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Smart Energy Efficient Security and Intelligent Home Automation Using IOT With Cloud Organizing

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Abstract: ***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.***
Keywords: Arduino Uno , LDR Ssenor , Motion Sesnor , Voice Controlled , smart theft , IOT etc.

I. INTRODUCTION

In modern life it is very important to save energy. Environmental problems such as climate change and global warming are various problems caused by excessive use of energy. Electricity in terms of light accounts for 20 percent of the total energy used. Excessive power consumption is caused by the unsafe use of consumer electronics, on a light account. The paper focuses on an internal LED light control system based on user experience and environment. The system is designed using a control unit, sensors, LED driver and wireless sensor technology. Introducing a new LED Lighting Control System designed to reduce energy consumption. This program allows automatic control of the indoor lighting system by raising awareness of a situation such as user movement or ambient light. To increase the efficiency of the lighting system, we briefly discuss various energy-saving solutions. The proposed system uses multiple sensors and wireless communication technology to control the LED light depending on the user's environment and ambient light. The proposed system provides high power efficiency and user satisfaction compared to that of the existing lighting system on the market. It measures total energy consumption to ensure performance.

Internet of Things is a new era of computer intelligence and offers the right to worldwide communication. Figure 1 describes the combination of C and A. That reveals people and things that can be connected, it is good to use Any method / network or any service.



Figure 1: IoT Objectives

1) Utilization of resources (water conservation and energy use)
2) Security once
3) Comfort.

The project introduces an expert IoT agent for these structures and manages devices via the Internet. In a very short time, the IoT agent receives user data in the form of commands, which will be sent to control the systems using bluetooth commands. This command will be received by the Bluetooth assistant and you will control the devices.

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II. PROBLEM STATEMENT

Energy-saving solutions are especially important in recent years because of environmental issues such as climate change and global warming. According to energy conservation, energy cannot be created (produced) or destroyed by itself. It can only be changed. Environmental problems are very important issues and these problems are mainly caused by excessive use of energy. Caring for the environment is a responsibility that everyone should feel responsible for. Most of us are already aware of ecological processes such as recycling to reduce the amount of waste we produce and to reduce our carbon footprint. Existing systems are designed without regard to user satisfaction. But user satisfaction is an important factor for energy efficiency. So the system should be built taking into account energy efficiency and user satisfaction.

III. OBJECTIVE

A. Develop a smart home automation system using Voice based assistant.
B. Improving smart home automation system using Sensor based automatic assistant.
C. Learning Wi-Fi Communication technology.
D. Learning Mobile Communication.

All things considered; The design goals for the new smart lighting control system are as follows:
1) This program should be designed to increase LED usage.
2) This program should be designed to have the ability to communicate
3) This program should be designed to control based on awareness of the situation
4) 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 online-based system to allow for the monitoring of critical dynamic processes from the distributed control system (DCS). It suggests computer hardware and software configuration that allows the user to access process variables in DCS, remotely rent and rented designated locations.

Potamitis, Georgila, Fakotakis, and Kokkinoss, G. (2003) have suggested the use of speech to be used away from household appliances to perform a specific act on behalf of the user. This method is usually used by people with disabilities to do real homework by directing the materials used in speech. The word separation technique is chosen to make the right decision by observing the speech.

In 2006, S. M. Anamul Haque, S. M. Kamruzzaman and Md. Ashraful Islam proposes a program entitled “A System for Smart-Home Control of Appliances Based on Time and Speech Interaction” that manages household appliances using a personal computer. This program is developed using Visual Basic 6.0 as a programming language and tools for the Microsoft voice engine for speech recognition purposes.

Electronic devices can be controlled by a timer or by voice command. Jawarkar, Ahmed, Ladhake, and Thakare (2008) propose remote cell phone monitoring that involves the use of spoken commands. Spoken commands are generated and sent via SMS text in the control system and the microcontroller on the basis of SMS decides on a specific task.

V. PROPOSED BLOCK DIAGRAM

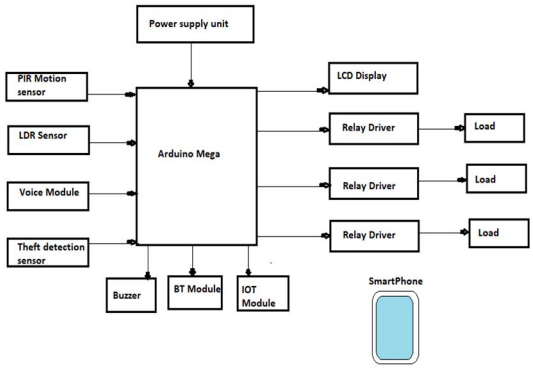


Figure 2: Block Diagram of System

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VI. WORKING

The LED light control system consists of various modules: movement sensor, light sensor and current sensor, control unit, LED driver, LED light source, dimmer module, LCD display and Io transceiver as shown in the figure . When the power supply is turned on, the PIR sensor first checks the presence of a person in the room and then the decision is made by the controller to turn on or off the lights. At the same time the light sensor constantly monitors the ambient light energy connected to the controller and based on that intensity the Atmega 32A controller decides to control or dim the lights and turn on or off the lights. The condition of that room can be continuously monitored on a PC using an online resource module. The dimmer module used in the system; requires AC supply. Indicates the blur of the bulb. Intelligent Energy Saving System, the purpose of the project is to save energy. In this project we use a variety of sensors, controls and displays.

This project uses basic signal processing of various parameters namely LDR, PIR motion sensor, voice assistant, theft detection system. To measure the values of different parameters, different sensors are used and the output of these sensors is adjusted to control the parameters. The control circuit is designed using a small controller. The results of all these parameters are included in the sub-control.

The output of the small controller is used to drive guided light as shown in the block diagram. The light sensor module is used to control the intensity of the LED lamp. The proposed LED system can automatically adjust the amount of light intensity to improve both energy efficiency and user satisfaction. The proposed system provides a smart way to effectively manage power using multiple sensors and wireless communication technology to control LED light depending on the user's environment and environment.

VII. LIST OF HARDWARE / SOFTWARE IDENTIFIED

1) PIR Sensor
2) LDR sensor
3) IR sensor
4) Voice Controlled Module
5) Bluetooth Module
6) IOT Module
7) Arduino Mega Controller
8) LCD Display
9) Buzzer
10) Relay Driver
11) Load
12) DC Fan
13) Power supply unit
14) Others

A. *Software Specifications*

1) Arduino Compiler
2) MC Programming Language: C

VIII. COMPONENTS SPECIFICATION

A. *Arduino Uno*

Arduino is an open source electronic platform based on easy-to-use computer software and software. The ATmega328P is a small efficient but low-power 8-bit AVR controller capable of achieving a single clock cycle of 131 powerful directions thanks to its advanced RISC architecture.

The board is equipped with sets of digital anchors and analog input / output (I / O) that can be connected to various extension boards (shields) and other circuits.



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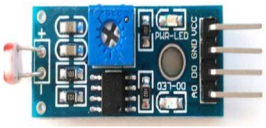
B. PIR Motion Sensor (HC-SR501)

PIR sensors allow you to feel movement, which is often used to detect when a person has entered or exited the sensory range. They are small, inexpensive, low in strength, easy to use and never tired.



C. LDR Sensor (LM393)

The LDR sensor module is used to detect light intensity. It is associated with both the analog output pin and the digital output pin marked AO and DO respectively on the board. When there is light, the LDR resistance will be lower according to the intensity of the light.



D. IR Sensor Module (LM393)

The IR sensor module consists mainly of IR Transmitter and Receiver, Op-amp, Variable Resistor (Trimmer pot), LED outlet and a few shortcuts. IR LED Transmitter. IR LED emits light, in the range of infrared frequency.



E. Voice Controlled Module (KY-037)

Microphone requires low power and can be powered directly on Arduino 5V PIN. Returns the amount of analogue that will be sent to the analogue input of the small controller. Depending on the model used, a potentiometer is present in the module to adjust the microphone sensitivity.



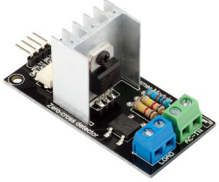
F. IOT Module

Internet of Things (“IoT”) refers to the ability of everyday objects to connect to the Internet and send and receive data. The ESP8266 WiFi Module is an independent SOC with an integrated TCP / IP protocol that can give any microcontroller access to your WiFi network. ESP8266 is able to host the program or free up all Wi-Fi network activities in another application processor.



G. Triac Module

The triac is a semiconductor switch that transmits power in both directions when turned on, which means it is an AC switch.



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H. Relay Board

A relay is usually an electrical device driven by an electric motor. The current flow in one cycle results in the opening or closing of another circuit. Transmission is like a remote control switch and is used in many systems because of its simplicity, longevity, and high guaranteed reliability.



I. Liquid Crystal Display

Liquid crystal display display mode used in digital machines instead of many other display methods such as cathode ray tube, LED displays and plasma displays. Commonly abbreviated as LCD, liquid crystal displays are a thin flat panel made up of a few blocks filled with liquid crystals.



IX. METHODOLOGY

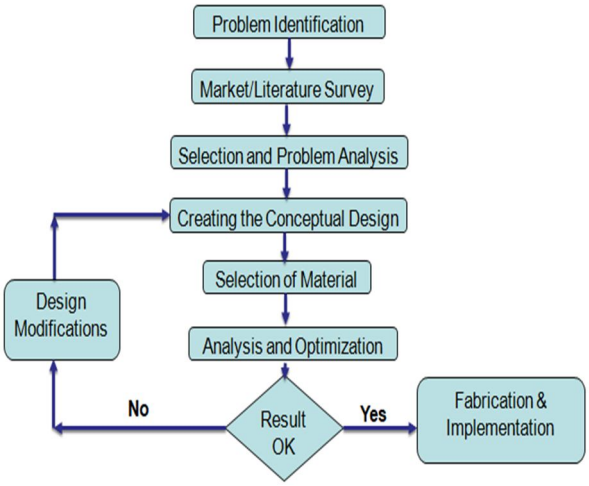


Fig.3. Work Flow Diagram of system

X. 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.

XI. APPLICATIONS FOR PROPOSED SYSTEM

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

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XII. ADVANTAGE OF INTELLIGENT LIGHTING SYSTEM

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

XIII. ACTUAL PROJECT

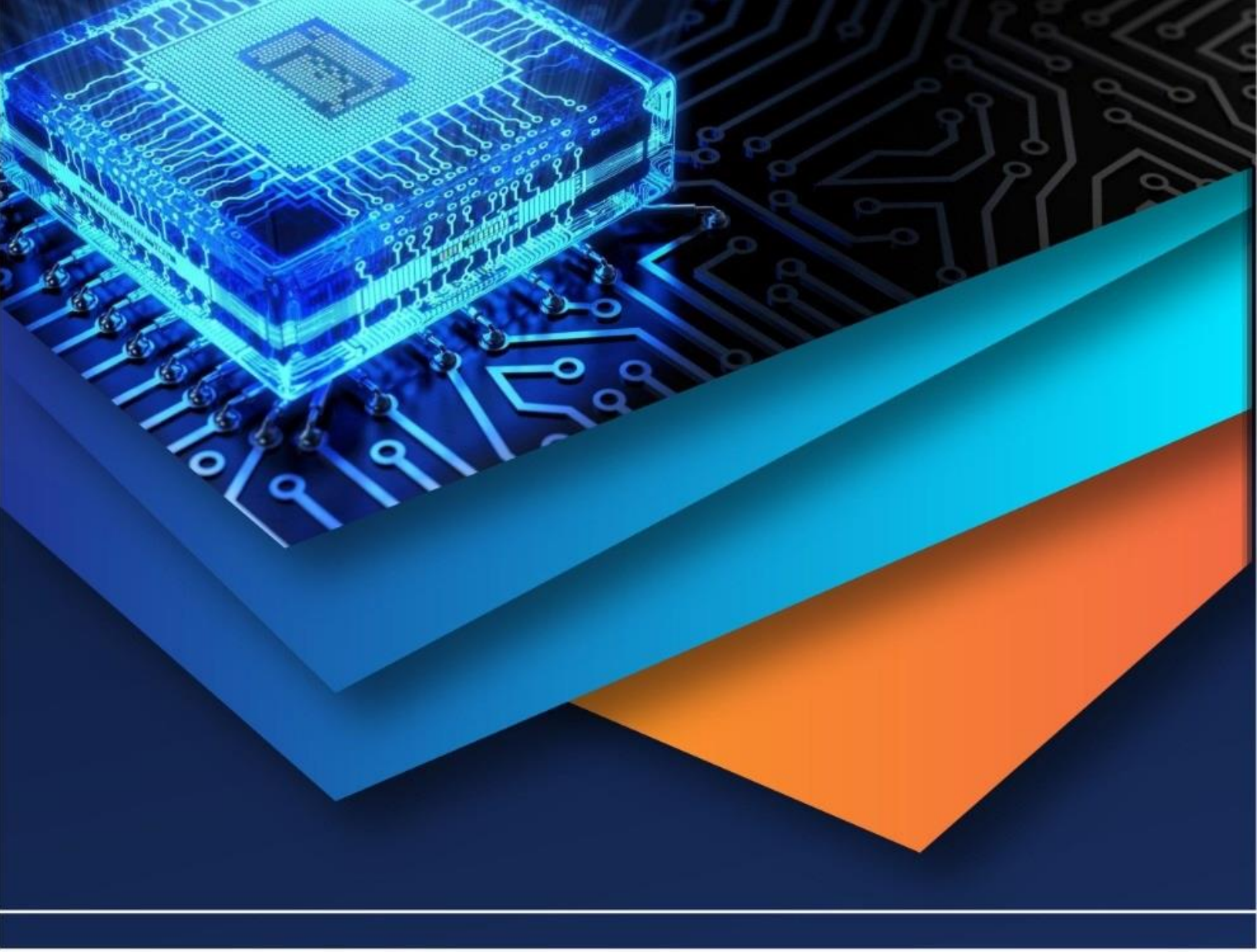


XIV. CONCLUSION

Home 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. Home 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. Home automation is undoubtedly an app that can make the home environment automated. People can control their appliances with these changing home 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.

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