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Automatic Room Light Control with Visitor Counting For Power Saving Applications and Monitoring in Cloud Over IOT

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Abstract:
Internet of Things (IoT) Core is a computing device and able to transfer the data through a network without manmade interaction. Here Information data will connect to devices and is used to build multiple applications that accommodates with the other big data services of Cloud Platform. Based on IOT we are controlling amount of light with the help of Blynk software and adafruit server is directly connected to internet so that we can able to receive message in mobile phone. By using mobile phone brightness we can able to control automatic room light. Light is an dependent factor on brightness ,whenever brightness is low then automatically light is low similarly brightness is high automatically light is high Depending on brightness with the help of blynk software alert going to get arise through mail or sms from that we can able to control automatic room light and we can save power. It can be used in real type applications(Example:IOT based smart and flexible lightining in streets)

Keywords:*Node mcu, Dcmotor, Relay, Led, Iot*

I. INTRODUCTION

RajuAnitha, et.al [1] proposed IoT, is a system of web associated articles (or things) that can gather and trade information. They told that "Internet of things will design process which machines talks each other with less human interaction" is the combination of the implanted, system, and data advances; and the primary factor that is driving IoT is the extraordinary decrease in the cost of sensors, handling force and transfer speed (broadband), and increment in omnipresent remote scope. Kevin Ashton trusted that IoT could transform the world into information which could be useful to settle on full scale choices on asset usage and administration. IoT extending over various areas, and Smart Street light is one such area. In city we are spending large expenditure on street light. With the usuage of smart street light, we can save municipal waste up to 50-70%. Whenever the sunlight is acknowledged the light will be naturally made OFF and a similar data can be gotten through web, which can be made ON/OFF utilizing IoT. We can approach the street light anywhere, anytime through the internet. The controller of the street light is not able to change on the pole of the street light along with a microcontroller, sensor and communication between the street lights is based on the controller which is installed on the pole of the street light and the controller controls the LED road lights. Those sensors identify the sunshine and send those details to the microcontroller which takes after the dependence over the light, provided for the circumstance. Gradually we ON/OFF street light guide to avoid these we use smart street lights so everything is self-activating. As per the necessities the control system it turns on-off the lights at required timings. The task is mainly helps to trace the illegal activities happening in the street using panic button and voice recognition. The camera will present on the street light to estimate the entire

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footages happenings on the street. Safety and energy wastage can be provided by this idea.

A.Problem Definition

Street light is very expensive as it contains chemical called sodium vapour, which consumes more power. Literally the cost which is spent on the street light can be used for other development of the nation. Due to this there is a heavy loss of energy in the process of switching on/off. Presently the systems are updated as the lights were set switch on in the evening hours and switch off in the morning hours automatically.

B. Limitations of Existing System

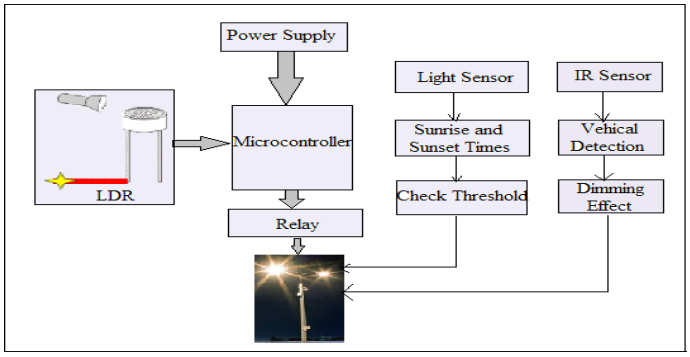
• Street lights can be switch on/off manually.
• Due to the chemical called sodium vapor lamps, more energy is consumed.
• It is expensive as the light is ON the complete night.
• The requirement of man power is more and also checking should be done continually.

II. Existing Methodology

2.1 Automatic Street Light Control System

The system elaborates the design and construction of automatic light control system. The developed electronic system The system develop the design and construction of automatic light control system. The developed electronic system eliminates the disadvantages of the existing systems. Based on the results the microcontroller can evaluate and automatically investigate geographical area and retrieve relevant data for sunrise and sunset in the area, respectively ensures very precise ON/OFF mode of the lighting system. The circuit holds a light sensor to sense the light. It doesn't require operator maintenance and initial installation setup. The advanced electronic device increases bulb life in result of the dimming effect. On the other hand this reduce of the illumination leads to reduce in the energy wastage. By using this system relating work are removed. spontaneously switches ON lights when the sunlight goes below the visible region of your eyes. spontaneously switches OFF light under illumination by sunlight. This is happening by a sensor called Light DependantResister(LDR) which senses light actually like oureyes. The existing system is commonly utilize in all streets of street light system. With the usuage of this method there will be loss of heavy electricity in the whole night. Here street light is not necessary when there are no manmade movements in the street.

2.2 automatic lightening using Arduino and PIR sensor



A real local time is received from the GPS data and a sunrise and sunset time associated with the geographic location can then be determined. The developed electronic system terminates the drawbacks of the existing systems by taking date and time from the GPS, as it also gives information about the position of thesystem. Based on the results the microcontroller estimates and spontaneously detects geographical area and retrieve relevant data for sunrise and sunset in the area, respectively ensures very precise ON/OFF mode of the lighting system. The main aim of the project is to spontaneous switch ON/OFF the street light by sensing the vehicle. In this system Light Sensors are used for sensing. Initially the street lights are in OFF state by using the LDR'S The ON and OFF state of one or more LED lighting modules of the streetlight can then be controlled upon the estimate sunrise and sunset times.

Without the usuage of electricity we cannot imagine our daily life because electricity has become a necessity for all, without which day-to-day life

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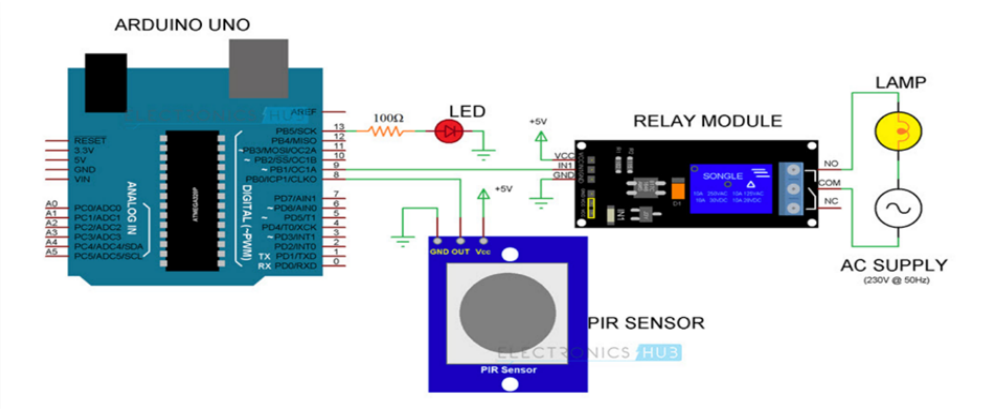
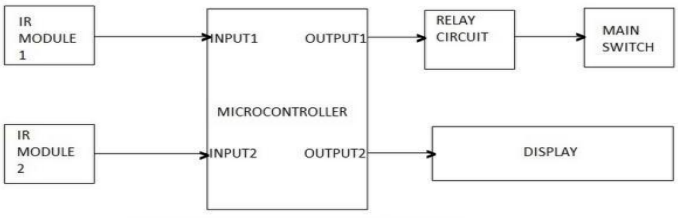
chores & daily activities become stand still. Due to the depletion of non-renewable resources, conservation of mandatory and by doing so we can reduce electricity bills as well. We develop that energies like wind energy, solar energy and hydro energy are called renewable energy sources which are renewable in nature. With the usuage of these resources for power supply is the best possible way of producing, conserving and renewing energy, which is advantageous as it is pollution free, affordable, and free from environmental impacts. Automatic Room Lights using Arduino and PIR Sensor, where the lights in the room will spontaneously turn ON and OFF by detecting the presence of a human. Such Automatic Room Lights can be designed in your garages, staircases, bathrooms, etc. where we do not require continuous light but only when we are present.



2.3 Automatic Home Lighting solutions using Human Detection, Sunlight Intensity and Room Temperature

In this paper they discussed multiple methods for automatic switching of home lighting systems, controlling the intensity of lights depending on the intensity of sunlight and controlling the fan controlled on the temperature of the room. They implemented design basically is split into three blocks human detection circuit, LDR based light detection circuit and temperature sensor based fan of off controller circuit. The first circuit is going to get control the main switch which will be turned on only if a person is detected; it is based on IR sensor and microcontroller. The second circuit is based on LDR, it is used to detect the intensityof the sunlight and depending on the intensity of sunlight number of led glowing will be controlled. The third circuit requires LM35 as a temperature sensor to control the switching of the fan. The human detection circuit will also estimate to count the number of person present in the room. The basic idea through this paper is to save the amount power consumed when the home lighting system is on even in the absence of human being.



BLOCK DIAGRAM OF HUMAN DETECTION CIRCUIT

The system will avoid the turning on the lights with enough amount of sunlight entering the room and turning on the fan with the room temperature below the par temperature. The implementation also gives the user flexibility to switch on the devices aviods the controlsystem.

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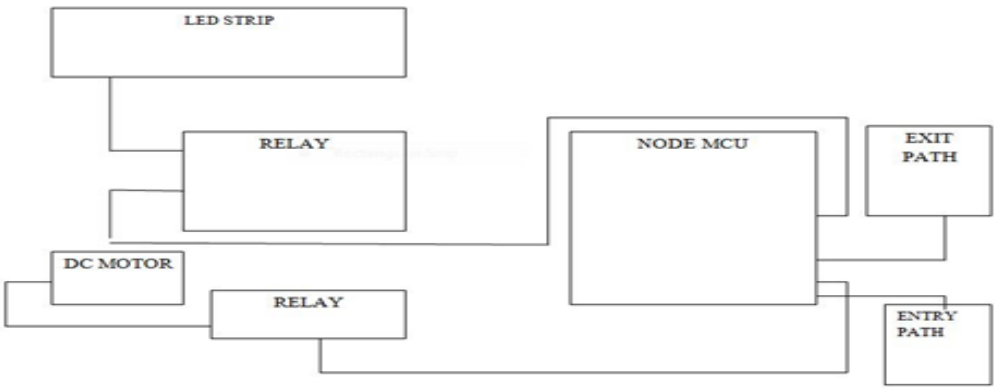
2.4 IoT based smart and flexible lightning in streets

The internet of Things (IOT) is always giving changeable answers for the customary issues looked by man. One of the real obstacles in city can benefit huge expenditure on street light. To determine the street lights based on detection of sunlight by implemented with smart embedded system. The paper is mainly used for smart and climate adaptive lighting in street lights. The street lights are spontaneously ON during the evening time and automatically OFF during day time. The street light can be accessed to turn ON or OFF at any place and any time through web. Along On top of the street light we are placing camera to identify the activities performed on the street and where the recordings are stored in a server. In future enhancement a panic button is placed on the pole, If there is any emergency situations like harassment, robbery there is a panic button is available at the accessable height any person can press it if he is in danger. If people are not able to press the panic button, they utilize the voice recognition which is connected to panic button, when it recognizes some commands like help, it spontaneously press the panic button. Sometime the panic button is pressed, the footages at that time recorded by the camera is sent straight forwardly to the cloud account. The near specific police headquarters can identify of the account by which they can see the incident's spot. Every region's street lights are interlinked with the specific area's police headquarters and cloud account can be accessible by each of them. HereGSM Technology is terminate completely. Safety and energy wastage can be ensured by this idea.

III. Proposed Method and Block Diagram

In this paper, we are using different components they are Node MCU,DC motor, relays, led strips, IR Sensor with the help of all these components we can Control Automatic Room Light With Visitor Counting For Power Saving Applications and Monitoring in Cloud Over IOT

The IoT can fix along with in the integration of communications, control, and information processing across various transportation systems. Application of the IoT holds in all aspects of transportation systems. Dynamic interplay difference these components of a transport system authorize inter and intra vehicular communication, smart traffic control, smart parking, electronic toll collection systems, logistic and fleet management, vehicle control, and safety and road assistance. Implementation and Fleet Management for example, The IoT platform can continuously record the location and conditions of cargo and assets via wireless sensors and send specific alerts when management exceptions occur (delays, damages, thefts, etc.)



Relay

Relays are the primary safeguard technique as well as switching devices in most of the control processes or equipments. All the relays react to one or more electrical quantities like voltage or current such that they open or close the contacts or circuits. A relay is a switching device as it works to separate or change

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the state of an electric circuit from one state to another.

Power Led Indicator

Just below and to the right of the word "UNO" on your circuit board, there's a tiny LED next to the word 'ON' **(11)**. This LED should glow up whenever you plug your Arduino into a power source. If this light doesn't turn on, there's a good opportunity something is wrong. Time to re-modify your circuit.

TX RX Leds

TX is used for transmit the data, RX is used for receive the data. This indicate a bit in electronics to indicate the pins responsible for serial communication. Arduino UNO consists of two places where TX and RX appear – once by digital pins 0 and 1, and a second time next to the TX and RX indicator LEDs **(12)**. These LEDs will allow us some nice visual indications whenever our Arduino is receiving or transmitting data (like when we're loading a new program onto the board).

Blynk

Blynk is implemented for the Internet of Things. It can determine hardware remotely, it can display sensor data, it can store data, vizualize it and do many other cool things. There are three significant components in the platform:

Blynk App - It enables to exist amazing attachment for your projects using various widgets we provide.

Blynk Server – It provide the communications between the smartphone and hardware. We can use our Blynk Cloud or run your private Blynk server is a open-source, can handle million of devices and it can be invented on a Raspberry Pi.

Blynk Libraries - It is used to survey the communication with the server and process all the incoming and outcoming commands.

Blynk works over the Internet: The hardware you choose should be able to interlink to the internet. Few boards, like Arduino Uno will utilize an Ethernet or Wi-Fi safeguard to communicate, others are already Internet-enabled: like the ESP8266, Raspberry Pi with WiFi dongle, Particle Photon or SparkFunBlynk Board. Adafruit server is used to connect directly to cloud platform and interlink a wireless connection to mobile phone it can notice LED lights are switched in a room.so that power consumption is reduced.

Node MCU

Node MCU is a appropriate environment of hardware and software for IOT prototyping depend on the lua language we can connect Node MCU to our computer through a standard USB interface for power programming and debugging. Node MCU is an open source firmware and implementation kit that helps you to prototype or build IOT product it contains firmware which runs on the ESP8266 wifisoc from ESPRESSIF systems, and hardware which depends on the ESP_12 module.MCU stands for microcontroller unit which thoroughly means it is a computer on a single chip. A microcontroller contains multiple CPU'S along with memory and programmable input /output peripherals they are used to spontaneous automobile engine control, implantable medical devices, remote controls ,office machines, powertools, toys etc.

Dc Motor

The electric motor performed with the help of dc is called dc motor. This is a device that translates DC electrical energy into mechanical energy. When a current carrying conductor is laid in a magnetic field it experiences a torque and has a tendency to move. In other words, when a magnetic field and an electric field interlink, a mechanical force is produced. This is known as motoring action. Structurally and

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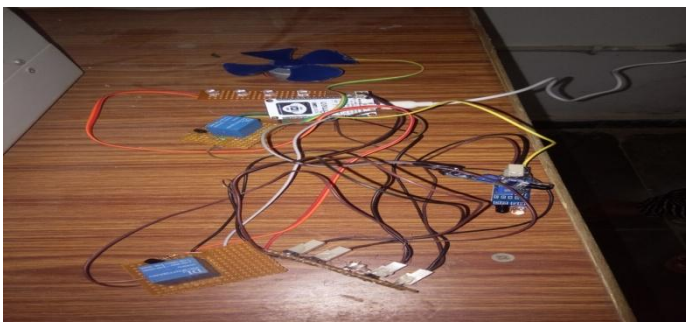
construction wise a direct current motor is exactly identical to a DC generator, but electrically it is just the opposite. Here it can refuse a generator we supply electrical energy to the input port and derive mechanical energy from the output port.

Ir Sensor

An infrared sensor emits and/or discover infrared radiation to sense its surroundings. The basic concept of an Infrared Sensor utilizes as Obstacle detector is to transmit an infrared signal, this infrared signal spring back from the surface of an object and the signal is received at the infrared receiver. The working of any Infrared sensor is constrained by three laws: Planck's Radiation law, Stephen – Boltzmann law and Wien's Displacement law.

IV. Results



V. Conclusion

Finally we can conclude that we can automatically control light with the help of brightness.hence we can save power and it can be used in real type applications.This methodology is costefficient, reliable, prevents manual on and off lights ,prevents energy wastage.

VI. References

1. RajuAnitha, M. Nishitha*, K. Akhila, K. SaiAnusha, G. Srilekha**,**"International journal of engineering and technology**"**, Vol-3, Issue-4, 2019.
2. AkshayBalachandran, Murali Siva, V. Parthasarathi, Surya and Shriram K. Vasudevan "An Innovation in the Field of Street Lighting System with Cost and Energy Efficiency"Indian Journal of Science and Technology,Vol-8, August 2015.
3. DeepanshuKhandelwal, Bijo M Thomas, KritikaMehndiratta, Nitin Kumar "Sensor Based Automatic Street Lighting system" International Journal of Education and Science Research Review Volume-2, Issue-2 April- 2015.
4. IsahAbdulazeez Watson, OshomahAbdulaiBraimah, Alexander Omoregie" Design and Implementation of an Automatic Street Light Control System" International Journal of EmergingTechnology and Advanced Engineering, Volume 5, Issue 3, March 2015.
5. KapseSagar Sudhakar1, AbhaleAmol Anil2, Kudakechetan Ashok3, ShirsathShravan Bhaskar4 "Automatic Street Light Control System" International Journal of Emerging Technology and Advanced Engineering"Volume 3, Issue 5, May 2013.
6. Mustafsaad, AbdalhalimFarij, Ahamed Salah "Automatic Street Light Control System Using Microcontroller" Mathematical method and Optimization Technique in Engineering ISBN: 978-960-474-339-1.
7. SaksheeSrivastava, "Electronics And Communication Engineering, Institute Of Technology And Management AL-1, Sector-7, GIDA, Gorakhpur, U.P., INDIA" Advance in Electronic and Electric Engineering. ISSN 2231-1297, Volume 3, Number 5, 2013.
8. Prof. K.Y.Rajput, GargeyeeKhatav, Monica Pujari, PriyankaYadav, "International Journal of Engineering Science Invention" www.ijesi.org Volume 2 Issue 3 و March. 2013, PP.60-69". Volume 2, Issue 3, March. 2013.
9. L. Jasio, T. Wilmshurst, D. Ibrahim, J. Morton,M. Bates, J. Smith D. Smith and C. Hellebuyck,PIC Microcontrollers: know it all, Publishing Elsevier Science, 2008.
10. K. S. Sudhakar, A. A. Anil, K. C. Ashok and S. S. Bhaskar, Automatic Street Light Control System, International Journal of Emerging Technology and Advanced Engineering, Vol. 3,May 2013.
11. Soledad Escolar, JesúsCarretero, MariaCristinaMarinescu and Stefano Chessa "Estimating Energy Savings in Smart Street Lighting byUsing an Adaptive Control System"

January-February 2020
ISSN: 0193-4120 Page No. 16022 - 16028

International Journal of Distributed Sensor Networks Volume 2014, Article ID 971587

12. Samir A. ElsagheerMohamed "Smart Street Lighting Control and Monitoring System for Electrical Power Saving by Using VANET",Int. J. Communications, Network and System Sciences, 2013, 6, 351-360.
13. Andrea Zanella, Senior Member, IEEE, Nicola Bui, Angelo Castellani "Internet of Things for Smart Cities" IEEE Internet Of Things Journal, vol. 1, no. 1, Feb. 2014.
14. J.Sherly1, D.Somasundareswari"InternetOf Things Based Smart Transportation Systems" International Research.
15. Chen, Bill & Bottoms, Bill & Armstrong, Dave &Isobayashi, Atsunobu. (2015). ITRS 2.0: Heterogeneous Integration. Solid State Technology. 58. 13-17.
16. Choe, Jeongdong. (2015). Comparison of 1Ynm NAND architectures and beyond. Solid State Technology. 58. 24-25.
17. Vogler, Debra. (2013). A Preview of Semicon West 2013. Solid State Technology. 56. 30-32.
18. Monahan, Kevin. (2006). Addressing 32nm half-pitch challenges with double-patterning lithography. Solid State Technology. 49. 28-30
19. Hoogeveen, L.. (2011). Academic talent development for every talented student. Talent Development and Excellence. 3. 71-73.
20. Jonker, Laura &Elferink-Gemser, Marije&Visscher, C.. (2011). The role of self-regulatory skills in sport and academic performances of elite youth athletes. Talent Development and Excellence. 3. 263-275.
21. Hakkarainen, Kai &Hytönen, Kaisa&Lonka, Kirsti&Makkonen, Juho. (2014). How does collaborative authoring in doctoral programs socially shape practices of academic excellence?. Talent Development and Excellence. 6. 11-29.
22. Phillipson, Sivaneswary. (2010). Modeling parental role in academic achievement: Comparing high-ability to low- and average-ability students. Talent Development and Excellence. 2.