy used is, from a renewable source that helps to reduce dependence on ordinary electricity. The Intelligent Energy Saving System is not limited to any application, it can be used anywhere in the processes industry with minimal modifications to software coding according to needs.

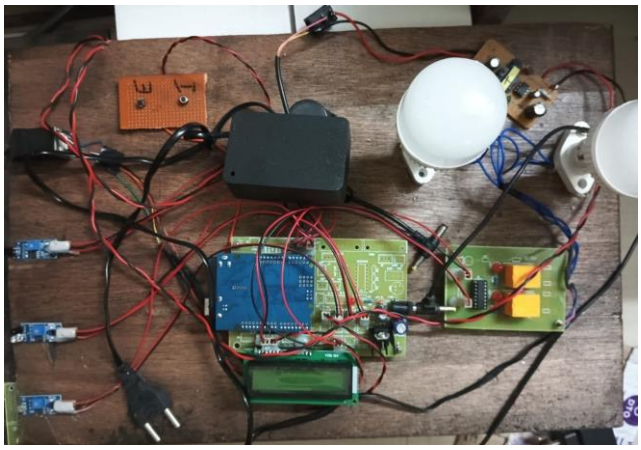

Fig.3. Actual Project Image

X. CONCLUSION

Industrial Automation that uses Internet of Things has been proven by testing that it works well by connecting simple electrical appliances to it and electrical appliances are successfully controlled remotely online. Industrial automation using Internet of Things has been proven by testing that it works well by connecting simple electrical appliances to it and electrical appliances are successfully controlled remotely online. Industrial automation is undoubtedly an app that can make the Industrial environment automated. People can control their appliances with these changing Industrial appliances and set up mobile control actions. In the future this product may have high marketing power. In addition, it can be displayed on a computer instead of cell phones to control the electrical equipment of any large areas such as factories, hospitals, facilities etc., in the center.

This project is about wireless Industrial automation using Android mobile helps us to implement such a fantastic system in our Industrial at a very reasonable price using cost-effective devices. Thus, it overcomes many problems like costs, inflexibility, security etc. In addition, will provide greater advantages like it decrease our energy costs, it improves Industrial security. In addition, it is very convenient to use and will improve the comfort of our home. The project has proposed the idea of smart homes that can support a lot of Industrial automation systems. C# programming language and Node microcontroller have been used to connect the sensors circuit to the home.

Also, in Industrial and building automation systems, the use of wireless technologies gives several advantages which cannot be achieved by using a wired network.

1) Reduced installation costs.
2) Easy deployment, installation, and coverage.
3) System scalability and easy extension.
4) Aesthetical benefits.
5) Integration of mobile devices.

For all these reasons, wireless technology is not only an attractive choice in renovation and refurbishment, but also for new installations.

REFERENCES

1. Tan, Y.K.; Huynh, T.P.; Wang, Z.Z. Smart personal sensor network control for energy saving in DC grid powered LED lighting system. *IEEE Trans. Smart Grid* **2013**, *4*, 669–676.
2. Park, Y.J.; Lee, M.H. Cost Effective Smart Remote Controller Based on Invisible IR-LED Using Image Processing. In Proceedings of the 2013 IEEE International Conference on Consumer Electronics (ICCE), Las Vegas, NV, USA, 11–14 January 2013; pp. 434–435.
3. Hwang, Z.; Uhm, Y.; Kim, Y.; Kim, G.; Park, S. Development of LED smart switch with light-weight middleware for location-aware services in smart home. *IEEE Trans. Consume. Electron.* **2010**, *56*, 1395–1402.
4. Ding, Y.S.; Jin, Y.L.; Ren, L.H.; Hao, K.R. An intelligent self-organization scheme for the internet of things. *IEEE Comput. Intell. Mag.* **2013**, *8*, 41–53.
5. Lee, C.K.; Li, S.N.; Hui, S.Y. A design methodology for smart LED lighting systems powered by weakly regulated renewable power grids. *IEEE Trans. Smart Grid* **2011**, *2*, 548–554.
6. Bhardwaj, S.; Syed, A.A.; Ozcelebi, T.; Lukkien, J. Power-managed smart lighting using a semantic interoperability architecture. *IEEE Trans. Consume. Electron.* **2011**, *57*, 420–427.
7. Keränen, K.; Mäkinen, J.; Korhonen, P.; Juntunen, E.; Heikkinen, V.; Mäkelä, J. Infrared temperature sensor system for mobile devices. *Sens. Actuators A Phys.* **2010**, *158*, 161–167.
8. Choi, S.J.; Kim, T.H. Symmetric current-balancing circuit for LED backlight with dimming. *IEEE Trans. Ind. Electron.* **2012**, *59*, 1698–1707.
9. Raj Sharma, Chirag, Pranjal Katara, Vishnu Shankar "Proceedings of IEEE Tech Sym 2014 Satellite Conference VIT University, Paper on Advanced Low-Cost Security system using sensors, Arduino and GSM communication module".
10. Meng-Shiuan Pan, Lun-Wu Yeh, Yen-Ann Chen, Yu-Hsuan Lin, and Yu-Chee Tseng, "A WSN-based Intelligent Light Control System Considering User Activities and Profiles", pg. no.1-12.
11. Individual Control Home Automation System, [Online] Available: http://www.slideshare.net/olafusimichael/500project1,Retrieved on November 2012
12. Gill K, Shuang-Hua Yang, Fang Yao and Xin Lu, "A Zigbee-based home automation system," IEEE Transactions on consumer Electronics, vol. 55, Issue.2, pp. 422–430, May 2009
13. Chao-Lin Wu, Wei-Chen Wang and Li-Chen Fu "Mobile agent based integrated control architecture for home automation system," Intelligent Robots and Systems, 2004. (IROS 2004), vol. 4, pp. 3608-3673, October 2004
14. Intelligent energy saving system, online available: http://projectabstracts.com/329/intelligent-energy saving-system. html, Retrieved in December 2012.

.