Problem Statement

Traditional street lighting systems are often inefficient, as they operate on fixed schedules regardless of actual lighting needs, leading to unnecessary energy consumption and maintenance costs.

A Smart Street Light system can be implemented to tackle these problems. This system has been designed to improve energy efficiency and lower maintenance costs.

INTRODUCTION

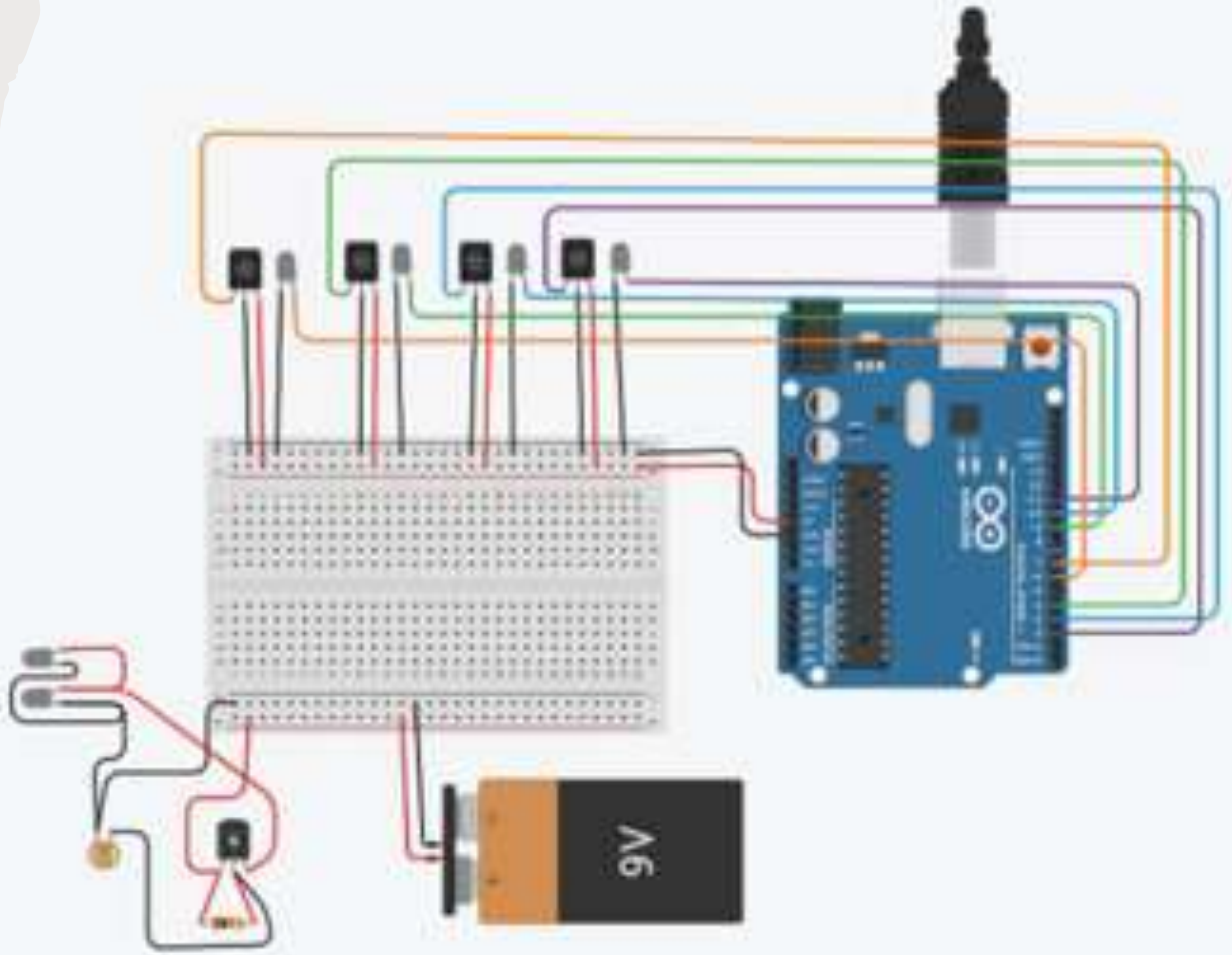
- In our country, the corporation street light consumes more power when roads are desolate. However with the increasing importance for saving power and proper maintenance are leads to save the natural resources for the future. A smart street light system can reduce the power of Corporation Street light for desolate roads
- our project gives the solution to those problems. An automatic street light system using sensors and wireless modules for implement a system. The LDR (Light Dependent Resistor) sensing the weather condition.

PROPOSED SYSTEM

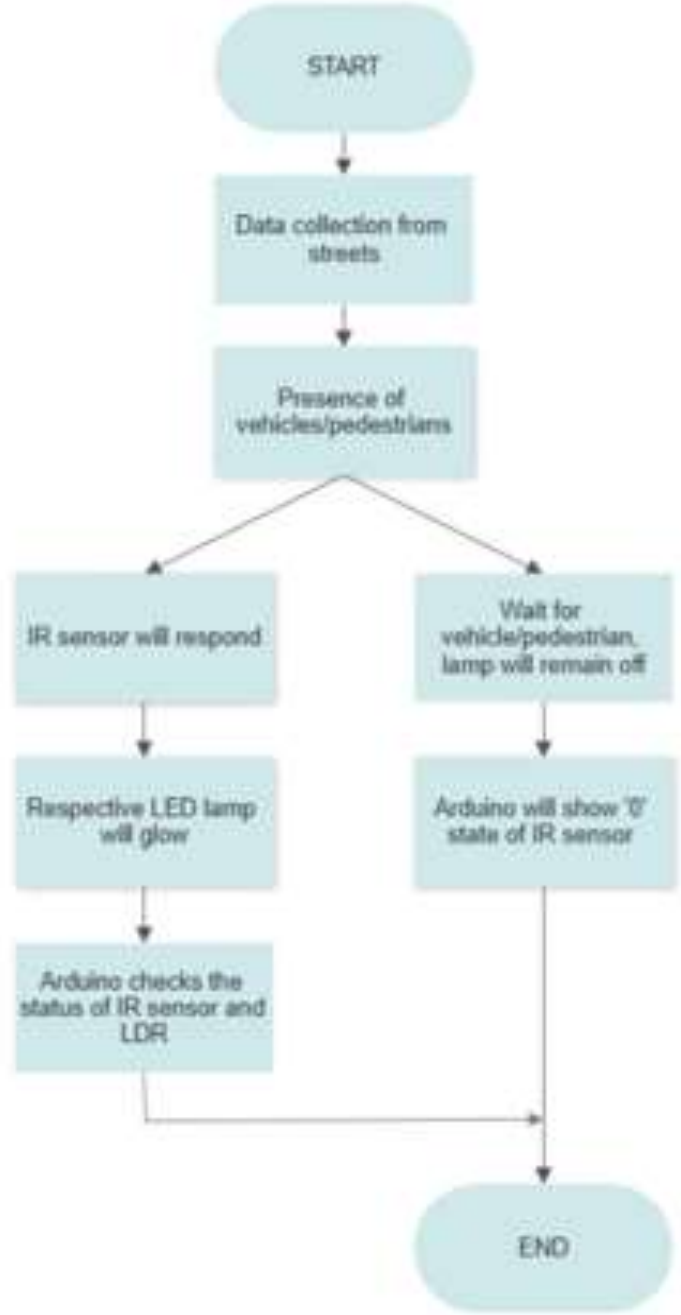
The street light control and fault detection system is implemented through an arduino. Nowadays, the street lamps are operate manually. But the cloud storage system operates the street lamps ON/OFF and find the fault in the street lamps automatically.

Same this LDR operation is used to find the light fault detection and send to the control room using ESP8266 Wi-Fi module. Here the intensity of the street light to be controlled by the controller. Whenever PIR sense the motion of vehicle, the street light will glow as bright or normal. Otherwise the street light will glow as dim

CIRCUIT DIAGRAM



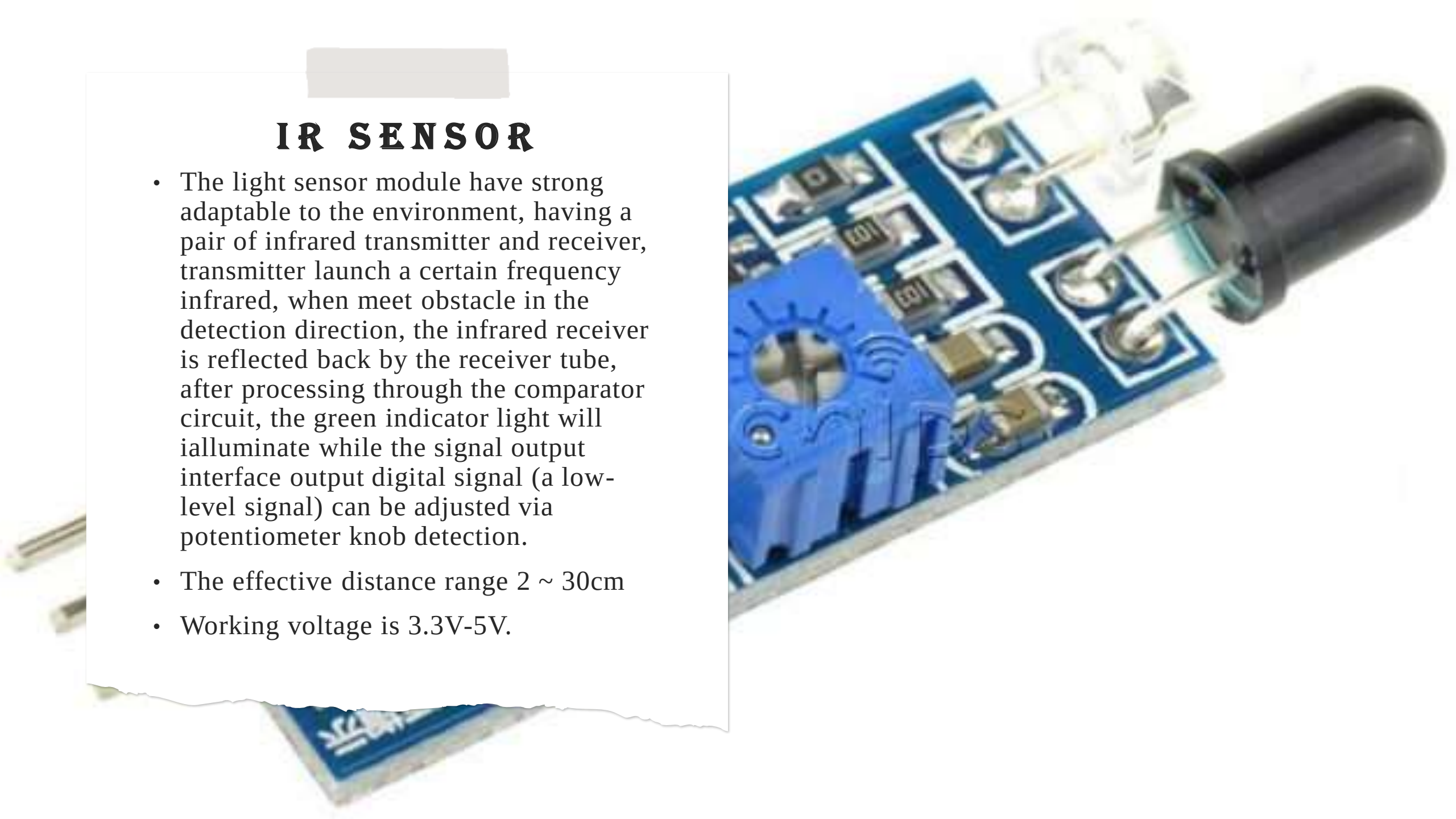
FLOWCHART


START
Data collection from streets
Presence of vehicles/pedestrians
IR sensor will respond
Wait for vehicle/pedestrian, lamp will remain off
Respective LED lamp will glow
Arduino will show '0' state of IR sensor
Arduino checks the status of IR sensor and LDR
END

COMPONENTS USED

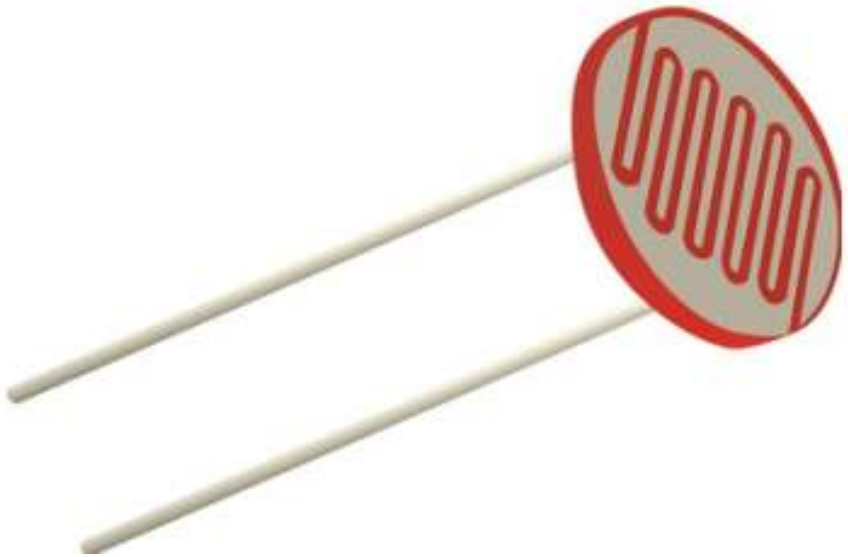
IR SENSOR

- The light sensor module have strong adaptable to the environment, having a pair of infrared transmitter and receiver, transmitter launch a certain frequency infrared, when meet obstacle in the detection direction, the infrared receiver is reflected back by the receiver tube, after processing through the comparator circuit, the green indicator light will ialluminate while the signal output interface output digital signal (a low-level signal) can be adjusted via potentiometer knob detection.
- The effective distance range 2 ~ 30cm
- Working voltage is 3.3V-5V.



LIGHT DEPENDENT RESISTOR (LDR)

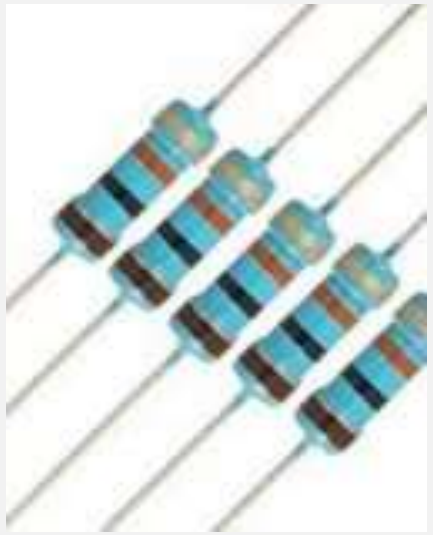
- Light Dependent Resistor as the name suggests the resistance is dependent upon the light incident on it. The theoretical concept of the light sensor lies behind, which is used in this circuit as darkness detector
- Maximum Voltage: 150V
- Maximum power consumption: 100mW
- Temperature: – 30C – – +70C
- Peak Spectrum: 560
- Bright Resistor: 5-10K_
- Dark resistance: 0.8M_



ARDUINO UNO

- Arduino Uno is an open-source microcontroller board based on the processor ATmega328P. There are 14 digital I/O pins, 6 analog inputs, a USB connection, a power jack, an ICSP header, and a reset button. It contains all the necessary modules needed to support the microcontroller. Just plug it into a computer with a USB cable or power it with an adapter to get started. You can experiment with your Arduino without worrying too much about it

- **10K RESISTOR:**-THE 10K OHM RESISTOR IS A PASSIVE ELECTRONIC COMPONENT USED TO CONTROL THE FLOW OF ELECTRIC CURRENT IN A CIRCUIT LED
- **A LIGHT-EMITTING DIODE (LED):-** IS A SEMICONDUCTOR DEVICE THAT EMITS LIGHT WHEN AN ELECTRIC CURRENT FLOWS THROUGH IT
- C**ONNECTING WIRES:**-A JUMP WIRE IS AN ELECTRICAL WIRE, OR GROUP OF THEM IN A CABLE, WITH A CONNECTOR OR PIN AT EACH END
- **BREADBOARD:-** A BREADBOARD, SOLDERLESS BREADBOARD, OR PROTOBOARD IS A CONSTRUCTION BASE USED TO BUILD SEMI-PERMANENT PROTOTYPES OF ELECTRONIC CIRCUITS

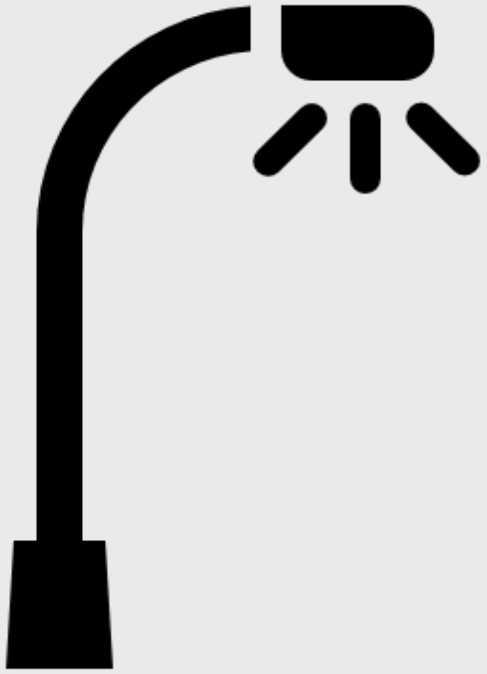



LITERATURE SURVEY

Hengyu Wu, Minli Tang, propose about The core technology of the street light control system is an ATMEGA328P single-chip microcomputer. It integrates a power circuit, a fault detect circuit, a photosensitive detection circuit, an infrared detect circuit, an LCD display circuit, a street light control circuit, an a1ann circuit, a pressed key control circuit and so on. This system cans automatically turn on or off the lights and controls the switches according to traffic flow. It expands the fault detect circuit and the corresponding a1arm circuit. It also has a convenient and flexible button control circuit to switch on and off fictions mentioned above. Main weakness is that they didn’t say about the working principle behind the system. It also said to use fault detection circuit which when it is damaged, the voltage is zero, so it will create a problem

METHODOLOGY

- . It reduces the manual effort by automating the streetlight on the basis of light intensity. The electricity wastage can be reduced by glowing the light on the basis of movement detection. Here three parts have been included under this topic for completed this study. Design architecture is the main block function for the proposed design. While, the hardware specification will detail out the components involved in this design from the sensor components until the controller selection. Software development based on the proposed design will be detail out in software part where the flow of the system operation will be detailed out elaborated



The Future of Smart Street Lights

Smart street lights are becoming popular worldwide to reduce energy usage and enhance safety and security. In the future, they may provide services such as Wi-Fi and air quality monitoring.

Lights can be used to create "smart streets," where sensors and other systems monitor and control traffic and pedestrian flow, improving visibility and public safety, creating a smarter, more efficient city.

Conclusion

Smart street lights are a revolutionary technology that can offer a wide range of benefits. From improved energy efficiency to improved safety, the advantages of this technology are undeniable.

Smart street lights can help to create a smarter, more efficient city environment, and are likely to become increasingly popular in the years to come. Smart street lights are a promising technology that can provide many benefits to our cities.

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