IoT-Based Smart Light System
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Abstract:
This street light system has brought a sense of well-being and freedom from risk or danger but street lights in centre of city, traffic lights and pedestrian crossings stay on all night. This much of lighting is not required since it does not have any benefit to the society. Continuous ON state of street light leads to power wastage and it is also getting very difficult to analyze the failure of street lights in all places. In these kinds of situations effects of crime will be increasing. In our proposed project work we have analyzed these problems. The main physical module consists of the two stations such as a measuring and a base stations, where a measuring station will measure the intensity of the light and has the capability to automatically decide and perform the activation of the light such as turning on and off. The base station is mainly used for auditing and collecting information about the operating process of the entire system. The information about all the activities is sent to the admin or operator through wireless network.

I. INTRODUCTION
The concept of providing an efficient street lighting with an low consuming electricity has always been a huge challenge for the engineers in the field. Providing a high intensity of light in the public roads and places is a huge responsibility and the most expensive task to complete in a city. Installing a street light in a city is an important task to the authorities of developing countries as it relays on economic and social stability. Because efficient lighting consumes huge economical cost and inefficient lighting [4] causes some danger conditions. the dynamic way of controlling the intensities of the light according to the intensity of the day sun light is not very possible. To bring a solution to such problems comes a solution of remote operating to manage luminaire which is a new trend. Many managing [1] methods in controlling the street light are available now a day, with the help of these remote operating system and controlling strategy there are many benefits and also it saves the economic cost of an developing countries. there are two sensors namely light sensor and photoelectric sensor[3],the light sensor determines the darkness of the light[2] for the activation of light of the street such as on and off and this photoelectric sensor[7] will determine the movement to whether or not to activate the street.

II. SYSTEM ARCHITECTURE OF STREET LIGHT SYSTEM
The system architecture that has micro-controller, LDR, and photoelectric sensor. We can access the light with the use of LDR[1] according to its intensity of light[6] such as if it is dark then the light will be on and if the intensity is bright that is if the day light is bright, then it will be off, from this we can understand that LDR is proportional to light[5].when the LDR will be covered with light the instruction will be sent to the micro-controller then it must change to off state after it switch OFF the light[4] to turn of or off the light. photoelectric sensor will be used depending on the presence or absence of the object[6]. All these instructions are delivered to the controller then accordingly the device works. turning on or off is done by relay.
III. POWER SUPPLY UNIT

The main module transformer is connected with an ac voltage at the beginning and then after this process the transformer steps down-level to the range of LDC output according to the need and it varies according to the level of dc output. A diode rectifier is installed at this stage where it includes a full-wave rectified voltage. The voltage is reduced to some extend by a “simple capacitor filter” to produce a dc voltage. After this process, the dc voltage has results with ac voltage fluctuations.

IV. LPC2148 MICROCONTROLLER

“LPC2148 microcontroller board has a real-time emulation and embedded trace support that clusters microcontrollers with embedded flash memory. A memory interface and particular accelerator design allows 32-bit code implementation at the maximum clock rate. 16 bit thumb mode filters almost 40 percentage of code in code length applications in almost reduced performance penalty. LPC stands for Low Power Low Cost microcontroller and is of 32 bit. also it is manufactured by Philips semiconductors”.

V. SERIAL COMMUNICATION

Important use of this module is that it transmits and receipts the data. once at a time one bit of data can be transferred. a bit usually are of 1 or 0 there is a serial port here, which has tow uses mainly such as converting ones and zeros and then converting those ones and zeros to bytes. the main converting part in serial port is done by Universal Asynchronous Receiver or Transmitter.

VI. LDR SENSOR

The module m1 has a clock build within, which determines when the sun rises and sets. but when in outside it is dark or light, there we need a different technique. the system must know the light level in that area so it must also while automating the light it should be known to activate the light or not. LDR is directly wired to input. analog zone is what a zone must be programmed to. if the light intensity is high, lower the voltage will be and if the intensity is high higher the voltage will be. there is no need of power as the LDR is wired directly.

VII. PIR CONFIGURATION

The pir sensor has two sensing elements and each of the elements are connected to a voltage configuration. at front of the sensor, a body that passes will actuate the first one and after this other elements will start to activate which will affect both the elements and it gets denied. Focusing device is used at the sensor and where pins 1 and 2 are on horizontal plane to continuously given to IR source.

VIII. CONCLUSION

Hence. our project is completely based on the need reduce the usage of electricity, which is one of the major problem in our country and also to reduce the maximum percentage of road accidents at night time especially, to save lives of people. technically, we have stations, that will be installed in each of the lam post that measures the intensity level of day and night light, and also it automatically based on the calculated intensities it decides and process the activation of light (on or off), there is a base station that will scan, check and verify the operating process of all the modules used and installed, and sends the information to the admin or operator who will make decisions in case of any malfunctions.

XI. REFERENCE

[4]. “http://mqtt.org/”