

Automatic Street Light System

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Abstract: In this paper, we are to discuss the Automatic Street Light system which now days electric energy consuming more than the regular use after some days we are facing more electric power problem .so we can that solution that,The vehicles are passing over the road and we are placing the some ir sensors to the detect the vehical movement and a neighborhood of places are going to be consisting of less density areas and even no vehicle moments itself in few areas. But during night all street lights are going to be on in conventional street lighting system. To overcome from this issue, a proper energy saving due to density of light low save more light energy methods and lighting control to be implemented. The proposed work based on the combination of the arduino and other components to have two controls like, one is to switch of lights during no vehicle moments in streets and automatically turn on when vehicles comes and therefore the other modes are to offer less intensity lightto turn on bright mode during vehicle moments at sides on the roads.

Keywords: Arduino Uno, IR sensors, BreadBoard, etc

I. INTRODUCTION

This paper shows the design to detect the vehicle movement on roadways to switch ON.The basic of the arduinouno we have used and coding inside the arduino .^[2] just a block of road lights ahead of it, and to show OFF the trailing lights to save lots of energy. During night each one of the lights on the expressway stay ON for the vehicles, to the loss of power is experienced when there is no vehicle movement. This proposed to satisfactorily works for energy saving.^[1] This is accomplished by detecting a vehicle moving towards thestreet and turns ON a block of street lamps in front of the vehicle. As the vehicleimplemented to regulate and continue complex road lighting systems. For controlling and diminishing energy utilization of a town's open lighting system, the effective systems are created.. As of now, the HID is employed for urban road light where power isn't managed by any of the methods to reduced or cut the lights during less density or unmanned areas.

II. LITERATURE SURVEY

Streetlight monitoring system based on wireless sensor network. The system are often set to run in automatic mode, which control streetlight consistent with Sunrise and Sunset Algorithm and lightweight intensity.^[7] This control can make an inexpensive adjustment consistent with the latitude, longitude and seasonal variation and arduino coding.^[5] Also this system can run in controlled mode. In this mode, we can take the initiative to control street lights.The system is equipped with the high-power relay output and can be widely applied in all places which need timely control like streets, stations, mining, schools, and electricity sectors then on.

III. METHODOLOGY

A dynamic control strategy is given for the smart road control project. As per the proposed arrangement indicates, all the road lights continuously glow for a couple of moments and switches off. At the purpose when a vehicle is moving by, a block of road lights turn on and because the vehicle moves ahead, the subsequent block of lights activates whereas the preceding light turn OFF leds present. Due to this reason, the high intensity discharge lights are replaced by light emitting diodes.^[9] The power utilization and price are often saved within the present field of utilization of electrical gadgets and their advancements. The road lighting systems are getting complex systems with proper energy conservation techniques thanks to the fast development of industries and concrete areas.

Various Components Used are as follows:

1]ARDUINO UNO: It is a microcontroller board based on 8-bit ATmega328P microcontroller. Along with ATmega328P, it consists other components such as crystal oscillator, serial communication, voltage regulator, etc. to support the microcontroller. Arduino Uno has 14 digital input/output pins (out of which 6 can be used as PWM outputs), 6 analog input pins, a USB connection, A Power barrel jack, an ICSP header and a reset button.^[5]

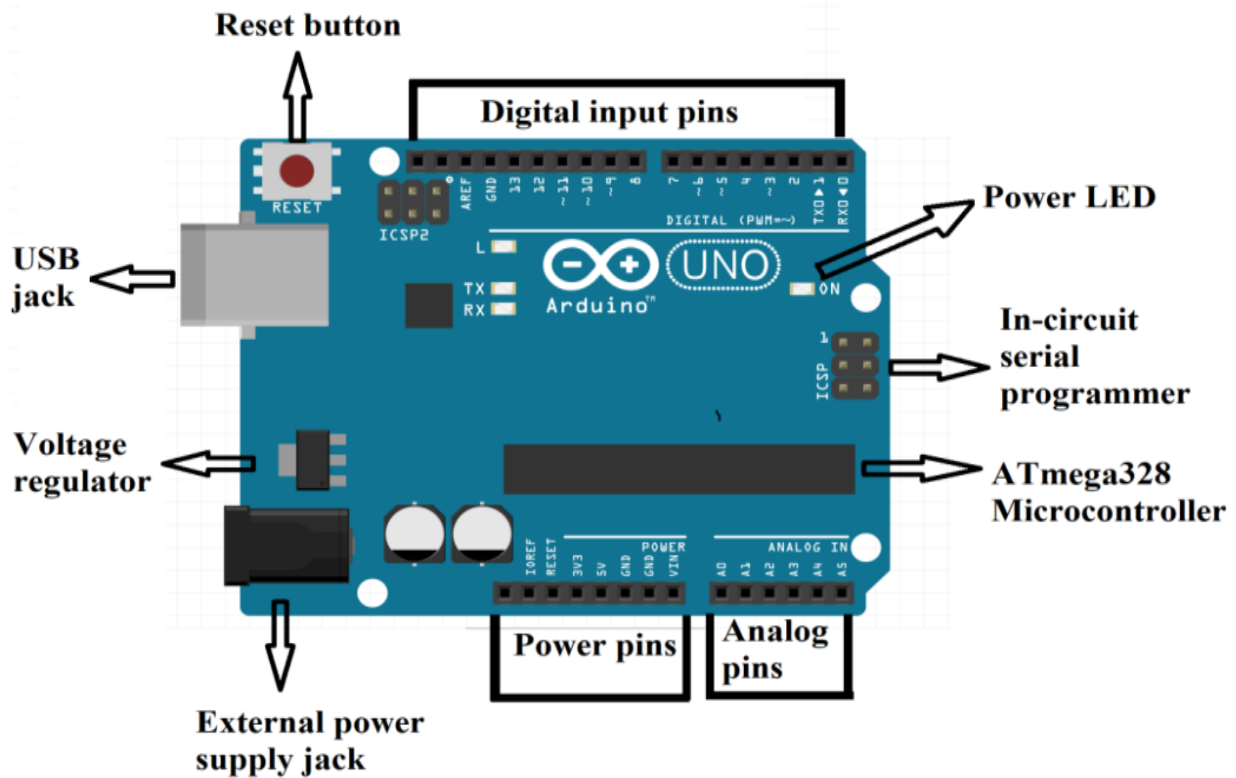


Fig3.1 Arduino UNO

2]IR Sensor: An infrared (IR) sensor is an electronic device that measures and detects infrared radiation in its surrounding environment. Infrared radiation was accidentally discovered by an astronomer named William Herchel in 1800. While measuring the temperature of each color of light (separated by a prism), he noticed that the temperature just beyond the red light was highest. IR is invisible to the human eye, as its wavelength is longer than that of visible light.

3]LED(Light Emitting Diode): A light-emitting diode (LED) is a two-lead semiconductor light source that resembles a basic diode, except that an LED also emits light. When an LED's anode lead has a voltage that is more positive than its cathode lead by at least the LED's forward voltage drop, current flows.

4]LDR: A Light Dependent Resistor (also known as a photoresistor or LDR) is a device whose resistance is a function of the incident electromagnetic radiation. Hence, they are light-sensitive devices. They are also called as photoconductors, photoconductive cells or simply photocells.

5]RESISTOR: The resistor is a passive electrical component to create resistance in the flow of electric current. In almost all electrical networks and electronic circuits they can be found. The resistance is measured in ohms. An ohm is the resistance that occurs when a current of one ampere passes through a resistor with a one volt drop across its terminals. The current is proportional to the voltage across the terminal ends.

6]BATTERY: Batteries are a collection of one or more cells whose chemical reactions create a flow of electrons in a circuit. All batteries are made up of three basic components: an anode (the '-' side), a cathode (the '+' side), and some kind of electrolyte (a substance that chemically reacts with the anode and cathode). A battery is a device consisting of one or more electrochemical cells with external connections for powering electrical devices such as flashlights, mobile phones, and electric cars. When a battery is supplying electric power, its positive terminal is the cathode and its negative terminal is the anode.

7]BREADBOARD CIRCUIT: Breadboards are one of the most fundamental pieces when learning how to build circuits. In this tutorial, you will learn a little bit about what breadboards are, why they are called breadboards, and how to use one. Once you are done you should have a basic understanding of how breadboards work and be able to build a basic circuit on a breadboard.

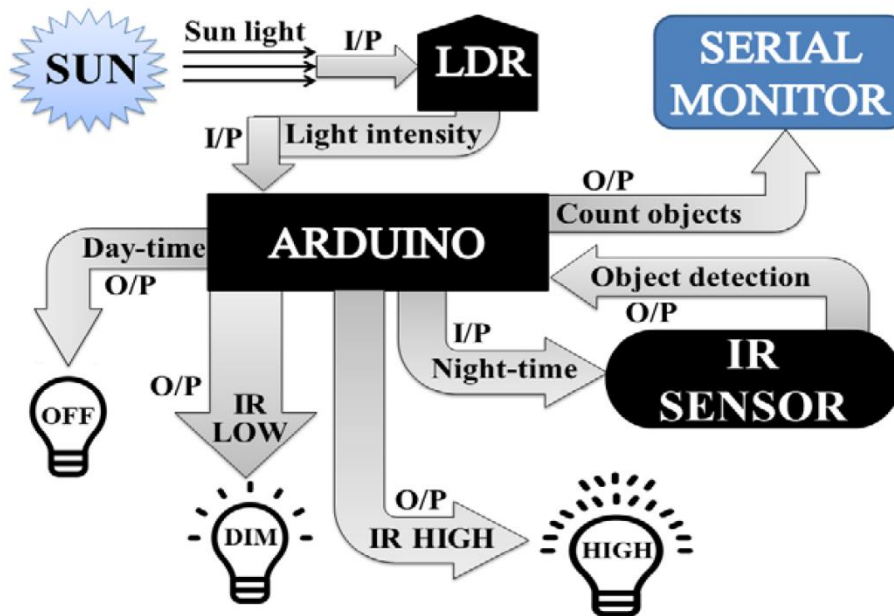


Fig. 3.2 Street Light Working Principle

8]JUMPER WIRES:Jumper wires are used for making connections between items on your breadboard and your Arduino’s header pins. Use them to wire up all your circuits.

Firstly, LDR will sense the intensity value of sunlight and send it to Arduino.^[2] Arduino will judge if the received value is above the edge level (which is about independently by the user from the discrete value: 0-2023), then it’ll consider it as daytime and LEDs will remain OFF, or if the received value below the threshold level, Arduino will consider it as a night-time. In the night-time, if the value of IR detector detect the light and glow, or if IR obstacle detector value is HIGH and detects any object, then HIGH LEDs maximum voltage will glow.^[8] Arduino also will count the entire number of vehicles that crossed the road within the already dark with the assistance of IR obstacle detection sensor and can demonstrate it to the serial monitor in this system.

IV. CONCLUSION

This system we will conserve energy and save environment which indirectly leads our country to the development. This system is economical and easy to implement and replace the current system. This circuit is totally based on arduino which here works as a micro-controller using the input from LDR. This system can be easily implemented on our Indian streets which needs this type of system as soon as possible.

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