iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 9 **Issue:** VI **Month of publication:** June 2021

DOI: https://doi.org/10.22214/ijraset.2021.35641

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 9 Issue VI June 2021- Available at www.ijraset.com

Movable Road Divider using Internet of Things

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***Abstract* — The purpose of using road divider is to separating the two ways of traffic i.e. ongoing and incoming vehicles in the traffic. With growing population, the vehicles used per family increases, but there is limitation in resources and leads to more number of cars on roads. In that case static road divider fixes the number of road lines on either side of road. This invites the better usage of available resources. In most of the cities, there are areas like industrial and shopping places where traffic flows only in one direction both in morning as well as in evening.**

***Keywords*— Automated Road divider; traffic system; IOT server; underutilization.**

I. INTRODUCTION

Now-a-days usage of private automobiles is making urban traffic more and more rush area as a result traffic control has become one of the most important problem which is resulting in vain attempt and pollution in surrounding area. Hence it has become necessary to find an effective solution for traffic control. Road divider is generally used for dividing the road for ongoing and incoming traffic. The static road divider divides the number of lanes into equal halves where the divider is fixed. In this paper, we design a movable road divider which moves depending on the flow of traffic.

The IoT compiles the real-time data of vehicular traffic that finds out the current traffic operation and traffic flow conditions. The IoT will be connected with each and every part of traffic such as roads, dividers with the help of infrared sensors. In many situations we see that there will be huge traffic on one side of divider of a road and there will be no traffic on the other side. In this kind of situations, it is possible to control the divider position automatically which reduces the traffic problems. Also using the movement of divider, we can give traffic clearance for the ambulance when required.

II. LITERATURE SURVEY

A. Soufiene Djahe presents an adaptive Traffic Management System (TMS)

A fuzzy logic based scheme in order to take appropriate actions to speed up the progress of emergency vehicles while avoiding the creation of bottlenecks around their routes. This is achieved through the well-designed adaptation actions and emergency response plans chosen based on the emergency level advertised by the emergency vehicle and the output of the fuzzy system (i.e., the assessed congestion level). To alleviate the impact of this problem, we design an advanced adaptive traffic control system that enables faster emergency services response in smart cities while maintaining a minimal increase in congestion level around the route of the emergency vehicle. This can be achieved with a Traffic Management System (TMS) capable of implementing changes to the road network's control and driving policies following an appropriate and well-tuned adaptation strategy. This latter is determined based on the severity of the emergency situation and current traffic conditions estimated using a fuzzy logic-based scheme. The obtained simulation results, using a set of typical road networks, have demonstrated the effectiveness of our approach in terms of the significant reduction of emergency vehicles' response time and the negligible disruption caused to the non-emergency vehicles travelling on the same road network.

B. S. Sujatha1, M. Ludophilia, P. Rimison Department of EIE, Adhyayan College of Engineering, Hosur, Tamilnadu, India1 UG Student, Dynamic Traffic Visualization Control Using IOT.

Traditional Traffic Signal system relies purely on Traffic police for controlling the traffic signal for regulating the traffic based on traffic density. Lot of investigation been carried out in computing the density of traffic by employing Sensors for controlling the traffic light signals. Also, some have hired image processing also for controlling the traffic signals too. This paper developed IOT Based Traffic Signal System as a mobile APP where ultrasonic sensor deployed on sides of road every 50 meters to count the number of vehicles. The traffic density information is sent to nano microcontroller where based on the condition the traffic signal changed accordingly by allotting more time for heavy traffic and less time for normal traffic. Analysis of traffic has been done as heavy and normal traffic and based on number of vehicles with date and time. This information sent to Webpage of cloud server. The system so developed is a prototype only for controlling density. If it is implemented in all the tolls and check post it will be more useful to the people

C. R. Nithin Goutham, J. Sharon Roza, Santhosh UG student, Department of Electrical and Electronic Engineering, S.A Engineering College, Chennai, India Intelligent Traffic Signal Control System.

Adaptive traffic signal control system is presenting an intelligent traffic signal control system using image processing technique. With the help of specialized algorithm, morphology and image needed to avoid traffic congestion. This paper processing technique, the vehicles are detected, recognized and density is calibrated for controlling traffic density. This is the most reliable and upcoming technology in the road transit system. The method of vehicle detection and counting from a image has been implemented using matlab and ARM development board and LPC 2148 microcontroller. The accuracy of vehicle detection depends on the weather conditions. Further modification in the algorithm can improve the system accuracy.

D. Sherly, D. Somasundareswari PG Scholar, ECE Department, SNS College of Technology, Tamilnadu, India: INTERNET OF THINGS BASED SMART TRANSPORTATION SYSTEMS:

Internet of Things (IoT) links the objects of the real world to the virtual world, and enables anytime, anywhere connectivity for anything that has an ON and OFF switch. It constitutes to a world where physical objects and living beings, as well as virtual data and environments, interact with each other. Large amount of data is generated as large number of devices are connected to the internet. So, this large amount of data has to be controlled and converted to useful information in order to develop efficient systems. In this paper, we focus on to an urban IoT system that is used to build intelligent transportation system (ITS). IoT based intelligent transportation systems are designed to support the Smart City vision, which aims at employing the advanced and powerful communication technologies for the administration of the city and the citizens.

III. METHODOLOGY

A. In the suggested programme, a microcontroller with an ultrasonic sensor for traffic measurement was employed to create the module.

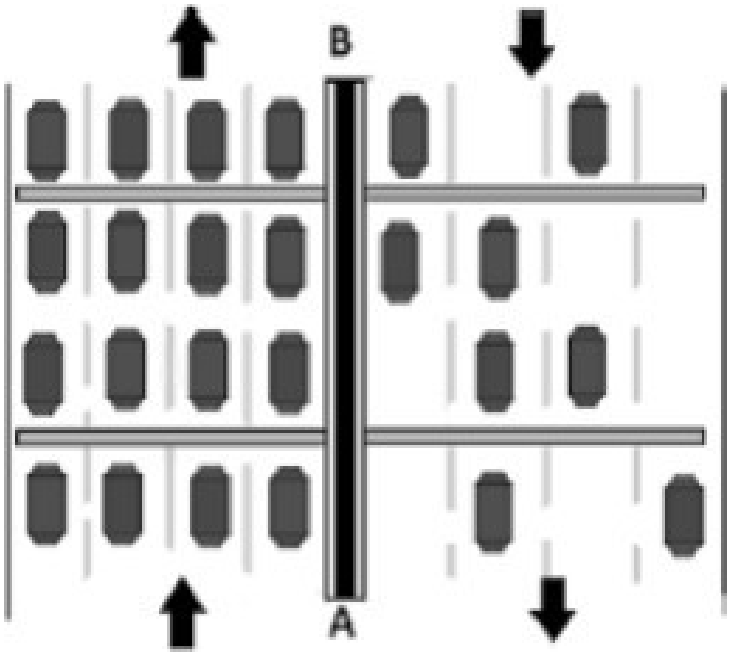
B. When an ambulance comes to a halt on the side of the road, the color of the road will change on the LCD display.
Ambulance monitoring:

C. On both sides of the lane, RGB LEDs are installed.

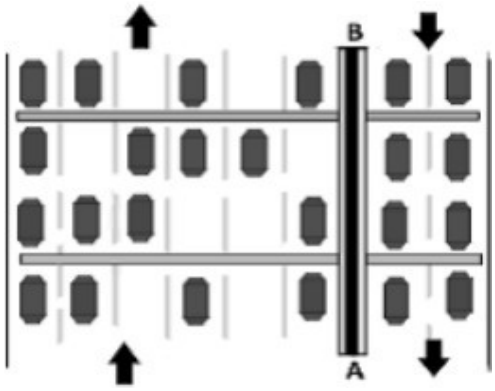
D. RBG LEDs begin to glow when an ambulance is recognized by an RFID reader.

E. The lane's path was then lengthened by altering the divider, allowing the ambulance to move with more room.

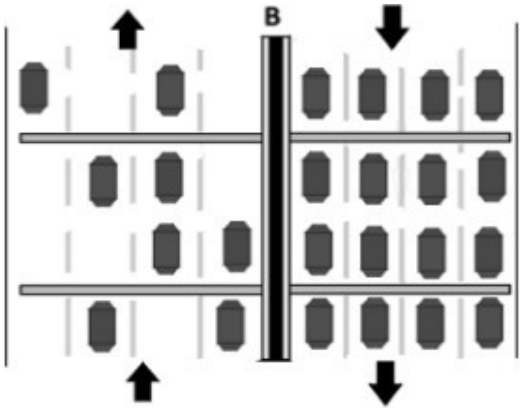
IV. FUNCTIONALITY OF PROPOSED SYSTEM



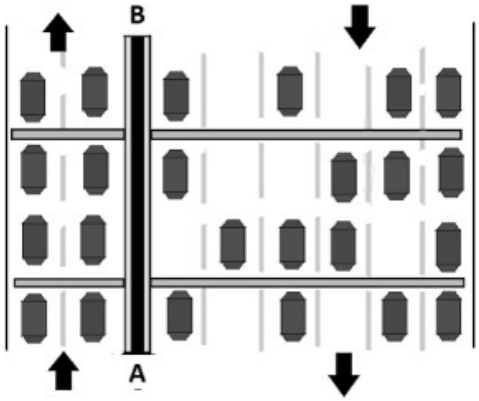
When traffic is heavy on left side of the road



When divider is moved to the right side.



When traffic on the left side of the road is high



When divider is moved to the left side of the road

For traffic testing, a metro computation is employed; it uses the Doppler Effect. The gadget was designed for existing vehicle divers who have already installed air tubes on both sides of the road. Each tube will be placed in the traffic flow direction one at a time. The pneumatic tube is proven on the A and B sides of the Metro to calculate the alignment of the fabricated metal as shown in figure 2 during the installation of the no of materials, such as pneumatic rubber tube should be single, should be of sufficient length to cover the width of the tracks, etc. Within the pipe, there should be no physical obstruction, the pipe should be neatly aligned, the traffic flow should be directed, the pipe should be the same length on both sides, and so on. Each tube should be compressed by 10-15% of its original size to reduce lateral movement. The Metro calculation is set to active using the MC Setup software after completing the processes indicated above.

The machines begin to store and record data when the number of axes passes through the tube. The Metro Count data is downloaded and the results are obtained after the space is completed.

The major goal of this project is to automatically build road dividers and report on user modifications. This application is used to prevent car accidents. Using IR transceivers, this project determines the condition of each car and reports it to the microcontroller.

This initiative is utilised to prevent auto accidents, saving lives and preventing fatalities. As a result, road transportation departments will benefit from this project. According to a recent report from social analytics, Indian roadways are the most disadvantaged. Our proposed solution focuses mostly on correcting these flaws. Here, we provide a novel concept for artificial road separation. Using the ATmega2560 microcontroller, we effectively use sensors and artificial intelligence, as well as H-bridge and control functions.

The proximity sensor detects the vehicle as it approaches the installation site and relays its effect to the microcontroller. The H bridge is utilized as a divider for forward and backward movement.

COMPARISION

AUTHORS AND YEAR	TITLE	PROPOSED METHOD	LIMITATI ONS
Soufiene Djahel IEEE 2015.	Reducing Emergency Services Response Time in Smart Cities	In this paper they used a An Advanced Adaptive and Fuzzy Approach	This project takes a step back due to the traffic congestion and only used for emergency purpose with a lengthy protocol.
S. Sujatha M. Lourdufel Adhiyama an College of Engineeri ng, Hosur, Tamilnad u, India 2015	Dynamic Traffic Visualization n Control Using IOT	This paper developed IOT Based Traffic Signal System as a mobile APP where ultrasonic sensor deployed on sides of road every 50 meters to count the number of vehicles.	It falls back with a major drawback of not providing services for traffic control .it only provides the density of traffic
Nilesh Patil, Parth Srivastava, Milan Ghori, march 2016	Public Cloud Integrated Road Lane Divider System.	Public Cloud Integrated Road Lane Divider System. with an idea of making movable barriers.	This mechanism is manual and is too cumberso me
Sherly, D. Somasund Rajeswari, PG Scholar, ECE Department SNS College of Technolog y, Tamilnadu, India,2018	Internet of things (IOT) based smart transport at ion systems	internet of Things (IoT) links the objects of the real world to the virtual world, and enables anytime, anywhere connectivity for anything that has an ON and OFF switch	This paper presents only the real time traffic monitoring system.

V. CONCLUSION

In this project the road is connected to cloud where continuous monitoring of the traffic is done and intensity of traffic is uploaded to cloud. Traffic intensity which is available in cloud can be used for various purposes like traffic updates on various apps such as HERE maps. After uploading traffic updates on cloud by considering traffic intensity in three variables like LOW,

MEDIUM and HIGH road divider is moved accordingly. If intensity is LOW then divider stays in its position. If intensity is MEDIUM then divider moves by a small distance.

If intensity is HIGH then divider moves by a large distance. The project also provides solution to traffic clearance for the ambulance. Using RFID, a cloud is made to detect the arrival of ambulance and then to make a way specially for ambulance by moving divider of the road. Accordingly. Hence it is concluded that it is possible to avoid congestion in a given route by moving the divider to widen or narrow the road and clear the traffic. Also, it is possible to provide a free way for the ambulance irrespective of the traffic on the road.

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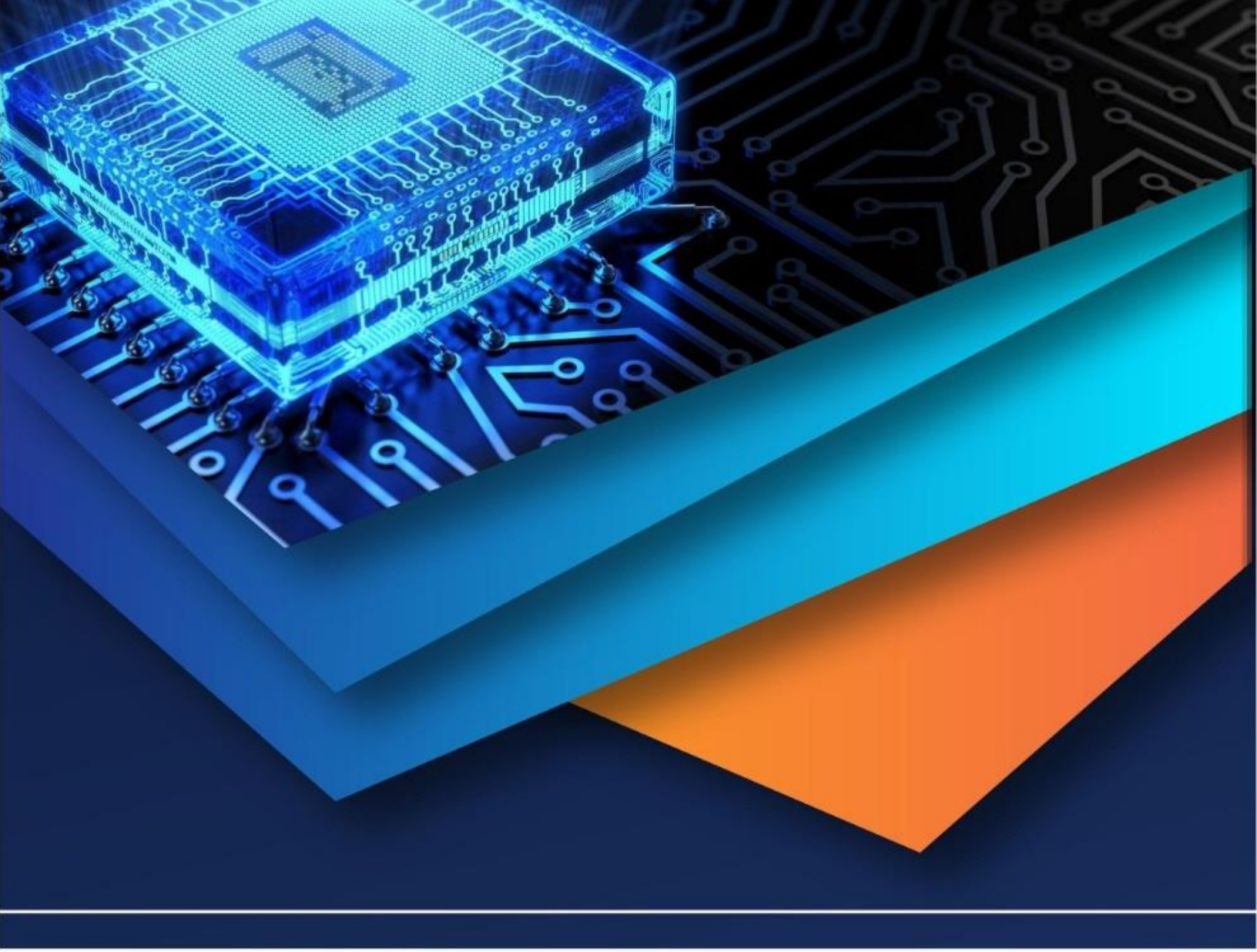

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