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Automated Street Lighting System Using IOT

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Abstract:

Automatic Street Light Control System is a simple yet powerful concept.By using this system manual works are 100% removed. It automatically switches ON lights when the sunlight goes below the visible region of our eyes. This is done by a sensor called Light Dependant Resistor (LDR) which senses the sunshine actually like our eyes. It automatically switches OFF lights whenever the sunlight comes, visible to our eyes. The IOT is able to implement transparently a very large amount of heterogenous end system.In the traditional system IR sensor is used to detect the object.By using this system energy consumption is also reduced.

Keywords —**Resistor,Transistor,Saturation,Intensity,Automation,Comsumption,Wireless,Sensor, Microcontroller,**

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I. INTRODUCTION

Nowadays we see that there is a lot of wastage of electricity. Street lights are manually controlled in the old days. These days street lights are emerging. Since we do not need a high light bulb for high hours in hours eg when there is no traffic and very early in the morning. This reduction in light intensity helps to save a lot of energy consumption on a small scale. So in this project we focus based on light intensity. Light intensity will be calculated and based on what LED lights will shine. The brightness of the LED lights will gradually increase with increasing intensity and the light will decrease when the light intensity is low.

II. HARDWARE REQUIREMENTS

1) Light Dependent Register:-

A Light Dependent Resistor (LDR) is also konwn as a photoresistor or a cadmium sulfide (CdS) cell. It is also called a photoconductor. It is basically a photocell that works on the principle of photoconductivity. It is passive component is basically a resistor whose resistance value decreases when the intensity of light decreases. This **optoelectronic device** is mostly used in light varying sensor circuit, and light and dark activated switching circuits.Applications of LED are camera light meters, street lights, clock radios, light beam alarms,etc.

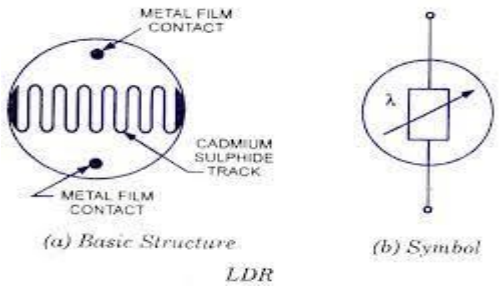

Fig:LDR Sensor

2) IR Sensor

IR sensor is an electronic device, emits the light in order to sense any object of the surroundings. An IR sensor measures the heat of an object as well as detects the motion. Usually, in the infrared spectrum, all the objects radiate some form of thermal radiation.

Fig:IR Sensor

3) LED's

A light Emitting diode is an electric component that emits light when the electric current flows through it. It is based on semiconductors. When current passes through the LED, the electrons recombine with holes emitting light in the process. It is a specific type of diode having similar characteristics as the p-n junction diode. This means that an LED allows the flow of current in its forward direction while it blocks the flow in the reverse direction. LED's are built using a weak layer of heavily doped semiconductor material.

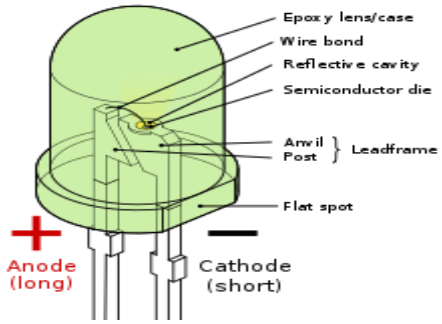

Fig:LED

4) Arduino UNO

The **Arduino Uno** is an open-source microcontroller board based on the Microchip ATmega328P microcontroller and developed by Arduino.cc.The board is equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits.The board has 14 digital I/O pins (six capable of PWM output), 6 analog I/O pins, and is programmable with the Arduino IDE (Integrated Development Environment), via a type B USB cable It can be powered by the USB cable or by an external 9-volt battery, though it accepts voltages between 7 and 20 volts. It is similar to the Arduino Nano and Leonardo.The hardware reference design is distributed under a Creative Commons Attribution Share-Alike 2.5 license and is available on the Arduino website.

Fig: Arduino UNO

III. WORKING

As the name indicates, there is no need of manual operation concerned during this system.Light Dependent Resistor (LDR) senses the light. When the sunlight goes below the visible region of our eyes lights will be switched ON. While the lights will be automatically switched OFF when sunlight comes and sunlight is visible to eyes. This is done by a sensor called Light Dependant Resistor (LDR) which senses the light like our eyes. Our system works in a similar fashion first, it sense the Infrared from the
Surrounding and check whether the lights need to be ON or not as per the intensity value. System will cause to light up when the infrared value become less than our defined value. Also the light will automatically switch OFF when detected value of infrared becomes greater than the defined value. Using this system consumption of power is also reduced.

IV. OUTPUT

1) The Sunlight is goes below the visible region:

2) The sunlight comes and is visible to eyes:

V. CONCLUSION

This project overcomes problem of power wastage and manual errors occurred in street lights is major problem for many countries. The proposed system is maintaining the street lights automatically as well as saving the power. It is low cost.There is no manual process in this project it can be done by automatically. So no human work is required to switch on/off the lights. Up-to 80% of power wastage will be reduced by implementing this project. It reduces the manual switching of street lights. The proposed system can be used in many areas like colleges, industries etc, This proposed system provides security at late nights.

VI. ACKNOWLEDGEMENT:

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