

CREATING SIGNAL FREE TRAFFIC FOR AMBULANCE

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ABSTRACT

Over population is one of the biggest problems in the world today. Speaking about facts, increase in the number of humans means increase in the number of cars on roads. Thus traffic management is a critical issue faced in many metropolitan cities today. There are many problems of congestion with traffic light in many cities especially for emergency vehicles. Lack of efficient traffic control leads to loss of lives because of ambulance delay in case of getting stuck in traffic jams. This paper presents a smart traffic control system to pass emergency vehicles smoothly. Each ambulance/VIP vehicle is equipped with special RFID tag (placed at a strategic location), which makes it impossible to remove or destroy. The RFID reader which is one part of the circuit is placed at 100meters before, at the junction to read the RFID tags attached to the vehicle. If the read RFID-tag belongs to an ambulance/VIP vehicle, that means the vehicle is approaching the junction, it will communicate to the traffic controller in the

junction to turn on the green light. For this activity Zig-Bee module will be used to transmit that information to the traffic signals.

INTRODUCTION

This paper presents a smart traffic control system to pass emergency vehicles smoothly. Over population is one of the biggest problems in the world today. Speaking about facts, increase in the number of humans means increase in the number of cars on roads. There are many problems of congestion with traffic light in many cities especially for emergency vehicles. Lack of efficient traffic control leads to loss of lives because of ambulance delay in case of getting stuck in traffic jams. Radio frequency identification (RFID) uses electromagnetic fields to automatically identify and track tags attached to objects. An RFID system consists of a tiny radio transponder, a radio receiver and transmitter. When triggered by an electromagnetic interrogation pulse from a nearby RFID reader device, the tag transmits digital data, usually an identifying inventory number,

back to the reader. This number can be used to track inventory goods.

Every RFID system consists of three components: a scanning antenna, a transceiver and a transponder. When the scanning antenna and transceiver are combined, they are referred to as an RFID reader or interrogator. There are two types of RFID readers -- fixed readers and mobile readers. The RFID reader is a network-connected device that can be portable or permanently attached. It uses radio waves to transmit signals that activate the tag. Once activated, the tag sends a wave back to the antenna, where it is translated into data.

Active RFID tags have their own transmitter and power source (usually a battery) on board the tag. These are mostly UHF solutions, and read ranges can extend up to 100 m in some instances. Active tags are usually larger and more expensive than their passive counterparts and are used to track large assets (like cargo containers, vehicles, and machines). Active RFID tags are also often equipped with sensors that measure and transmit temperature, humidity, light, and shock/vibration data for the objects they are attached to. There are two types of active tags. **Transponders** only “wake up” and transmit data when they receive a radio signal from a reader. For example, a

transponder attached to a vehicle in a toll payment or checkpoint control location would only be active when passing through a particular gate. This helps conserve battery life. **Beacons**, on the other hand, emit a signal at a pre-set interval. This type of active tag is used in real-time location systems (RTLS) for tracking anything from wheelchairs at a hospital to large cargo containers at a shipping dock.

LITERATURE SURVEY

Traffic congestion is a major problem in cities of developing Countries like India. Growth in urban population and the middle-class segment contribute significantly to the rising number of vehicles in the cities. Congestion on roads eventually results in slow moving traffic, which increases the time of travel, thus stands-out as one of the major issues in metropolitan cities. In, green wave system was discussed, which was used to provide clearance to any emergency vehicle by turning all the red lights to green on the path of the emergency vehicle, hence providing a complete green wave to the desired vehicle. A ‘green wave’ is the synchronization of the green phase of traffic signals. With a ‘green wave’ setup, a vehicle passing through a green signal will continue to receive green signals as it travels down the road. In addition to the green wave path,

the system will track a stolen vehicle when it passes through a traffic light. Advantage of the system is that GPS inside the vehicle does not require additional power. The biggest disadvantage of green waves is that, when the wave is disturbed, the disturbance can cause traffic problems that can be exacerbated by the synchronization.

In such cases, the line of vehicles in a green wave produces in size until it becomes too large and some of the vehicles cannot spread the green lights in time and duty stop. This is called over-saturation. In the use of RFID traffic regulator to avoid problems that usually arise with standard traffic control systems, especially those associated to image processing and beam intermission techniques are discussed. This RFID technique deals with multivehicle, multilane, multi road junction areas. It delivers an effective time management scheme, in which, a dynamic time schedule is worked obtainable in real time for the opening of each traffic column. The real-time operation of the system emulates the decision of a traffic policeman on obligation. The number of vehicles in each column and the routing are proprieties, upon which the controls and the judgments are completed. The disadvantage of this work is that it does not discuss what methods are recycled for

communication among the emergency vehicle and the traffic signal controller.

There are also semi-passive RFID tags, meaning a battery runs the circuitry while communication is powered by the RFID reader. Low-power, embedded non-volatile memory plays an important role in every RFID system. RFID tags typically hold less than 2,000 KB of data, including a unique identifier/serial number. Tags can be read-only or read-write, where data can be added by the reader or existing data overwritten. The read range for RFID tags varies based on factors including type of tag, type of reader, RFID frequency, and interference in the surrounding environment or from other RFID tags and readers. Active RFID tags have a longer read range than passive RFID tags due to the stronger power source. Smart labels are simple RFID tags. These labels have an RFID tag embedded into an adhesive label and feature a barcode. They can also be used by both RFID and barcode readers. Smart labels can be printed on-demand using desktop printers, where RFID tags require more advanced equipment.

PROJECT STATEMENT

Over population is one of the biggest problems in the world today. Speaking about facts, increase in the number of humans means increase in the number of cars on

roads. Thus traffic management is a critical issue faced in many metropolitan cities today. There are many problems of congestion with traffic light in many cities especially for emergency vehicles. Lack of efficient traffic control leads to loss of lives because of ambulance delay in case of getting stuck in traffic jams.

Traffic overcrowding is the existence of delays by the side of a substantial lane owing to the existence of additional road users. This is the most important problem of transportation in metropolitan region. Because of this, each cause is delaying: road user insincerity achieve to the intention, be short of services on the period public require, be short of services scheduled the routes public necessitate. Owing to the traffic overcrowding in the unusual intersections the liberated stream of the vehicles speed is low compare to the design speed. This will effect socioeconomic development of the country. Environmental pollution increases due to traffic delay and overcrowding. The imbalance of physiological behavior of the road user may leads to the risk generation further it may leads to accident.

EXISTING SYSTEM

Traffic is a critical issue of transportation system in most of all the cities of Countries.

This is especially true for Countries like India and China, where the population is increasing at higher rate. For example, Bangalore city, has witnessed a phenomenal growth in vehicle population in recent years. As a result, many of the arterial roads and intersections are operating over the capacity (i.e., v/c is more than 1) and average journey speeds on some of the key roads in the central areas are lower than 10 Km/h at the peak hour. Some of the main challenges are management of more than 36,00,000 vehicles, annual growth of 7–10% in traffic, roads operating at higher capacity ranging from 1 to 4, travel speed less than 10 Km/h at some central areas in peak hours, insufficient or no parking space for vehicles, limited number of policemen. Currently video traffic surveillance and monitoring system commissioned in Bangalore city. It involves a manual analysis of data by the traffic management team to determine the traffic light duration in each of the junction. It will communicate the same to the local police officers for the necessary actions. Traffic Signal Controllers are the electronic equipment kept at the junction to control duration of traffic signals. The controllers are designed using microprocessor based control circuits, and can be operated in any one of the following modes e.g. Fixed Time

mode, Demand Actuated Mode, Forced Flash Mode Etc. Now the new existing system limited to only one road of the traffic junction. In this project we have extended to multi road junction.

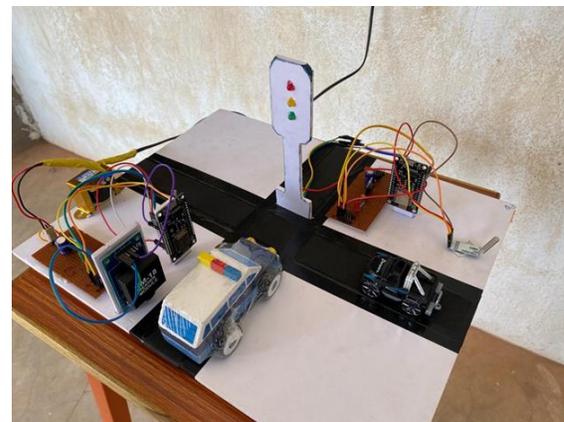
PROPOSED SYSTEM

This project presents a smart traffic control system to pass emergency vehicles smoothly. Each ambulance/VIP vehicle is equipped with special RFID tag (placed at a strategic location), which makes it impossible to remove or destroy. The RFID reader which is one part of the circuit is placed at 100meters before, at the junction to read the RFID tags attached to the vehicle. If the read RFID-tag belongs to an ambulance/VIP vehicle, that means the vehicle is approaching the junction, it will communicate to the traffic controller in the junction to turn on the green light. For this activity Zig-Bee module will be used to transmit that information to the traffic signals.

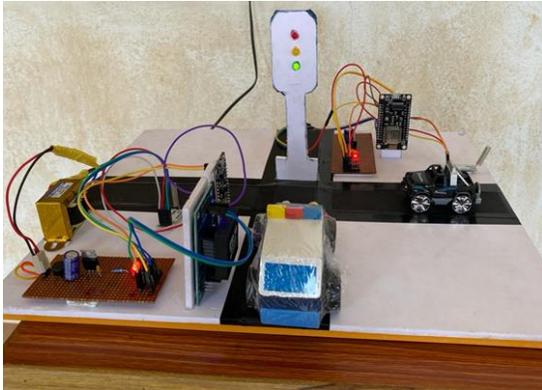
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vehicle, that means the vehicle is approaching the junction, it will communicate to the traffic controller in the junction to turn on the green light. For this activity Zig-Bee module will be used to transmit that information to the traffic signals. ZIGBEE for wireless communication with the surrounding vehicles and audio-visual system for displaying warning message. All the emergency vehicles contain RFID tag which will be sensed by RFID receiver and emergency vehicle is detected. Once Traffic Control System emergency vehicle is detected, using ZIGBEE, existence of emergency vehicle is notified to traffic light controller and the same is also conveyed to all the vehicles between emergency vehicle and traffic light so drivers of those vehicles can pull the car on left lane to give way to emergency vehicle.

RESULT



Overall Practical Circuit Diagram



**After Reading RFID Tag of Vehicle
Traffic Light Changes to green**

CONCLUSION

Due to delay of ambulance, the loss of life came into existence. If traffic signal is in path of the hospital is ON than it would be great use of ambulance. Thus, we proposed a new design for automatically controlling the traffic signals. By doing this, the ambulance would be able to cross all the traffic junctions and can be reached to the hospital without delay. It would guarantee a clear path and smooth flow for an emergency vehicle. The red signal will be displayed till the emergency vehicle is passes through the traffic junction. As a conclusion, the implementation of smart technology in the transportation system can produce a great impact on traffic levels especially for the emergency vehicles. This project reviews the literature on the relevant techniques used to control traffic lights to provide a clear path to the emergency

vehicles and will make the emergency vehicles reach the emergency site faster. It also indicates that RFID is the best technique to control the traffic light for emergency vehicles.

FUTURE SCOPE

The proposed work considers not only the priority of the vehicles but also the density of the vehicles on the road and controls the traffic light sequence efficiently. Also, as a future scope the condition of patient can be monitored this information the respective doctor. So that doctor can prepare for the next process before the patient reach to the hospital. Traffic lights can be increased to n number and traffic light control can be done for whole city by sitting on a single place.

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