INTERNATIONAL JOURNAL
FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Review Paper on Street Light Automatic Intensity Controller

Ms.Vrushali Uttam Khadake[1], Ms.Vaishnavi Subhash Kadam[2], Amruta anil Barge[3], Varsha Hanmant Barge[4] , Sanskruti Anandrao Patil[5]

[1]*Lecturer,* [2, 3, 4, 5]*Students, Electrical Engineering Department, Nanasaheb Mahadik Polytechnic Institute, Peth*

Abstract: This paper is planned for making more secure roadways with canny light framework to lessen power utilization. This framework has programmed road light power control dependent on the vehicular development and turning ON and OFF of road lights relying upon the light atmosphere. This will help in decreasing the power utilization during long periods of small street use. The road light module is introduced subsequently for each specific separation. This paper additionally targets lessening street mishaps by recognizing utilization of liquor by the driver. This can be actualized utilizing liquor sensor module which contains skin sensor, breath liquor sensor and nearness sensor. The skin sensor and broadness liquor sensor distinguish the nearness of liquor content and the nearness sensor helps in identifying any sort of misbehaviour. The oddity of this paper is to successfully lessen the vitality utilization of the road lights by controlling the road light's force, detecting both human just as vehicular development and injury and passing brought about by alcoholic driving can be forestalled by earlier detecting of the liquor content in drivers by a basic and affordable way..

I.   INTRODUCTION

Street lights on the highways are designed with high-intensity lamps that consume more energy and also cannot be changed as per the requirement. Thus, the proposed system overcomes these problems by using LEDs instead of HID lamps in the street light systems. So the light intensity can be changed and controlled according to the needs. An Arudino is programmed with instructions to control the light intensity by producing a PWM signal which makes a MOSFET to turn ON the LEDs to get the result. Therefore, the street light intensity increases during the evening time and gradually reduces in late nights and continues again in the morning at 6 am. Street light automatic intensity controllers are devices that adjust the brightness of street lights based on ambient light levels. These controllers help in saving energy and reducing light pollution in urban areas. The technology behind these controllers involves sensors, microcontrollers, and actuators.

II.   PROBLEM STATEMENT

Currently around a number of cities that the street light is one of the huge expenses in a city. The cost spent is huge that all the sodium vapor lamps consume more power. The expense spent on the street light can be used for other development of the nation. A manual system is used where the light will be made to switched on or off that is the light will be made to switch on in the evening and switched off in the morning. Hence there is a lot of wastage of energy between the on or off.This is one of the major causes of shifting to the proposed automatic system, since there is less wastage of power and thus saving a lot of monetary expense.

III.   PREPOSED SYSTEM

So, there were the several problems which need to be worked upon in former system.This can be done by creating a new system which is Automated, Energy conserving and cheap. Our system works in a similar fashion first, it senses the sound wave produced by the object from the surrondings and check whether the lights needs to be ON or not as per the intensity value. This system will eliminate the system of manual control as the system will cause to light up when the ultrasonic value become less than our defined value. Also, the light will automatically switch OFF when detected value of ultrasonic become greater than the defined value. This system works for university roads, Streets, hotel & mall parking area. In this system the lights do not remain in OFF state, instead they remain ON but in less intensity. Again, if the motion is detected here the intensity of light become greater for the particular time interval.This is dimming effect created by our system. Here many systems use IR sensor it will not be more efficient as like the ultrasonic sensor it will give the distance value between the detected object and the sensor. Here we use CF bulb for the lighting purpose.

Then the current and voltage consumed by the bulb can be measured using current and the potential transformer. The consumed current and voltage reading can be stored in the cloud. Here we using cloud is that we need not to enter the data manually the cloud will update the data automatically in daily manner. Then we are using android app in two ways. One for viewing the stored data in the cloud. Another way for if we find wastage of light in roads then we can ON/OFF the whole system by using this android app.

IV.   METHODOLOGY TO SOLVE THE PROBLEM AND EXPERIMENTAL SETUP

The Block diagram of the proposed system is shown in fig1. It mainly consists of Power supply unit, PIR Module, GSM modem, Arduino UNO and feedback unit. The main components used for power supply circuit is 1 Transformer, 2 Diodes, 1000uF Filter Capacitor, LM7805, 3 PIN Voltage Regulator. The 230V 50 Hz AC supply from the mains is used to feed the power supply circuit to generate 5V regulated supply for energizingThe GSM modem, Arduino UNO and LCD Display. The power supply circuit consists of a centre tap transformer, rectifier made of full wave rectifier circuit and filter circuit which provides a regulated 5V supply. Regulator is used to regulate the output from the Transformer to the required voltage level. In a typical 12-0- 12 transformer with a bridge rectifier and a filter the output voltage is unregulated 12V DC, if the desired output voltage is 5V, then a regulator needs to be used.7805 regulator indicates positive voltage with 5 volts as the output. The GSM modem is used for a duplex wireless communication. The authenticated operator mobile is configured with SIM (Subscriber Identification Module) which is inserted in the GSM modem The message is sent in text format which is received, extracted and fed to Arduino UNO. The Arduino UNO uses the SMS received by GSM modem and switches the streetlight ON/OFF. The UNO has in-built memory which is used to store the code which in turn controls the load. The UNO used in the receiver side helps in decoding the AT commands and taking decisions.
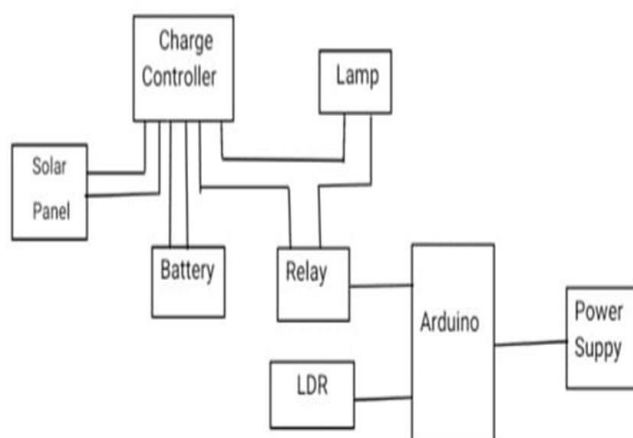

Fig. Experimental Setup

V.   CONCLUSION

This project is for the development of Smart Street lighting control framework circuit. The circuit meets expectations appropriately to turn road light ON/OFF. LDR sensor and the RTC are the two fundamental conditions in living up to expectations of the circuit. On the off chance that the two conditions have been fulfilled the circuit will do the wanted work as indicated by the particular system.The road lights have been effectively controlled by Arduino UNO. With orders from the controller, the lights will be ON according to the brightness in the environment With the help of this system, we will conserve energy and the circuit can be utilized as a part of a long roadway between the urban areas as well as the rural areas which indirectly leads our country to development. This system is economical and easy to implement and can possibly have the potential to replace the current system.

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