Automatic Lane Clearance System for Emergency Vehicles

Channagire Nikita[1], Deshmukh Pallavi[2], Deshmukh Shivani[3], Sharada Kore[4]

UG Student, Bharati Vidyapeeth's College of Engineering for women, Pune, Maharashtra, India [1,2,3]

Professor, Bharati Vidyapeeth's College of Engineering for women, Pune, Maharashtra, India. [4]

ABSTRACT- In this paper our aim isto clear lane automatically for emergency vehicle system. Due to growing in number of vehicles on road ways causes heavy traffic congestion on the road. Traffic congestion on roads may cause delay for emergency services.The traditional method of customs examination cannot satisfy the increasing demands of imports and exports of the vehicles. A traffic light plays an essential role in traffic management. Under the normal state traffic light duration for path is almost fixed and same for the entire path and emergency vehicle are not considered.

This system designs a new automatic clearance control system based on Radio Frequency Identification (RFID) and Xbee technology. This system consist of two unit i.e. one is ambulance unit and second one is Lane unit. Both units communication made by using Xbee technology.

I. INTRODUCTION

The tendency of international logistics globalization has promoted the development of port logistics. The rapid increase of the amount of vehicle that passes through ports is putting high demands on the efficiency of port logistics. INDIA is one of the most populous Country in the World and is a fast growing financial prudence. It is seen that terrible road congestion problems in cities. Infrastructure growth is slow as compared to the growth in number of vehicles, due to space and cost bounds.Also, Indian traffic is non-lane based. It needs a traffic control solutions, which are Different from the other Countries. Smart management of traffic flows can reduce the negative effect of congestion.

II. LITERATURE SURVEY

Automatic Lane Clearance System for Emergency Vehicles, A new model proposed in this paper which provides the functionality of one path clearance i.e. the ambulance going path will be cleared is Developing a Smart Traffic Management System for Ambulance Rescue, Congestion Control, Control Signal Violation an Stolen Vehicle Tracking. Thus we also provide facility for congestion control by sensing the traffic density using IR Sensor. This will be reflected on the particular signal. The Stolen Vehicle Tracking System will help us to keep a track of Stolen Vehicles and report them to the authorities. Another application provided by our project is that if any vehicle violates the signal they will receive a warning message on their phone from the control room and if they trespass the violation limit then their licence will be terminated [1].

Intelligent Traffic Control Management System The first application and the most widespread problem is that traffic congestion. Here we introduce a RFID technology to overcome this traffic congestion problem. The second application in traffic management is detection of the stolen vehicle. The stolen vehicle will be detected by the RFID tag which will be attached to the vehicle once the complaint will be registered in the control room. And the owner will get the information about his vehicle which has been stolen through GSM technology. The third application is clearance for the emergency vehicle in that heavy traffic congestion. That is, the arrival of the ambulance is to be communicated to the nearest traffic signal, so that it can turn the light to green and hence clear the traffic. [2].

Design of an Automated Traffic Control System for Emergency Vehicle Clearance, This system aims at providing clearance to Emergency vehicles like ambulance, fire engine that need to reach their destinations at the earliest. Our project not only provides sufficient amount of time for ambulance to pass the signal without hindrance but even allows

a smooth traffic movement in other roads joining the junction. The proposed "Automated Traffic light controller" system provides clearance to Emergency vehicles using Radio Frequency Identification (RFID) module that consists of RFID tag and an RFID reader and a GSM modem [3].

Dynamic Traffic Control System using RFID Technology: A Systematic Review, Traffic congestion often causes loss of time, time delay, missed opportunities, etc. To overcome these problems proposed system uses the RFID technology where RFID tag is attached to each vehicle and as and when vehicle reach the traffic junction the RFID reader will read those RFID tags. Depending upon the count of vehicles green passage will be set dynamically and the proposed system provides special privileges for emergency vehicles like police vehicle, ambulance, VIP vehicles, etc. RFID also enforces law against stolen vehicles [4].

Intelligent Traffic Management System

It is quite obvious, going by the current state of affairs, that our roads are not desirable places to be and a solution dedicated to ensure smooth flow of traffic will go a long way in making road travel a lot more convenient. It has been identified that the challenge mainly lies in channelizing traffic from heavy traffic zones into alternate routes thereby making optimum use of road space, in turn ensuring smooth flow of traffic. In this regard a simple mechanism which makes use of RFID technology has been described. The add on applications of this system such as tracing of stolen cars, vehicles that evade traffic signals/tickets, toll collection or vehicle taxes also make this system even more important because many other equally relevant road traffic issues are addressed[5].

Automatic Lane Clearance System for Emergency Vehicles

As the entire system is automated, it requires very less human intervention. Emergency vehicles need to reach their destinations at the earliest. If they spend a lot of time in traffic jams. With emergency vehicle clearance, the traffic signal turns to green as long as the emergency vehicle is waiting in the traffic junction. The signal turns to red, only after the emergency vehicle passes through. Currently, it is implemented system by considering one road of the traffic junction [6].

Traffic Management for Emergency Vehicle Priority Based on Visual Sensing, This paper has presented an approach to schedule emergency vehicles in traffic. The approach combines the measurement of distance between the emergency vehicle and intersections using visual sensing methods, vehicle counting and time sensitive alert transmission within the sensor network. The distance between the emergency vehicle and the intersection is calculated from visual data using Euclidean distance, Manhattan distance and Canberra distance techniques for comparison. The experimental results have shown that the Euclidean distance outperforms other distance measurement techniques and is suitable for real-time applications [7].

Traffic Clearance for Emergency Vehicles Using Priority Mode, The main motto behind our project is to provide a smart way of controlling traffic light timing during a peak hours and also to provide smooth flow for the ambulance to reach the hospital in time .We are going to implement a new mode called "ambulance mode" which would control the traffic lights in the path of the ambulance. This scheme is fully automated thus it controls the traffic lights, helping to reach the hospital in time. This is not preferred only for ambulance. It is preferable for other emergency vehicles such as fire engine [8].

Intelligent Traffic Control System for Emergency Vehicle, The proposed design is based on a traffic controlling, which allow high priorities vehicles like ambulance. Each ambulance is configured with zigbee module (placed at a predefined location). In this module PICAT89C52 system-on-chip module uses to read the ZIGBEE module attached to the vehicle. It recognizes the time span of green light of respective path. As the ambulance is heading toward the junction, the green signal will turn ON. The signal will turn ON by communication with the traffic controller which is placed at junction. With the help of ZigBee modules and PICAT89C2051, System on chip wireless communication takes place between ambulance and traffic controller. The module is tested and the experimental results were found is expected [9]

III.   PROPOSED SYSTEM

Lane unit:-
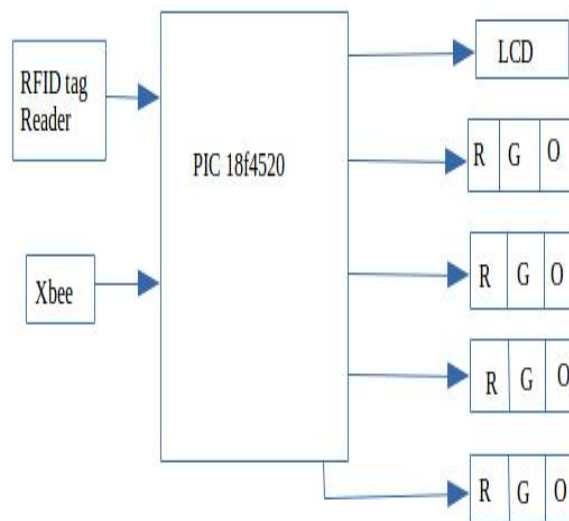
Fig. no. 1. Lane unit

Ambulance Unit:-
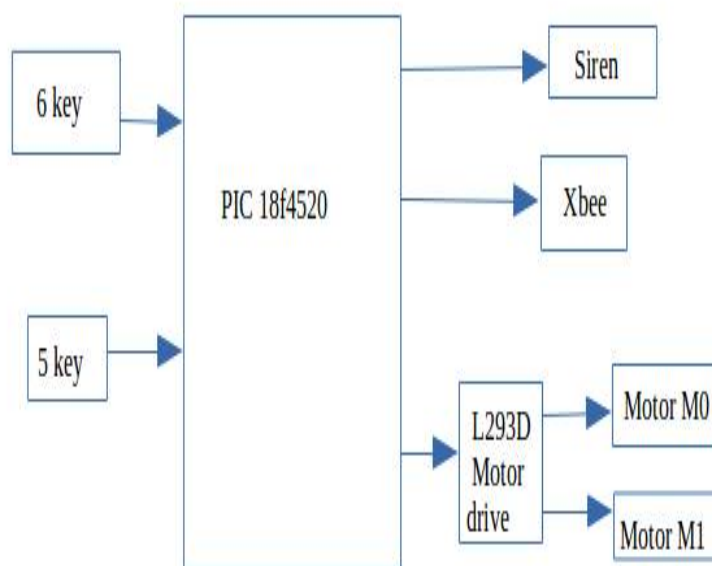
Fig. no. 2. **Ambulance Unit**

The system block diagram is shown in Fig 1. This system consist of two units i.e. ambulance unit and lane unit. Ambulance unit consist of controller, 6 keys, siren, Xbee, Motor driver connected with two motor. Lane Unit consists of LCD, Xbee, etc. Laneunit contains automatic signal control system. Lane unit will be implemented at the traffic junction. This will send the signal through the XbeeTx and XbeeRx. It will make the traffic light to change to green. Once the ambulance passes through it the traffic light is turned to red. LCD display shows the status of unit time of signal.

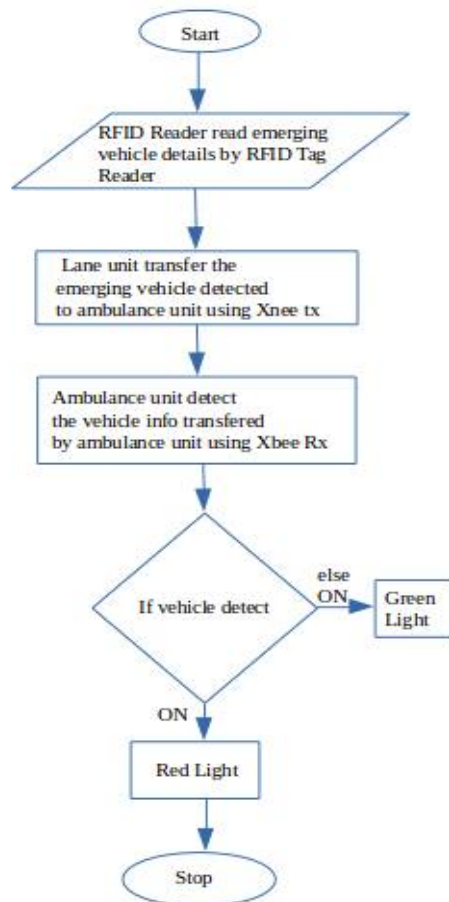## IV. FLOWCHART

The system flowchart is as shown in Fig. 3

Fig. 3. Flow Chart

V. ADVANTAGES

- Lot of time is saved at signals.
- Solve Traffic Issues.
- Vehicle Identification Is Easy.
- Instant Notification.

- Reliable.
- The critical levels of the traffic jam have been indicated through alerting unit.
- The system successfully detected the primary appearances of emergency vehicles.

VI. DISADVANTAGES

- Keys required pressing for siren, left direction, and right direction.
- Initial cost is high.

VII. APPLICATIONS

- Useful for traffic monitoring.
- Useful for road safety control.
- Can be useful in all ambulances.
- Over the years this would also help in making travel more "eco-friendly".

VIII. CONCLUSION

The proposed system will help to traffic police to give the way to the ambulance when there is heavy traffic on the road. The design and implementation of this technique is directly targeted for traffic management so that emergency vehicle on road gets clear way to reach their destination in less time and without any human interruption. It is very smart to find the location of emergency of VIP vehicle and get clear path to pass on. This system saves a lot of time at signals, Solve Traffic Issues, Vehicle Identification Is Easy; proposed system is Reliable and is able to detect the primary appearances of emergency vehicles. Keys have to press for siren, left direction; right direction and Initial cost are two only limitations of this system. This system is Useful for traffic monitoring, road safety control. Over the years this would also help in making travel more "eco-friendly".

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