

# Intelligent Traffic Controlling and Assisting Road Divider

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**Abstract-** Road Divider is generically used for dividing the road for ongoing and incoming traffic. This helps in easy flow of traffic; generally, there is equal number of lanes for both ongoing and incoming traffic. The problem with Fixed Road Dividers is that the number of lanes on either side of the road is fixed. Since the resources are limited and population as well as number of vehicles increasing day by day, there is significant increase in number of vehicles on roads. This calls for better utilization of existing resources like number of lanes available. For example, in any city, there is industrial area or shopping area where the peak traffic generally flows in one direction in the morning or evening hours. The other side of Road divider is mostly either empty or much underutilized. This is true for peak rush hours. These results in loss of time for the vehicle owners, traffic jams, time consuming as well as underutilization of available resources. Our aim is to create a mechanism of automatic road divider that can shift lanes, so that we can have desirable number of lanes in the direction of the rush. The collective impact of the time and fuel that can be saved by adding even one extra lane to the direction of the rush will be significant. And also detecting traffic rules violations and giving priority to emergency vehicles with speed breaker deactivation if any so that the whole roadway system is utilized efficiently and effectively .

**Keywords-** Road Divider, speed breaker, fixed lanes, traffic violation, Emergency vehicles.

## I. INTRODUCTION

Countries around the globe are facing issue of traffic problem because of increase in the number of vehicles. In spite of the fact that the quantity of vehicles utilizing the roads has been expanded, the static road foundation is nearly the equivalent and it can't adapt to the progressions like a blockage or unexpected increase in the flow of traffic. The government is also trying its best to reduce the traffic. Various rules are also made the government and the authority such as parking the vehicles on busy roads, waiting on busy roads are all prohibited but also the traffic overcrowding problem is not decreasing. The problem with static road divider is that the number of lanes on either side of the road is fixed. Hence the road cannot be utilized to its full potential.

This calls for better of existing road like a number of lanes accessible. So as to conquer this issue, we propose an Intelligent Traffic Controlling and Assisting Road Divider which moves to rely upon the progression of traffic. The sensors can be worked by the Arduino to recover the information from them and analyze the data and move the divider accordingly it also performs other functions including detection of emergency vehicles and extending the lane on which the emergency vehicle is arriving and also deactivating the speed breakers if there are any on the path on which the emergency vehicle is

going to arrive so that it can easily pass the traffic by means of a dedicated lane. It can also detect traffic violation such as signal jump. The Intelligent Traffic Controlling and Assisting Road Divider helps in the arrangement of the road lane limit, in order to achieve ideal efficiency of the Road. By utilizing the development of divider, we can give traffic clearance for the emergency vehicle when it required. Looking at all these problems that have been faced by the people regularly, this paper has tried to provide a better solution for the day to day increasing traffic.

Hence in this work an Intelligent Traffic Controlling and Assisting Road Divider is implemented, which can change its original position and adopt itself according to the traffic.

## II. LITERATURE REVIEW

In [1], RFID is a remote connection to extraordinarily recognize objects or people. RFID empowers distinguishing proof from a separation without requiring a view. This disposes of the utilization of additional equipment. This likewise incorporates the acknowledgment of vehicles by the sound of their alarm. By utilizing the RFID tag, a different way will be made for emergency vehicles.

In [2], the traffic parameters, for example, traffic volume, path speed, path inhabitancy, and vehicle progress are gauges and utilized. The day of the week and the hour of day are additionally utilized by the calculation. Information investigation is done on a for every path premise and results are created for every path and for the general street fragment. Improving the proficiency of Traffic Management Systems (is as yet a functioning and testing research territory because of the criticality of transportation foundation being observed by such system.

In [3], In this they proposed image capturing process instead of sensing vehicles by sensors. In this system traffic light can be control by using image processing method. By using analyze data traffic signal can be controlled. With the assistance of specific calculation, morphology and picture are expected to stay away from traffic blockage.

In [4], a versatile Traffic Management System (TMS) joined with a fuzzy rationale-based plan so as to take proper activities to accelerate the advancement of crisis vehicles while maintaining a strategic distance from the production of bottlenecks around their courses. This is accomplished through the all-around planned adjustment activities and crisis reaction plans picked dependent on the crisis level promoted by the crisis vehicle and the yield of the fuzzy framework.

In [5], proposed an intelligent traffic organization framework, in view of the Internet of Things, which is included by minimal effort, high versatility, high similarity, easy to upgrade, to replace conventional traffic the executive's framework. In [6], proposed a innovation in robotizing the traffic signals by utilizing picture handling, Infrared sensor, and in some spot's prioritization in rush hour gridlock motioning towards crisis vehicles dependent on the fuzzy rationale this method is assumed to be expensive. In [7-11], various smart and intelligent systems have been discussed.

### III. COMPONENTS AND METHODLOGY

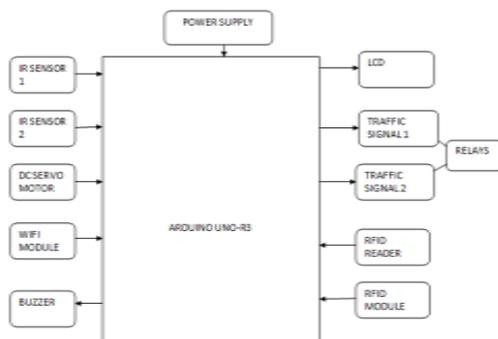


Fig 1. The block diagram of the proposed system.

The executed framework consists of Arduino as a principle preparing unit and all the sensors and devices are associated with the Arduino.

The circuit diagram is divided into two phases in phase one the connection for emergency vehicles passage and signal jump detection is established, In phase two the connection between movable divider, traffic light and other necessary functionality connections are established.

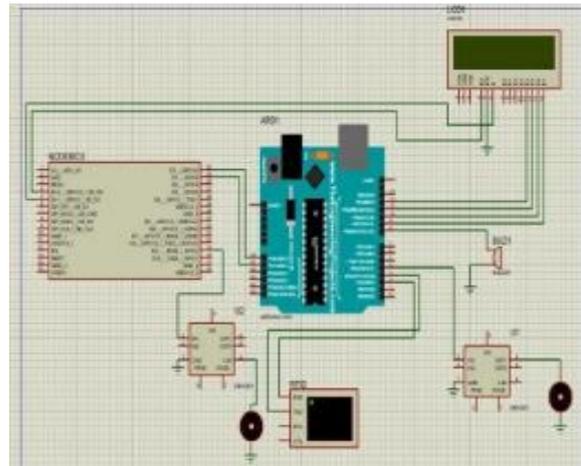


Fig 2. Circuit diagram Phase -1.

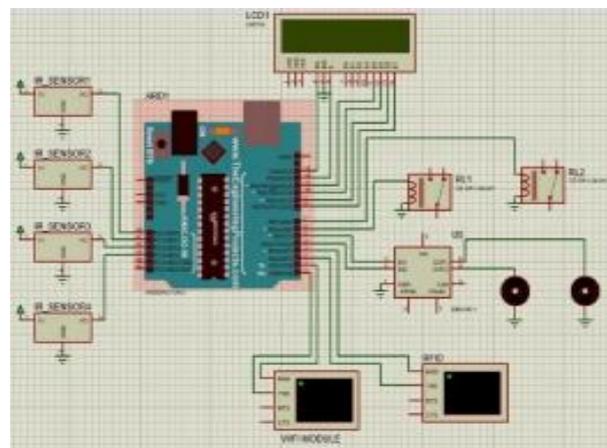


Fig 3. Circuit Diagram Phase-2.

#### 1. Arduino:

Arduino is an open-source equipment and programming. It has 14 advanced input/output pins, 6 simple data sources, a 16 MHz artistic resonator, a USB association, a force jack, an ICSP header, and a reset button. It contains everything expected to help the microcontroller. The ATMEGA328 on the Arduino UNO comes pre programmed with a boot loader that permits us to transfer new code to it without utilizing an external hardware programmer. The sensors can be worked by the microcontroller to recover the information from them and update it to the web through Wi-Fi module associated with it. In this work we use ARDUNIO for analyzing sending and receiving data.



Fig 4. Arduino.

### 2. IR Sensors:

An infrared sensor is an electronic gadget that produces so as to detect a few parts of the environmental factors. An IR sensor can measure the distance of an object as well as identifies the movement of the object. In this work IR sensors are used for detecting traffic intensity.



Fig 5. IR Sensor.

### 3. DC Servo Motor:

A DC Servo motor is an electric motor that runs on direction current. It chips away at the way that a current conveying conductor set in an attractive field encounters a power which makes it turn as for its original position. In this work we are using servo motor for moving divider and for speed breaker application.



Fig 6. DC Servo Motor.

### 4. Liquid Crystal Display:

An LCD is a flat board show that utilizes the light-balancing properties of fluid precious stones consolidates with polarizers. Fluid precious stones don't emanate light directly, rather utilizing a backdrop illumination or

reflector to deliver pictures in shading or monochrome. In this work we are using LCD to show the data required.



Fig 7. Liquid Crystal Display.

### 5. ESP8266 IOT Module:

ESP8266 is Wi-Fi enable system on chip (SOC) module created by Espressif framework. It is for the most part utilized for the advancement of IoT implanted applications. It eases independent remote handset that can be utilized for end-point IoT advancements. It has 2.4 GHz WI-Fi, 16 GPIO, 10-piece ADC, Inter-Integrated Circuit serial communication protocol. In this work we are using IOT module to communicate the data with IOT application



Fig 8. Iot module.

### 6. Transformer:

It is a device that transfers electric energy from one alternating-current circuit to one or more other circuits, either increasing (stepping up) or reducing (stepping down) the voltage. Transformers are employed for widely varying purposes; e.g., to reduce the voltage of conventional power circuits to operate low-voltage devices.

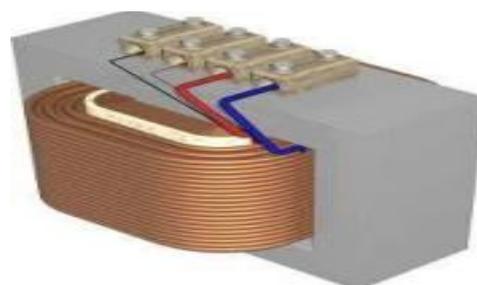


Fig 9. Transformer.



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