Abstract: The main aim of this project is to develop an intelligent ambulance which will reach the hospitals without any problem in heavy traffic. This particular project is designed for the cities with heavy traffic. E.g.: In Bangalore the roads are full jammed every time. Most of the time the traffic will at least for 100meters. In this distance the traffic police can’t hear the siren form the ambulance. So he ignores this. Then the ambulance has to wait till the traffic is left. Some times to leave the traffic it takes at least 30 minutes. So by this time anything can happen to the patient. So this project avoid these disadvantages. According to this project if any ambulance comes near when the Ambulance at emergency comes to any traffic post the traffic signals automatically stop the signals and give green signal for this ambulance. When the ambulance at emergency comes to any traffic post the traffic signals automatically stop the signal. The road accidents in modern urban areas are increased to uncertain level. The loss of human life due to accident is to be avoided. Traffic congestion and tidal flow are major facts that cause delay to ambulance. To bar loss of human life due to accidents we introduce a scheme called Intelligent Traffic Light system.

Keywords: Intelligent Transportation, Traffic Control, RFID Application

I. OVERVIEW OF THE SYSTEM

Each and every vehicle going for registration is provided with a RFID tag. In which information like vehicle’s unique registration number and vehicle type is stored. The vehicle type is mentioned as E (For Emergency) and N (For Normal) in the tag. These data are stored in the database in the Transport office. To read the information in tag a RFID reader is installed in the Traffic control unit. Whenever the vehicle passed through the signal reader get the vehicle type and gives it to the controller unit. In which if any E (Emergency) type vehicle is found, that lane is made green w.r.to the other lanes. To upgrade further more theft vehicle detection method is used. To find a theft vehicle, the user has to contact the Transport office to update the database of the vehicle with T (for Theft). So whenever a vehicle is passed through the traffic signal, the Control unit picks up the tag details and sends to the Transport office via Zigbee unit. From the obtained value the PC in the Transport office check with the database. If any theft vehicle is found, the control unit in the Transport office will send to Police station about the vehicle passing through the particular signal. Thus the police able to intercept the vehicle in the next possible path. Thus the single system is used in 2 Tier methods.

II. PROBLEM STATEMENT

An RFID reader is a network connected device with an antenna that sends power as well as data and commands to the tags. Which do not cover the longer range. The problem is insufficient to handle the problems of traffic control.

III. EXISTING SYSTEM

In existing system, the stolen vehicles are finding by using human resources. There is no system available to control the traffic signal, when the emergency vehicle is present in the traffic signal.

Drawbacks:
- Possible to occur the human death.
- Difficult to find the theft vehicle

IV. PROPOSED SYSTEM

In proposed system if a vehicle has met accidents, immediately an alert message with the location coordinates is sent to the Control center. From the control center, a message is sent to the nearby ambulance. Also signal is transmitted to all the signals in between ambulance and vehicle location to provide RF communication between ambulance and traffic section. The vehicle accident observed using vibration sensor and in the control section it is received by the microcontroller and then the nearby ambulance is received from the PC and controller sends the message to the ambulance. The signal to Traffic signal section is transmitted through RF communication. Also if any fire occurs, it is detected using fire sensor and an alarm message is directly sent to the fire station.

Advantage:
- Low cost
- Easy to find the theft vehicle.
- High flexibility
- Reduces the loss of human life

A. Project Goal

The project of the goal is by implementing this intelligent traffic control system we can control the congestion on the road which is used to clear the emergency vehicle like ambulance, fire truck and detect the stolen vehicle by using RFID tag and GSM.

V. SYSTEM ARCHITECTURE

If a vehicle has met accident, vibration sensor or fire sensor gives the electric signal to microcontroller through signal conditioner. Then GPS provides latitude and longitude information about vehicle location to control section through GSM.

A. Block Diagram of Vehicle Unit
Figure 1: Block diagram of vehicle unit

B. Block Diagram of Ambulance/Control Unit

In control section GSM modem receives message about accident and sends it to PC. PC identifies the nearest ambulance and ambulance is instructed to pick up the patient. Control section transmits the control signal to all the signals in between ambulance and vehicle by RF transmission.

C. Block Diagram of Traffic Unit

Whenever the ambulance reaches near to the traffic signal(approximately 100m), the traffic signal will be made to green through RF communication. Thereby the ambulance is recommended to reach the hospital in time.

VI. DESIGN OF SOLUTION AND ALGORITHM

In our project we have three components-ambulance which acts as the client, scanners which act as Bluetooth access points and master servers. When the ambulance sends signal to the scanner in order to get the database for finding the shortest path leading to the hospital, the scanner sends the database to the ambulance in an encrypted format. This similar approach is observed in another work ‘In-Building Location using Bluetooth’. In this project the location of any mobile device can be detected using Bluetooth scanners. The received signal strength from each coordinate is sent to the server by the scanners. The server has a map of RSSI (Received Signal Strength Indication) at different coordinates. Thus it gives the deduced location of the mobile device by the use of the received RSSI and triangulation technique.

VII. MODULES

Our system consists of three main units, which coordinates with each other and makes sure that ambulance reaches the hospital without any time lag. Thus our system is divided into following three units,

- The Vehicle Unit
- The Ambulance/control Unit
- Traffic unit

A. Vehicle Unit

The vehicle unit installed in the vehicle senses the accident and sends the location of the accident to the controller. According to our system, every vehicle should have a vehicle unit. The vehicle unit consists of a vibration sensor, controller, siren, a user interface, GPS system and a GSM module.

The vibration sensor used in the vehicle will continuously sense for any large scale vibration in the vehicle [1]. The sensed data is given to the controller GPS SYSTEM inside the vehicle. The GPS SYSTEM finds out the current position of the vehicle (latitude and the longitude) which is the location of the accident spot and gives that data to the GSM MODULE. The GSM MODULE sends this data to the control unit whose GSM number is already there in the module as an emergency number.

B. Ambulance Unit

The controller finds the nearest ambulance to the accident spot and also the shortest path between the ambulance, accident spot and the nearest hospital. The controller then sends this path to the ambulance. Also using this information the controller controls all the traffic signals in the path of ambulance and makes it ready to provide free path to ambulance, which ensures that the ambulance reaches the hospital without delay. At the same time, the ambulance unit turns ON the RF transmitter. This will lead to communicate with the traffic section.

C. Traffic unit

Whenever traffic signal section receives the information about accident, the RF receiver in this section is turned ON to search for ambulance nearing the traffic signal. Whenever the ambulance reaches near to the traffic signal(approximately 100m), the traffic signal will be made to green through RF communication. Thereby the ambulance is recommended to reach the hospital on time.
**Future Enhancement**

Further enhancements can be done to the prototype by testing it with longer range RFID readers. Also GPS can be placed into the stolen vehicle detection module, so that the exact location of stolen vehicle is known. Currently, we have implemented system by considering one road of the traffic junction. It can be improved by extending to all the roads in a multi-road junction.

**References**


