

Smart Industrial Power Saving and Safety System Using IOT

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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. Internet of Things (IoT) is an ideal buzzing technology to influence the internet and communication technologies. In this project, an overview of smart industrial automation systems is discussed. This project presents a design and prototype of the industrial Automation system, With Motion sensor PIR, LDR sensor and smart theft detection IR system using IOT is introduced. In addition to that, an app would be used which will allow the user to control their devices smartly and gets information of security.

Keywords : *Arduino Uno , LDR Ssenor , PIR Ssenor , IR Sensor, smart theft , IOT etc.*

I. INTRODUCTION

IoT can be employed for improving energy efficiency, increasing the share of renewable energy, and reducing environmental impacts of the energy use. This paper reviews the existing literature on the application of IoT in energy systems, in general, and in the context of smart grids particularly. Energy conservation is the effort made to reduce the consumption of Energy by using less of an energy service. This can be achieved either by using energy more efficiently (using less energy for a constant service) or by reducing the amount of service used (for example, by driving less). Energy conservation is a part of the concept of Eco-sufficiency. Energy conservation measures (ECMs) in buildings reduce the need for energy services and can result increased environmental quality, national security, *personal financial security* and higher savings.[1] It is at the top of the sustainable energy hierarchy.[2] It also lowers energy costs by preventing future resource depletion.[3]

Energy can be conserved by reducing wastage and losses, improving efficiency through technological upgrades and improved operation and maintenance. On a global level energy use can also be reduced by the stabilization of population growth. Energy can only be transformed from one form to other, such as heat energy to motive power in cars, or kinetic energy of water flow to electricity in hydroelectric power plants. However, machines are required to transform

energy from one form to other. The wear and friction of the components of these machines while running cause losses of very high amounts of energy and very high related costs. It is possible to minimize these losses by adopting green engineering practices to improve life cycle of the component.

II. PROBLEM FORMULATION

The energy consumption has become one of the major problems in our industry. Power consumption plays a vital role in energy consumption. Sometimes the user forgets to turn off the lights and fans; the energy gets wasted. Hence there is a need for power management system to save our electric power. Light, fans and many other electrical devices are controlled by on or off method. Nowadays most of them are controlled by the remote device. To control through the remote, we need a system; often we need a fan and light to perform a daily basis so that most of the electric power getting wasted because we were making use of the computer to control the electrical appliances. Therefore we need to spend the significant amount of power cost. Here we cannot measure the temperature of the human being, and we cannot change the speed of the fan.

III. OBJECTIVE

- Develop a industry automation system using smart sensors.
- Improving smart industry automation system using Sensor based automatic assistant.
- Learning Wi-Fi Communication technology using IOT.
- Learning Mobile Communication.

All things considered; The design goals for the new smart lighting control system are as follows:

- This program should be designed to increase LED usage.
- This program should be designed to have the ability to communicate.
- This program should be designed to control based on awareness of the situation.
- This program should be designed to improve energy efficiency and user satisfaction.

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 Kokkinoss, G. (2003) suggested the use of speech to interact remotely with the industry 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 industry 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-Industry Control of Appliances Based on Time and Speech Interaction” that controls the industry 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 Industry Automation”. Withings is a consumer electronics company is the leader in the connected health revolution. The Industry camera alerts the user to many motion 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 industry 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 Withings Home, a HD security camera equipped with environmental sensors, by connecting with IFTTT app to make household automation a reality. Fig 2.1 shows the Reality Industry automation explaining that if the user is leaving the home, then the camera inserted to monitor automatically starts to watch.

V. CONCEPT AND METHODOLOGY

A. Block Diagram

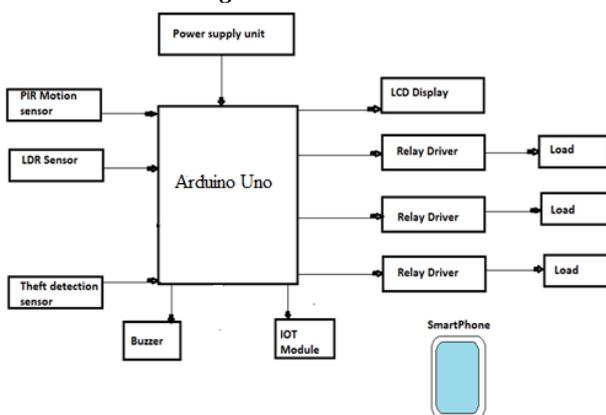


Fig.1. Block Diagram of system

B. Working of system

The LED light control system consists of various modules: motion sensor, light sensor and current sensor, controller unit, LED driver, LED light source, dimmer module, LCD display and IOT transceiver as shown in fig. When power supply is on, PIR sensor first check the presence of a person in a room and then decision has been taken by the controller to turn the lights on or off. At the same time light sensor continuously monitors the light intensity of a surrounding connected to the controller and based on that intensity value Atmega 32A controller takes decision to control or dim the lights and turn lights on or off. The status of that room can be continuously monitors on the PC by using Internet of things module. Dimmer module used in the system; it requires AC supply. It shows dimming of a bulb. Intelligent Energy Saving System, the aim of the project is to save the energy. In this project we are using various sensors, controlling and display.

In this project work the basic signal processing of various parameters which are LDR, PIR motion sensor, IR Theft detection system. 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 micro-controller.

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 wireless communication technology to control LED light according to user’s state and surroundings.

VI. ADVANTAGES

- 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.

VII. APPLICATION

- This program works in Home 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.

VIII. CONCLUSION

This project is about wireless industry automation using Android mobile helps us to implement such a fantastic system in our industry 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 industry 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 industry automation systems. C# programming language and Node microcontroller have been used to connect the sensors circuit to the home.

Also, in industry 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.

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