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IMPLEMENTATION OF MOVABLE ROAD DIVIDER

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ABSTRACT

Lane dividers are primarily employed to manually segregate the movement of incoming and outgoing vehicles. There are more vehicles being used by individual families as a result and population expansion. Yet, there is still control over assets, as evidenced by the enormous number of cars, trucks and bikes that are constantly circulating on the roadways. The optimum use of the resources at hand is encouraged. The quantity of road markings on each side of the road is determined by the consistent roadway dividers. One side of the road is not approximately used during rush hour.

INTRODUCTION

Together with the growth of large cities around the world, there are more vehicles, such as cars and trucks, on the roadways. The structure is similar and could not address the differences in traffic congestion heavy duty traffic accidents and unpredictable travel time delays. This is because the roads have been misguided and have been made worse. Instead of taking action to reduce traffic, cities are more concerned with traffic jams. Because of tie-ups at the time, this idea of mobile road barriers dates back to the 1990s. The machine used at the time was a Zipper machine, which is used to move the road barrier from one lane to the other lane.

LITERATURE SURVEY

The integration [1] of a flexible Traffic Management System (TMS) with a vague, logic-driven strategy was utilized to expedite the implementation of essential measures in order to accelerate the resolution of a crisis. Cars while keeping a safe distance from the areas where bottlenecks are being created around their intended routes. This is accomplished by carefully strategized adaptation measures and crisis response plans, chosen according to the severity of the crisis caused by the crisis vehicle, as well as the outcomes generated by the fuzzy framework.

The implementation of automated traffic signals, utilizing image processing, infrared sensors, and selective prioritization during peak traffic hours to facilitate the movement of crisis vehicles, was introduced based on fuzzy reasoning [2]. Each of these frameworks has the drawback of being expensive.

The suggested an image-capturing procedure in [3] as an alternative to sensing automobiles using sensors. With this technique, image processing can be used to regulate traffic lights. Traffic signals can be

controlled by analysing data. The morphology and picture are supposed to avoid traffic jams with the use of precise calculation.

RFID is described in [4] as a distant link that may astonishingly recognise persons or items. RFID makes it possible to tell a separation from an evidence without a view. By doing this, the need for extra equipment is eliminated. This also includes the ability to recognise automobiles based on the sound of their alarm. This architecture avoids interfering with the bottlenecks that occurs during rush hour. An alternative method of handling emergencies will be created by using the RFID tag.

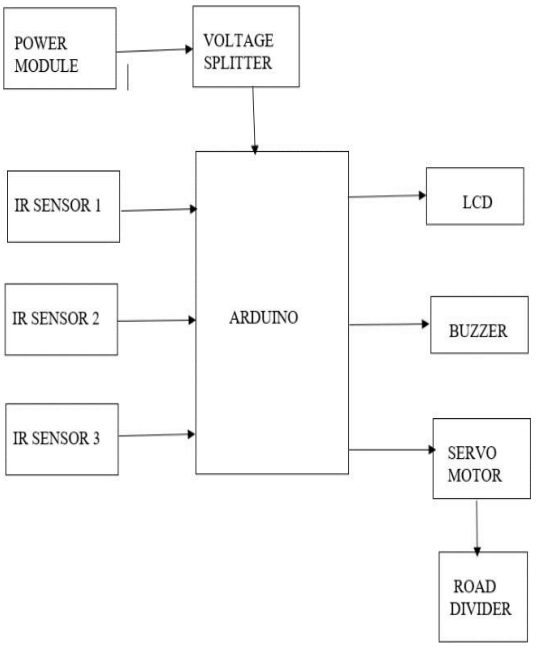
MOTIVATION

In order to have a progressive number of approaches approaching the rush, our proposal is to compute a robotized, portable road divider. How much time and fuel can be saved overall by adopting just more method of reducing traffic congestion. With the clever application suggested below, we will also do away with the need for human intercession and manual traffic coordination, allowing for increasingly intelligent traffic throughout the city.

MATERIALS AND METHODOLOGY

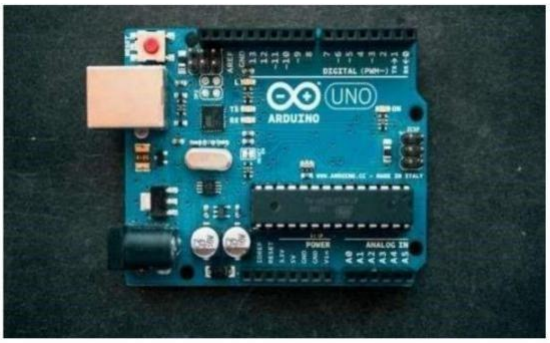
ALGORITHM

Step 1 : Start
Step 2 : Check IR Sensor1 Step 3 : Check IR Sensor2 Step 4 : Check IR Sensor3 Step 5 : Result display on Lcd Step 6 : Buzzer indication Step 7 : shifts road divider Step 8 : Stop



ARDUNIO

Arduino is an open source equipment. It is also used for programming purpose. The device consists of 14 input and output pins, 6 data sources, a 16 MHz artistic resonator, a USB connection, an ICSP header, a power jack, and a reset button. It also includes all the necessary components to support the microcontroller. The Arduino UNO board incorporates the ATMEGA328 microcontroller, which comes preloaded with a boot loader enabling convenient code transfer without the need for an external hardware programmer.



IR SENSORS

An infrared sensor is an electronic device that emits light to identify specific factors in the surrounding environment. An IR sensor can gauge an object's height as also indicates the movement.

LIQUID CRYSTAL DISPLAY:

An LCD is a flatscreen display or another optical device that is electronically adjusted and makes use of the light-balancing technique fluid precious stone characteristics combine with polarizers. Liquid gemstones do not emit light directly; instead, they utilize a reflector or a backlight to display dark or monochromaticimages.

RFID

One intriguing way to identify between persons or objects remotely is through the use of RFID. It makes recognisable proof possible without the need for a view, from a distance. An RFID system consists of an RFID tag/card, an RFID reader, a control system, and a backend database. RFID structures both active and passive generic classes. An RFID Reader and RFID tag interact via label cross-examination.

SERVO MOTOR

A servo motor is a high-precision motor. Servo motors, commonly equipped with a control circuit, incorporate a feedback mechanism that accurately determines the current position of the motor shaft. This feedback enables servo motors to achieve precise rotation. A servo motor is used to rotate an object at a specific angle or distance. It is essentially a motor that operates using a servo mechanism. When the motor is powered by a DC power source, it is known as a DC servo motor, while an AC servo motor refers to a motor powered by an AC power supply. In this tutorial, we will only look at how a DC servo motor works.

The main goal of the planned construction is to reduce the time it takes for emergency or government vehicles, such as an emergency vehicle or a government, to

react police, firefighter and other vehicles, by providing these cars all have RFID tags. The suggested method is explained using the stream diagram that is shown in figure underneath. The recommended framework demonstrates that the using and relying on the power while out and about. The traffic divider is in motion. Two categories of sensors are utilized, namely high and standard types. The data collected by the sensors is wirelessly transmitted to the website through the Wi-Fi module and then displayed on the LCD screen. When an emergency car arrives passes fast each observation point with an RFID label in addition to the road.

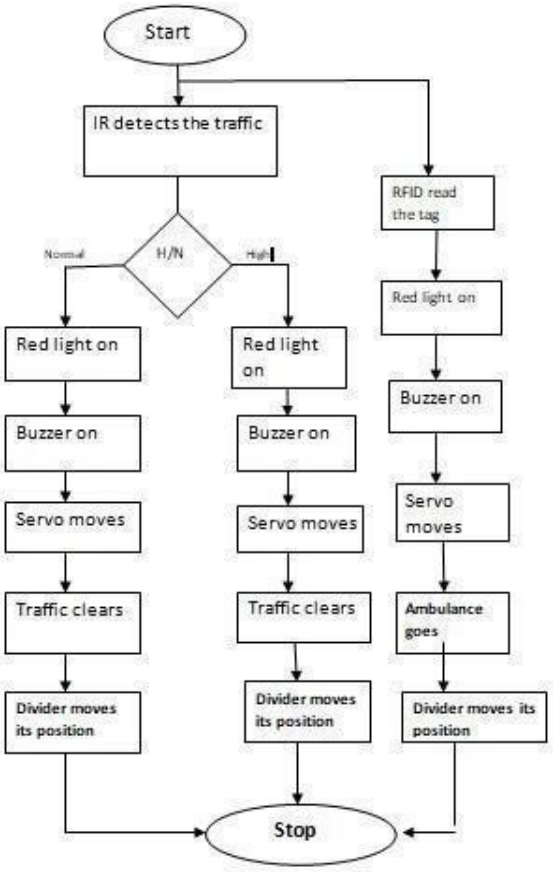


Fig : Flowchart

The infrared sensors with a range of 10 cm are being used in this project to measure the density of traffic. These sensors will provide digital data to an Arduino Uno motherboard (Arduino uno have Atmega 328 microcontroller). The Arduino board contains a programme to monitor the traffic density depending on the sensor inputs and these sensors are linked to pins D2, D3 and D4 on the Arduino board.

Ex: When sensors 1, 2 and 3 are activated, the density is HIGH.

- Sensors 1 and 2 are detected and the density is MEDIUM.
- Sensor 1 IS detected when density isLOW.

In order to move the road divider in accordance with the traffic density provided by the servo motor, we use infrared sensors to monitor the traffic density in this manner. The adaptor circuit, which accepts 240V input and outputs 9V DC, regulates the 9V to a constant 5V with the aid of an LM2560 DC-DC step down circuit and the entire project operates on 5V DC. Suppose a street with (four + four) lanes connects points A and B. As seen in figure 4, during the morning hours, there is considerable traffic congestion on the lane leading from A to B and minimal traffic congestion on the lane leading from B to A. As seen in figure 6, there is more traffic congestion in the evening on the lane leading from B to A than it is on the lane leading from A to B. In order to expand the length of the road leading to position B, movable road dividers have been installed.

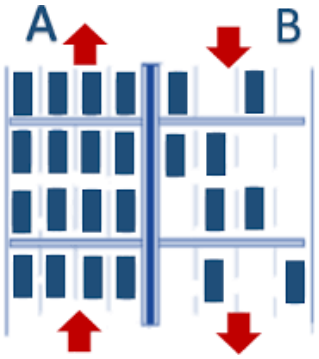


Fig-1: High traffic density in one direction

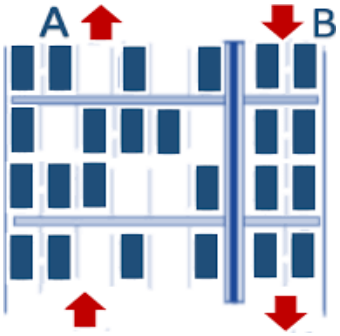


Fig-2: Adjusted lanes to balance traffic density on both directions.

RESULTS

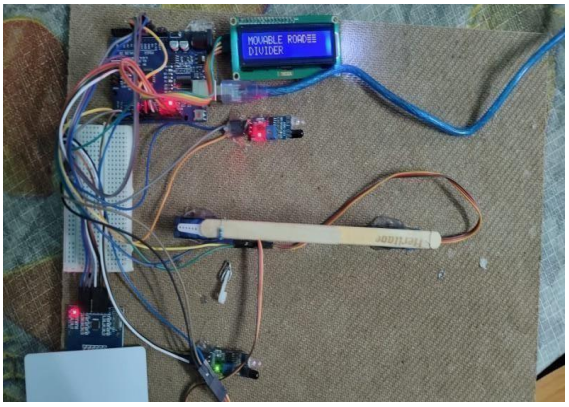


Fig- 1: Normal Situation

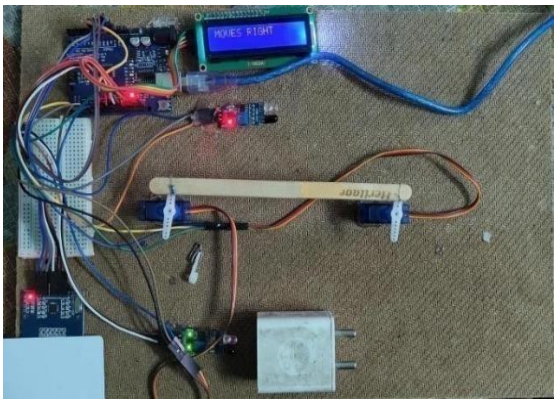


Fig- 2: Sensor 1 detects the vehicle

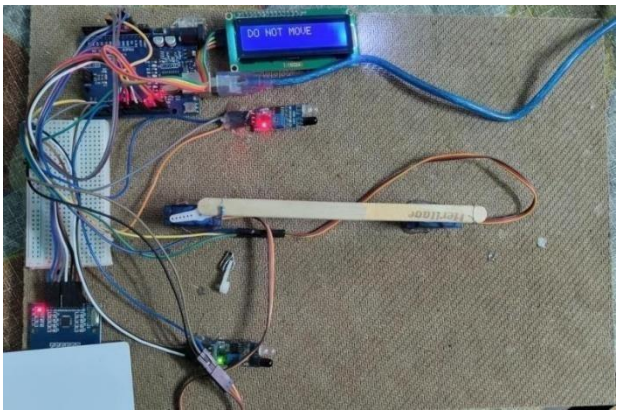


Fig- 3: Sensor 2 detects the vehicle

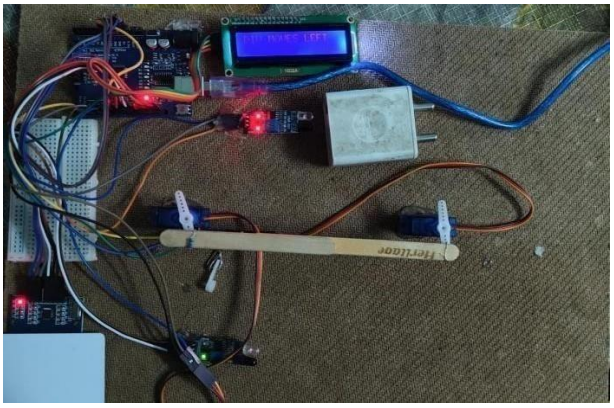


Fig 4 Sensor 3 detects the vehicle

CONCLUSION

The outcomes of the demo model we successfully constructed and developed for "Controlling of traffic using IR sensors" in this article are satisfactory. We have only used IR sensors to demonstrate it through one direction of traffic because it is a demo model. The sensors provide the Arduino with information about traffic congestion. However, since real-time traffic congestion can occur in multiple directions, this module can alternatively utilize image processing instead of conventional sensors.

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