

# A REVIEW: IOT BASED TRAFFIC OPTIMIZATION & ACCIDENT ALERTING SYSTEM

Ms. Shubhangi s. Dod<sup>1</sup>, Prof. Abhijit S. Titarmare<sup>2</sup>, Dr. M.M. Khanapurkar<sup>3</sup>

<sup>1</sup>Research Scholar, <sup>2</sup>Associate Professor, <sup>3</sup>Head of Department, Electronics and Telecommunication Department, GHRCE, Nagpur, Maharashtra, India

<sup>1</sup> dod\_shubhangi.ghcemtechcom@raisoni.net, <sup>2</sup> abhijit.tithrmare@raisoni.net, <sup>3</sup> milind.khanapurkar@raisoni.net

**Abstract-** Day to day Number of vehicles are increasing rapidly due to which Traffic Density is increased and we face Jam on roads frequently. To avoid Jam traffic must be Managed in such a way that there will not be any jam and every vehicle should Run at good speed Also in today's world number of accidents incidents, diseases is increasing day to day and so ambulance also must get the path clear in case of emergency. Similarly in case of accident vehicle will just send the alert and details To the RSU and it will get updated to the server which will be seen by ambulance system and immediately ambulance will update the RSU id and that signal will be made ON for the ambulance. By this ambulance will get the path clear and can serve the people by reaching in minimum time to the spot. In this way we are planning to make a system which will help Ambulance for clearing the path and at the same time adjust the signal timings automatically to keep the traffic density in limit.

**Keywords-** IOT, RSU, Traffic Management, Ambulance Rescue or Ambulance path Clearance.

## I. INTRODUCTION

We are planning to make a system which can recognize the traffic density on roads by checking the vehicles average speed between 2 segments of road and as per that information, manage the traffic signal in such a way that density will remain almost constant or decrease. As Day to day No of vehicles are increasing rapidly due to which Traffic Density is increased and we face Jam on roads frequently. To avoid Jam traffic must be Managed in such a way that there will not be any jam and every vehicle should Run at good speed. The basic aim of this project to make a traffic management and path provider to ambulance in case of emergency system based on IOT. Wireless communication between vehicles and RSU, Vehicle speed checking by RSU, automatic traffic signal timer control as per average speed of the vehicle, traffic management, accident detection by RSU by communicating with vehicle,

automatic signal controlling for path clearance to ambulance, providing fastest services to the people faced accident So we are designing system which will be consist of RSU (Road Side Units) Vehicles, Ambulance, Server. All sub part or systems will communicate with each other to manage the traffic density.

Vehicle systems will keep calculating their average speed between 2 RSUs and give it to the next RSU whenever it will get the RSU ID transmitted by RSU. Once RSU receives the average speed it will come to know about how vehicles are running in previous segment. That means if it gets average speed below 30-40km/hr then there must be more number of vehicles and it will increase the signal timer for Green light for that way. Due to which vehicles will come into flow and density will be decreased. Suppose it receives normal average speed of 50-60kms/hr then it will keep timer normal and suppose RSU receives speed more than 80kms/hr then it will check and in case of need it will decrease the timer for the green signal of that way. In this way RSU will make the vehicles move in good speed and at the same time traffic will be managed automatically due to which density will remain in control. Jam will also be reduced by managing the traffic.

Also in today's world number of accidents, incidents, diseases is increasing day to day and so ambulance also must get the path clear in case of emergency. For this case we are having the solution for which we are having a part in every vehicle which will detect the accident and send alert immediately to the RSU about accident and its vehicle details. As soon as RSU receives these

details it immediately updates the information and alert on server by using Internet Of Things Concept. This data on server is continuously checked by the ambulance system. Once Ambulance gets the alert about accident and details of the vehicle it will immediately update its RSU ID from which it will pass to reach Accident spot. As soon as the RSU id gets updated to the server respective RSU will make its Signal ON for that way. So that ambulance will find the path clear and reach the destination as fast as possible. By this ambulance will be able to serve the people by reaching in minimum time to the spot. In this way we are planning to make a system which will help Ambulance for clearing the path and at the same time adjust the signal timings automatically to keep the traffic density in limit.

## II. RELATED WORK

### A. ACCIDENT DETECTION AND ALERTING

Whenever Accident will occur Vehicle will send accident notification and vehicle number. to the nearest RSU. As soon as RSU gets this alert it will send the same details to the Server (Raspberry Pi) which will upload it Online where a file get updated. On the other side ambulance will keep checking online for the updates. As soon as ambulance gets the status about accident it will immediately update its path at the same place which will be read by Server and as per that path , server will send the Signal to the respective RSU and RSU will make the signal ON for the ambulance. And when ambulance will pass that RSU next RSU will make the next signal ON. In this way Ambulance will get the path clear and will reach the spot at the earliest.

### B. TRAFFIC MANAGEMENT

As the Vehicle will get the RSU id , vehicle will send its average speed to the RSU. And as per the average speed RSU will come to know about traffic density and as per that it will change the ON timing of the signal . By this the traffic will come into flow and Density will get managed automatically.

## III. SYSTEM OVERVIEW

Vehicle will be having accelerometer, vibration sensor & gyroscope to detect accident & zigbee to communicate with Road side unit(RSU).It will be having GPS module for sending location co-ordinates to family member or hospital after accident, whenever vehicle reach starting position of road side seg it will road id from road side unit & from that point vehicle will start calculating own speed & at the end of the road segment. That information will be sent to main unit or server, when data form all RSU will be stored & update & short/low density path will be calculated.

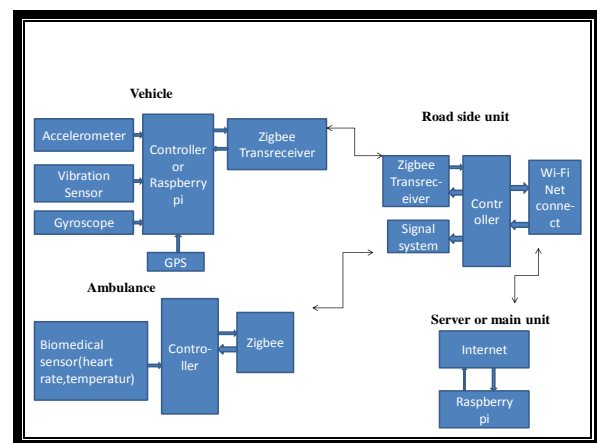


Fig.1. System organization

Ambulance will be having pulse sensor & temperature sensor which will keep checking the parameter of the patient & keep sending to the hospital so that hospitals can take proper action when ambulance will reach there.

Ambulance will send its id& path to the road side unit which will be sent to the main server where path will be calculated for the low density& as per that every coming signal will be made on for the ambulance by sending signal from server to RSU.

RSU will be having zigbee which will communicate with the vehicle & Raspberry pi through which it will communicate with the main server using internet & signal system which will be handled by RSU as per command from the server.

## IV. TECHNICAL REVIEW

Day to day Number of vehicles are increasing rapidly due to which Traffic Density is increased

and we face Jam on roads frequently. To avoid Jam traffic must be managed in such a way that there will not be any jam and every vehicle should Run at good speed. Also in today's world number of accidents incidents , diseases is increasing day to day and so ambulance also must get the path clear in case of emergency. Similarly in case of accident vehicle will just send the alert and details To the RSU and it will get updated to the server which will be seen by ambulance system and immediately ambulance will update the RSU id and that signal will be made ON for the ambulance. By this ambulance will get the path clear and can serve the people by reaching in minimum time to the spot. In this way we are planning to make a system which will help Ambulance for clearing the path and at the same time adjust the signal timings automatically to keep the traffic density in limit.[1]

In this paper[2] describe the all metropolitan cities face traffic congestion problems in the downtown areas. In normal cities can be Converted into "smart cities" by the information n communication technologies (ICT). Internet of Thing (IoT) can play an main important role in realization of smart cities. This proposes system an IoT based traffic management problem solving for smart digital cities where traffic flow can be controlled by onsite traffic officers through their smart phones controlled through Internet. The main concept of the system for smart cities has been introduced to give solutions to such issues in big cities. In this system , Investigated the possibility of using embedded system in dynamic traffic light controlling in smart cities. In this paper can be improved the system if the traffic situational information is automatically send to the RPi unit for controlling the lights at an intersection .

Internet of Things (IoT) [3] is very useful in medical for to generate the heterogeneous data due to the many medical sensors attached with various patients' body. In proposed system medical management system based on hadoop using IoT technology, iot technology is vey useful for the medical emergency management system. The collected data is then send to the Intelligent Building to process n perform necessary actions using various units such as, collection, Analysis and

decision unit, Hadoop Processing Unit (HPU). In proposed system medical management system based on Hadoop ecosystem using IoT technology. In this system involves in the various aspect of Hospitals, emergency services, first aid, n police stations.

when ambulance comes to the signal that time signal is automatically green for the ambulance, signal time wait till move the wasting valuable time. The traffic densities are very useful for measured using Radio-Frequency, readers identification that frequency identification tags. The distributed server uses the microcontroller to perform the computation based on the proposed system using the proposed algorithm.[4]

This paper[5], review dynamic ambulance models from the dispatch policies. the connection between the reviewed real-life policies n ambulance dispatch policies is highlighted. Ambulance system is based on the maximal covering location problem (MCLP). It is very useful to examine the commonly used dispatch policy n the proposed model of free-ambulance exploitation to useful for the further improve urgent call response time.

## V. OBJECTIVES

Wireless communication between vehicles and RSU, Vehicle speed checking by RSU, automatic traffic signal timer control as per average speed of the vehicle, traffic management, accident detection by RSU by communicating with vehicle, automatic signal controlling for path clearance to ambulance, providing fastest services to the people faced accident.

## VI.CONCLUSION

There will be a system which will communicate with the vehicles and control traffic signal timer for managing traffic density as well as path clearance to ambulance using IOT technology.

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