Literature Review on IOT Based Movable Divider

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Abstract **- Now a days, traffic on the roads has increased because of the increase in population in India, Due to this, traffic congestion has become a very big problem in our life, so to solve this problem we have created a traffic divider which can be moved automatically to increase the lane area of the congested side of the road and to provide more space for the vehicles to move. With the help of a technology like Internet of Things, this module is implemented, IR sensors are being used to keep the track of traffic and according to which a needed action will be taken. When one side the road is congested and the other is not this movable divider will move the that side of the road which is not congested and area of the congested road will be increased. When both side of the traffic is equal no action will be taken. Now to detect the signal violation we are using RFID tag and reader. Tag will be attached to the vehicles and reader will be connected to the signal, if any vehicle violates the traffic signal it will be detected.**

Index Terms **- Traffic Congestion, Movable divider, Internet of Things, Divider, Traffic Violation.**

I.INTRODUCTION

In recent years we have seen that our country is facing the problems of traffic congestion due to increase in number of vehicles in society. Currently all this is happening because of increase in population which has been increased from 136.64 crores to 139.82 crores in past two years which indirectly tells the number of vehicles running around the whole country, we cannot even tell the exact number of vehicles.

These traffic problems lead to many problems like accidents on roads because of rush for reaching the destinations. People get late for their important meetings, work, jobs, occasions etc., so it is very imp for people to get on their destinations so by adaptation of our idea we will decrease the traffic which will help to get on our destinations on time and it will decrease the chances of accidents. Many times, ambulances stuck between traffic which we can say that this condition is life or death condition. So nobody wants to play with anybody's life, as in this case the life of a patient. By implementing our idea, we can save once life. our idea will not only save the time and fuel but in case of ambulance and emergency we can even save the life's. The idea of our project is that we are going to build a movable divider using IOT which will help to taper the traffic of the road where we see the road is chock-a-blocked with traffic.

Here we're using IOT, because Internet of Things (IoT) is a technology that helps us implement this idea of movable divider, IoT describes the network of physical objects(things) that are embedded with sensors, software and systems over the internet. We are using this technology because of low-cost, low-power sensor technology, physical things can share and collect data with minimal human intervention. Along with that it communicates with so many hardware like IR sensors, RFID module and other modules.

II. LITERATURE SURVEY

1. *Implementation of Movable Road Divider using Internet of Things (IOT)* [1]

The designed system shows that the vehicles on the road are taken in to count and depending on the congestion of traffic the divider moves. Two sensors are employed here for normal and high. The information obtained from sensors are updated in website through Wi-Fi module and divider is moving as per this information.

2. *Movable Road Divider* [2]

The main aim of this project is to reduce traffic congestion in the day-to-day life. Here, in their proposed system they were using IR sensor on the starting of road and incrementing the count when vehicle get detected and according to the congestion, they are moving divider, along with this they were also providing facility for ambulance.

3. *Design and Simulation of Intelligent Traffic Control System* [3]

They designed system for Intelligent traffic control based upon the number of vehicles at the traffic signal. They have used the feature like SSADM and Fuzzy logic control system. The drawbacks are Overhead of Complex technology and the system is only designed for specific traffic signal patterns such as crossroads.

4. *Movable Traffic Divider: A Congestion Release Strategy* [4]

The proposed uses Metro count and pneumatic tubes to detect traffic congestion. They got the various traffic patterns from the Metro Count output and from those patterns, they suggested to use movable traffic dividers, in order to reduce the traffic congestion, if used in appropriate way.

5. *Movable Traffic Line* [8]

This model states a way to build a relatively cheap and stable way of using movable traffic lines to control traffic and increase or decrease the number of lanes according to the specific time of the day. It shows a method of using cables and suspension wires to change lanes that have been laid out on the road and make them portable across the width of the road.

6. *Apparatus and method for moving Roadway Lane Divider* [9]

This model states an improved method to expeditiously move a road divider on a roadway, to change the number of lanes in the road in a pair of adjacent groups. It uses a hoist mechanism (to pull upwards) with vertical support above the road to traverse the divider through the breadth of road and can account for numerous different traffic patterns.

III. PROPOSED WORK

Here, in this project we'll be using IOT technology. For establishing connection between hardware devices, we have used Arduino Uno and ESP 8266 as our microcontrollers. we divide this project into two modules as follows

1. *Traffic Detection and Movable Divider*

The main aim of this module is to detect traffic congestion and according to traffic congestion we'll be moving divider to reduce congestion.

For detecting traffic congestion, we'll be placing IR sensors on both side of road in their starting and ending part and set some threshold for maximum amount of traffic needed to move divider. Once the vehicle enters the road then the starting IR sensors will detect the vehicle and increment the count of vehicle. Once the vehicle leaves the ending part of road then the count of vehicle gets decremented. When the count of vehicle touches the threshold value then the divider gets moved to reduce the traffic congestion.

2. *Traffic Signal Violation Detection*

The main aim of this module is to detect the traffic violations and then record those violations. In this module we have setup the RFID modules onto the signals and connected it with our microcontrollers for communication. The unique RFID tag is connected with the respected vehicle, once the vehicle violates the traffic then the RFID module present at signal will read the RFID tag and capture the information of vehicle.

IV. ADVANTAGES

- Traffic Intensity can be reduced
- Traffic Congestion can be avoided
- Time of journey during rush hours can be reduce
- Can give traffic clearance for the emergency vehicle when it required

V. CONCLUSION

We have designed and implemented a demo model of 'Movable Traffic Divider'. IR Sensors are applied on both the side of roads to detect the amount of traffic, according to this, commands are given to the hardware using microcontrollers. When the traffic gets increased, the divider moves and helps to reduce the traffic congestion. Above module is also beneficial for the emergency vehicles like ambulance, etc. Other than that, we have also implemented traffic signal

violation module, which will decrease the traffic signal violation.

VI. FUTURE SCOPE

In the future, we can use Convolutional Neural Network (CNN) for detecting the traffic congestion. If the architecture of CNN is robust then it can detect traffic congestion accurately.

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