TRAFFIC MANAGEMENT USING IOT

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Introduction

- One of the major problems faced in any metro city is traffic congestion. Heavy traffic is a headache for each and every person driving the vehicle and even to the traffic police in controlling the traffic.
- Traffic congestion has a negative impact on economy, the environment and the overall quality of life.
- There are two ways through which traffic is been controlled

  a) Manually

  b) Systematically (Controllers)

a) One of the oldest ways of handling traffic was having a traffic policeman deployed at each junction.

b) Traditional Traffic light controllers: It uses a fixed predetermined schedule for traffic inflow for each direction.

- However the whole idea of a fixed time traffic light controller is not convenient for cities where traffic flow is variable.
- For this reason a dynamic traffic control system is needed, which controls the traffic signals according to the density of traffic.

- In our project we focus on optimization of traffic light using IR sensors and Arduino UNO as a microcontroller.

- In our project our approach is to take data/input from IR sensors it will allow us to detect whether the road is congested or not and will allow us to manage our traffic according to our input.

Literature Survey

- [1]This paper suggests implementing a smart traffic controller using real-time image processing. It used filtering method, which filtered the image and released all waste objects and only showed the cars. It has been customized to be used to control the traffic light sign by giving each sign sufficient time, depending on the number of cars on each direction.
- [2] this paper the author optimize the traffic using microcontroller this system reduce traffic jams problem cause by traffic light to extent. The system contains IR Transmitter and IR Receiver. IR count the vehicles on the road Microcontroller generates the result.

- [3]In this paper the traffic control system based on (WSN) wireless sensor Network. In that System Time manipulation Used for controlling Traffic Light. This System Control Traffic over Multiple intersections. The vehicles transmits the RF signal and code. The sensor on traffic signal detects the signal and receives the code and communicates wirelessly with traffic lights controller.
- [4] System is based on a simple principle of RFID tracking of vehicles, can operate in real-time, improve traffic flow and safety, and fully automated, saving costly constant human involvement.

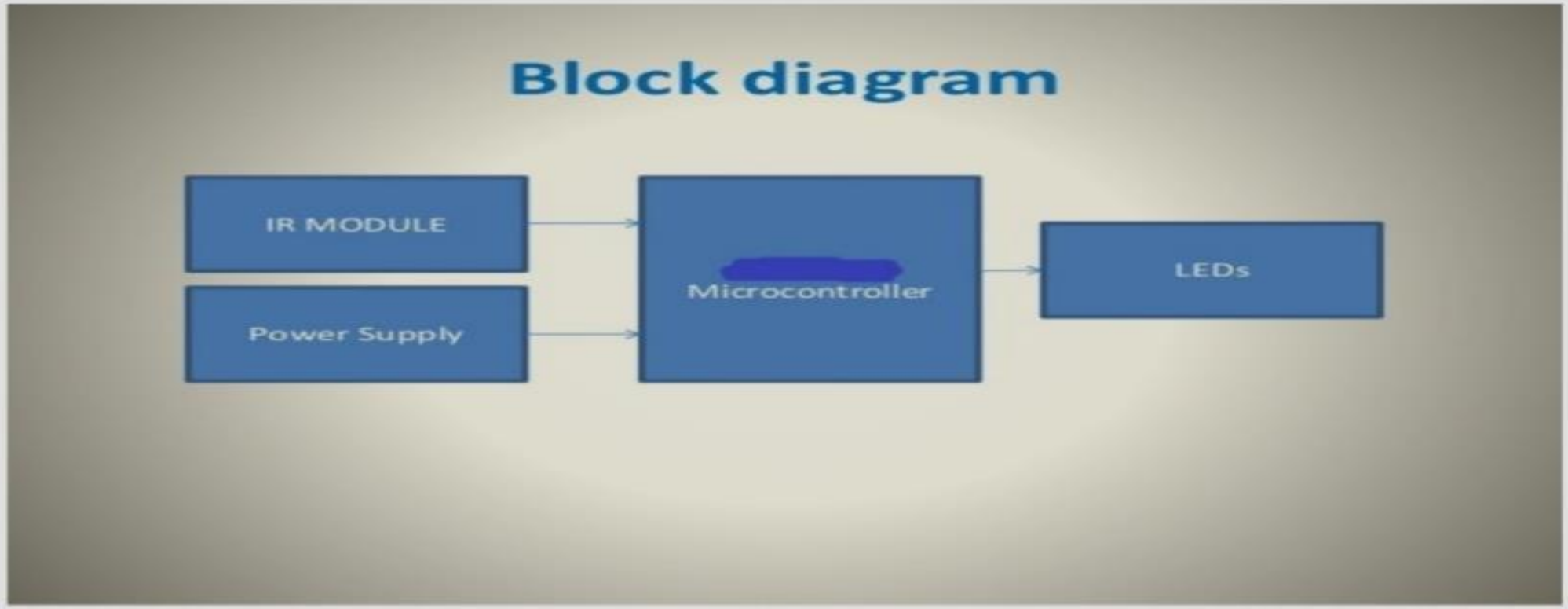
Working

- This project works on the principle that when a car passes between the IR transmitter and IR receiver, the IR light is blocked and as the result the resistance of the photodiode increases. This change in resistance is converted to electrical pulses, which is used to control traffic lights.

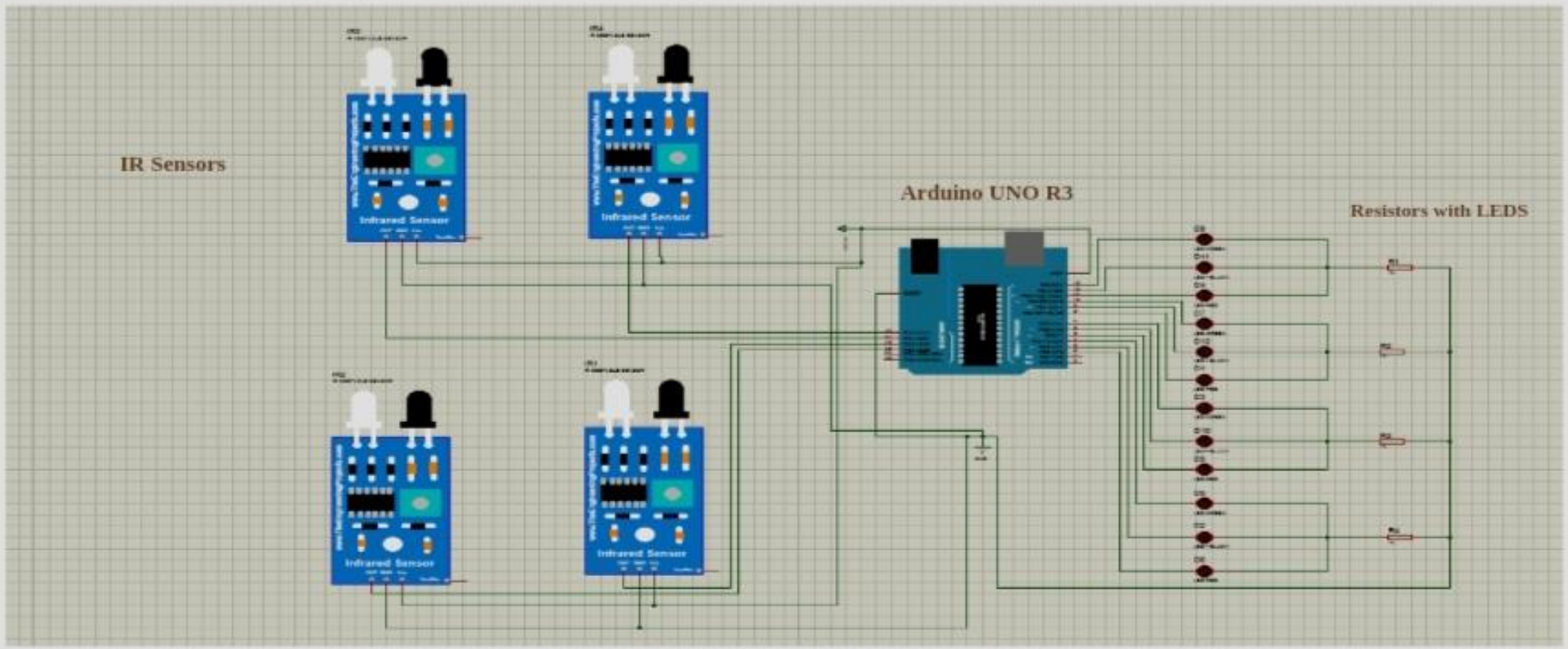
Components Used

- Arduino UNO
- IR Sensors (IR Transmitter & IR Receiver)
- LED’S (12)
- Resistors(1k ohm)
- Power Supply (5V)
- Jumping Wires

Block Diagram



Circuit Diagram



Results

Conclusion & Future Work

- In this project we have studied the optimization of traffic light controller in a City using IR sensors and microcontroller. By using this system we tried to reduce the possibilities of traffic jams, caused by traffic lights and we have successfully gets the results. Number of passing vehicle in the fixed time slot on the road decide the density range of traffics and on the basis of vehicle count microcontroller decide the traffic light delays for next recording interval