AUTOMATED INTELLIGENT POWER SAVING AND SECURITY SYSTEM

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ABSTRACT

Nowadays power saving is essential in all aspects. The existing method using switches to on or off the supply. The main drawback of this existing method was unnecessarily the power will be wasted when no one in the room or surroundings. To overcome the drawback, we are using this Automated intelligent power saving and Security system. In this we are using IR sensor, relay. When a person enters the monitored area, the Infrared energy emitted from the motion of the body is focused by a Fresnel lens segment and the IR sensor activates, and gives to the Arduino uno board which acts as a security surveillance system or power saving device according to the position of switch.

I. INTRODUCTION

Power saving system is an electronic project that uses Arduino. This project works to save electricity and to determine the number of persons in a room. IR sensors are used to detect the presence of person through entrances and exits. There are 2 IR sensors for example IR sensor A and IR sensor B, if a person passes through the IR sensor A and IR sensor B will be count one. On the other hand, if a person goes through the IR sensor B first then the IR sensor A will be rejected. The relay will turn off the light or fan when the number of persons in the room is empty. This in turn can reduce the cost of electricity and easily be the total number of persons in a room.

II.LITERATURE SURVEY

Kazi Tanvir Ahmmed et.al[1] published a paper reports on a system that can save electricity. Many times we leave the room and hall without switching off lights and fans, thus electricity is wasted. In this work we have presented a system in which energy will be saved based on number of people entering in or leaving out of the room. If there is no person in the room, then light and fan will be switched OFF. On the other hand as soon as any person enters the room, light and fan will be switched ON. On the basis of the intensity of sunlight we can increase or decrease the intensity of light. Simultaneously we can vary the speed of the fan sensing the room temperature. The more temperature the more speed of the fan. A smoke sensor module is used for detecting any smoke within the room and provides safety by alarming the audio device.

Dr.Harikrishnan R et.al[2] described the main objective of this paper is to save power in IT work spots, using a PIR sensor capable of detecting only human beings. It deals with the concept of office automation which will be very much helpful to save power in the time of power crisis. A PIR sensor is fixed to each and every computer in the work spot. The PIR sensor fixed in the computer will sense its user for every 15 seconds as pre programmed in the controller which is fixed to the sensor. In the case of absence of user, the monitor is programmed to turn off. All the PIR sensor are centralized by a PIC controller (PIC 18F4520) in the department. This is capable of interfacing

multiple electronic devices. It interfaces the PIR sensors with the relays. If a whole row or continuous 4 system is seemed to have no user then PIC controller is programmed in such a way to switch off there spective lights and fans (or AC shutters) by a interface between switch board of light and fan control and PIR sensor. A DC relay is used for the turn ON and turn OFF purposes of electrical appliances according to the output obtained from the PIC controller circuit. A relay driver circuit is used to drive the relay according to the output pulses from the PIC controller.

K. Srishyla et.al[3] has said Electricity has the major resource consumption among many resources in the country. Also, it is the most misused resource, so control of consumption needs to be taken so that cost is maintained and future generation is benefited. The system proposed here represents a low cost and efficient classroom system which controls appliances like lights and fans using Node MCU module and relays and adapters with the available LAN or Wi-Fi in the University, so that devices can be remotely controlled using the web. This also uses low-cost sensor which detects the presence of humans switching on the lights when necessary and off if humans are not detected. The simple and effective sensor called Passive Infrared Sensor (PIR sensor) will be used in each classroom. Human existence is sensed by the sensor through heat radiations which are produced by humans. Then the input is given as the signal through simple web application is created. The procedure to operate the devices which manually followed to operate the devices is however neglected, therefore, installing this type of equipment, and a web application will surely reduce the wastage of electricity in classrooms by remote-operating devices.

Mayuresh Mahajan[4] described the work gives a report about the design of an energy saving system using a Passive Infrared Radio sensor to switch 'off' fan and light circuits in the classroom in the absence of students. When a student enters the classroom, the Infrared energy emitted from the living body is focused by the Fresnel lens segment and the PIR sensors activate and give to the microcontroller which acts as power saving device according to the relay. When motion is detected the relays trigger and switch the fan and light 'on' and after ten minutes to switch 'off' the fan and light when motion has not been detected. The fan only switches 'on' when the room attains a temperature of 250 C-300 C.

Acording to Sonali Nagdeve et.al[5], 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.

Vani Sri.Set.al[6] described the objective of this paper is to save electric power to detect human using a PIR sensor. We often leave the place without switching off lights, fans and Air Conditioner etc. Therefore electricity is getting wasted. Here we have done a power saving in which electricity cost will be saved by sensing the movement of people entering or by leaving out the room. If the sensor identifies that there are no persons present inside the room, then electrical appliances will be turned OFF automatically. If any person enters the room, automatically devices will be turned ON. Here we are separately controlling every electrical appliance by specifying the area. We can also vary the speed of the fan by sensing the room temperature. If the temperature is more the speed of the fan will even more. If there is no user in the room, it switches off the lights, fans, or AC with the help of interface which is in between the switchboard of appliances and PIR sensor. DC relay is also used

for the turn ON and turn OFF of the electrical devices according to the output which is in the PIC controller circuit. How many appliances are turned on can also be checked through online? If anyone wants to see who are present inside the room can also be seen with their images on the cloud.

Acording to Vedanth Lakshmi Swaroopa et.al[7], Energy is the ultimate source in earth, the consumption of Energy/Power is must take care. People in the home will wastes lot of energy by forget turn of switches while leaving the room especially elder aged persons, for that we wastes lots of energy and consumption of energy levels also increases. So implementing /Developing project like "Energy Management & Safety System for Home Appliances" Now a days the appliances control with wireless sensors networks has a great revolution but it has manual action need, so this project can be developed on ARM based controller or ARM 7 TDMI microcontroller i.e. LPC 2148 micro controller with automatic functioning of home appliances using IR sensors. This paper reports on a system which will save electricity, over and over whenever we are left the room and hall without switching/turn off lights and fans or any electrical appliance, therefore electricity is wasted. In this work we've developed or implementing a system during which energy are saved based on range of individuals coming into in or going out of the area. If there's nobody within the area or in that particular room, then automatically the lights and fans are switched OFF. On the opposite hand as presently as a person enters the room, lights using in that room and fan are switched ON. On the idea of the Intensity of daylight we will turn off lights in day time.

Himanshu Chandak et.al [8] has said Comfort has become a staple in the 21st century. So computer and intelligent changes came about. Other technologies such as ubiquitous / full-fledged and existing intelligence meet the great need for a smart world but these technologies are not firmly integrated with the internet, so people need another technological extension. Internet of Things (IoT) is a buffet technology suitable for influencing the internet and communication technology. In this project, smart home automation systems are being discussed. The project introduces the design and prototype of the Home Automation program, With the motion sensor, LDR sensor, Voice controlled and intelligent crime detection system using Ioot. In addition, an app will be used that will allow the user to control his device intelligently and gain security information.

III.RESULT&DISCUSSION

 The power-saving system intelligently adjusts fans and lights based on room occupancy, reducing energy consumption. When no occupants are detected, specified devices are automatically switched off, conserving power. Upon entry, PIR sensors detect human presence and activate devices, ensuring user comfort. This seamless integration of sensors enhances energy efficiency and user experience. Overall, the system effectively balances energy conservation with user comfort, promoting sustainability.

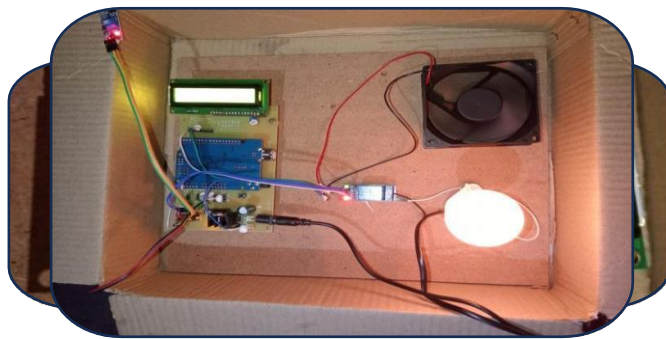Fig1 :There are no persons in the room

Fig 2 : Sensors detected one person entered into the room andautomatically turn   on fans and light

V CONCLUSION

In this paper, it is developed to turn automatically the appliances ON and OFF as required and security alarm. By implementing this setup, we can expect more power conservation and high security. This concept not only ensures that our work will be usefulin the future but it will also provide flexibility to adapt and extend as needs change. This device is compatible with our existing system used for providing comfort. The system utilizes IR sensors to detect human presence and ambient light levels. Advanced algorithmsanalyze real-time sensor data for intelligent decision-making. Continuously monitors the premises for unauthorized intrusions or suspicious Triggers activities. Instant alerts and notifications to the user's mobile device or centralized control panel. Enhances security byproviding timely information on potential threats or breaches.

FUTURE SCOPE

1. **Integration with IoT:** Enhanced connectivity with the Internet of Things (IoT) for seamless communication and intelligent building management.

2. **Advancements in AI and Machine Learning:** Integration of advanced algorithms to enable the system to learn, adapt, and optimize energy consumption and security protocols.

3. **Cloud-Based Solutions:** Utilization of cloud computing for remote monitoring, real-time analytics, and scalable deployment across various applications.

4. **Smart Cities Integration:** Expansion into smart city infrastructures to contribute to sustainable, energy-efficient, and secure urban environments.

5. **Cyber security Enhancements:** Implementation of robust cyber security measures to protect sensitive data and ensure the integrity and reliability of the system.

REFERENCES

[1] Kazi Tanvir Ahmmed, Md. Haider Ali Shaim, Md Kamrul Hassan Majumdar, Himel Biswas Automated Energy Saving and Safety System April 2014.
[2] R Harikrishnan, P Sivagami intelligent power saving system using PIR sensors

Himanshu Chandak, Prof . Ayushi Jaiswal , Hitesh Dhoke , Pranay Kumar Juwar , Chandan Singh Smart Energy Efficient Security and Intelligent Home Automation Using IOT With Cloud Organizing

[3] K. Srishyla, E. Naresh , M.Niranjanamurthy , Santosh Dilipkumar Parakh
    Automated Electric Power Saving System in University Classrooms Using Internet of Things

[4] Mayuresh Mahajan Energy Saving System using a PIR Sensor for Classroom Monitoring System

[5] Sonali Nagdeve , Shweta Mahalgave, Ms. J.C Kolte, Saloni Janglekar Smart Power Saving and Safety System
Vani Sri.S, Sneha.S, Dr.G.Umarani Srikanth POWER SAVING SYSTEM USING SENSOR OVER IoT

[6] Vani Sri.S, Sneha.S, Dr.G.Umarani Srikanth POWER SAVING SYSTEM USING SENSOR OVER IoT

[7] Vedanth Lakshmi Swaroopa , S.Naveen Kumar INTELLIGENT ENERGY SAVING AND SAFETY CONTROL

[8] Himanshu Chandak, Prof . Ayushi Jaiswal , Hitesh Dhoke , Pranay Kumar Juwar , Chandan Singh
Smart Energy Efficient Security and Intelligent Home Automation Using IOT With Cloud Organiz.