Density Controlled Traffic Lights System using Aurdino Mega 2560

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Abstract: We have proposed the enhancement of Traffic Light Controller utilizing ultrasonic sensor and microcontroller. The Paper is planned for structuring a thickness based dynamic traffic signal framework where the planning of signal will change consequently on detecting the traffic density at any road junction. Traffic jams are an extreme issue in many urban areas over the world and thusly the time has come to move progressively manual mode or fixed clock mode to a robotized framework with choice making abilities. Present day traffic control framework is fixed time based which may render wasteful on the off chance that one path is operational than the others. To solve this issue, we have made a structure for a clever traffic control system. Some of the time higher traffic density at one side of the intersection requires longer green light time when compared with standard green light time. We, consequently propose here a component where the time of green light and red light is allotted based on the thickness of the traffic present around then. This is accomplished by utilizing ultrasonic sensors which are available on Top of the street.Sometime, in specific intersection of the street junctions extended periods of Red Traffic Light. In instance of any vehicle in crisis circumstance or on the other hand in emergency like VVIPs,a SMS is send to Traffic Control Authority, who has the control of microcontroller empowers microcontroller to change traffic light green for specific time on need premise.

Keywords: Traffic Light Controller, VVIPs.

I. INTRODUCTION:

The First traffic sign was found by Detroit police officer named Lester Wire like two shading, red-and-green light with a signal in 1912.Then in 1920, William Potts update the previous plan of traffic light. William brought the tri-shaded red, yellow, and green lights generally utilized today. Traffic signal mostly used for controlling the vehicles and help to control the traffic between vehicles. The traffic jam issues are expanding day by day in light of the expanding number of vehicles with fixed framework. Under this circumstance, the current traffic light systems which are clock based are most certainly not suitable to control traffic.

To take care of this issue, a constant traffic control framework is required which will control the traffic signal as per traffic density. The current traffic signal framework is controlled with postpones where the sign change timings are fixed and don't depend upon current traffic stream. The current traffic density should be moved up to settle the serious traffic jam issues. So here we propose a straightforward, ease, and continuous traffic signal framework that intends to solve numerous issues and improves the traffic framework. The framework depends on MEGA 2560 Microcontroller that helps to control traffic thickness using Ultrasonic sensors mounted on either side of every street and dynamic planning spaces with various levels. Our system will be helpful for solving the vast majority of the traffic jam issues happening these days.

Component Description:

Power Supply:

As per the power requirement of the hardware of the Density Based traffic light control system, we need a supply of +5V and GND. We use external power supply or use batteries to give power supply.

SENSOR:

A Ultrasonic sensor is a gadget that can sense an object or item by using sound waves. It has to separate channels for sending out a sound wave at a particular recurrence and to receive the reflected wave from the object. Here we have utilized our ultrasonic sensor to identify the density of traffic in different lanes. This ultrasonic sensor detects with impression of sound waves. Sensor has one transmitter module with enhancer circuit and Receiver with discrete part. This ultrasonic sensor takes a shot at 40KHz recurrence so no effect of other sound over which isn't of 40Khz.

AURDINO MEGA 2560:

A microcontroller is an efficient PC on-a-chip manufactured for managing a few explicit errands, for example, getting data through PORTs or remote-controlled gadgets and many more, handling it further to get proper outcome for which it is

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392

operated. Arduino Mega is an ATmega328-based microcontroller comprising of 54 info and advanced yield pins, of which 15 pins are PWM yield, 16-stick simple info, 16 MHz resonators,

USB associations, control supplies, ICSP headers and reset catches. Arduino Mega can utilize the battery or can be used from the USB port. The Arduino programming incorporates a sequential screen that permits the code to be sent to the Arduino board. Driven RX and TX on board will flicker when information is sent by means of USB-to-sequential chip and USB association with PC. A Software Serial library permits sequential correspondence on one of Arduino Mega advanced pins.
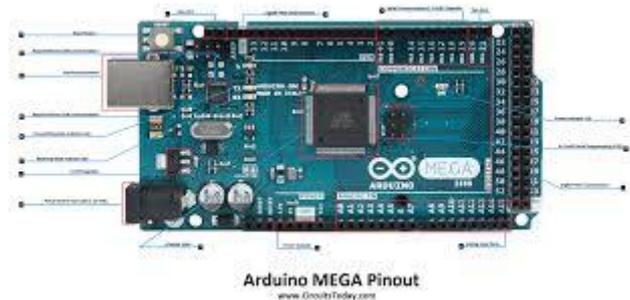

Arduino MEGA Pinout
www.CircuitsToday.com

LIGHTS:

Traffic light show will be same as that we are having now a day's RED, YELLOW and GREEN. In any case, the configuration of evolving light is dealt by microcontroller through ultrasonic sensors.

BLOCK DIAGRAM:
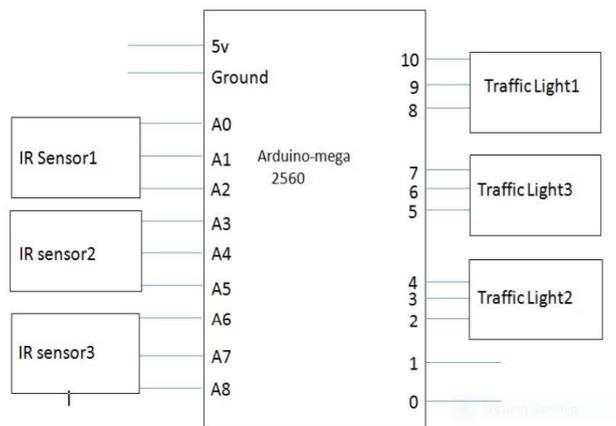
FLOW CHART:
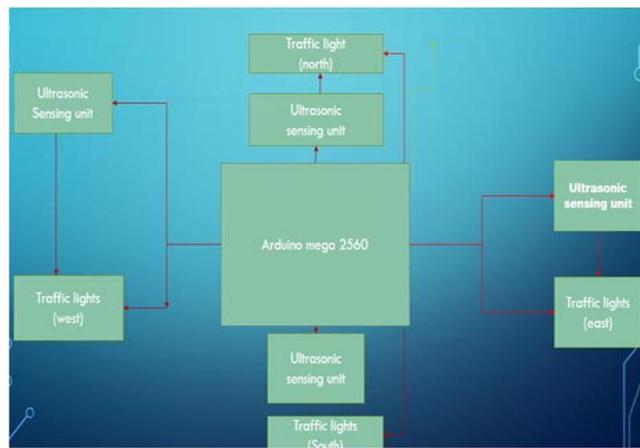
## OPERATION:

This project is a smart traffic light control and checking framework which demonstrates the interfacing of a few peripherals and ICs with the microcontroller.

Connect the adaptor to the Arduino board it gets Switch on the program is loaded into the microcontroller now the sensors which are set up to detect the traffic are connected to the Aurdino and they pass on the information to the Aurdino about the traffic. The traffic lights that is the LEDs are connected to the Aurdino so now if any obstacle(vehicles) pases infront of the sensor the information is sent to the Aurdino , then the system allows the traffic of that particular path by glowing GREEN light some delay time will be set for the next signal to glow based on the sensor output.

PROTOTYPE MODEL:

Shot on OnePlus
Powered by Dual Camera
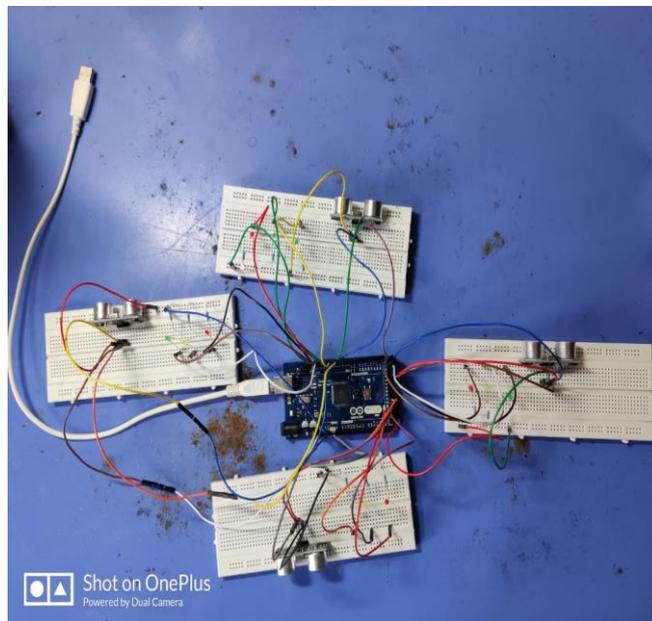
OUTPUT:

When a object is detected message is transfer to the Aurdino then the Aurdino activates the traffic lights in that particular lane. When 2 or more lanes are having traffic then timer is turned on and works on timer.

II.   CONCLUSIONS

Density Of traffic is controlled using ultra violet sensors. UV sensors help us to detect the vehicles present In a lane using uv sensor, based on

that traffic light are operated.UV sensors are less in price and work more effective. This project can be taken to next level using cameras and sound sensors for work to be more effective , priority can be given by using cameras and sound sensors like in the case of an ambulance or a police emergency and etc

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