An Automatic Accident Rescue System
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Abstract—This paper presents a system which prevents accidents and also provides a remedial measure when accident occurs in spite of the preventive measure. We use MEMS sensor to determine the angular change of the vehicle to limit the speed and a buzzer is used to alert in case of over speed. RF transmitter and receiver is used to disable the speaker and keypad of the mobile phone while driving. Vibration sensor determines the accident and message is sent to the nearby authorized number using GPS and GSM. RF transmitter and receiver is used to control the traffic at the junction. And using Zigbee modules the ambulance communicates to the respective hospital for first aid or information about the victim.

Key words: LPC2148, Vibration sensor, MEMS sensor, GPS, GSM modem, Zigbee Modules, buzzer, RF transmitter and receiver, relay, temperature sensor, heartbeat sensor

I. INTRODUCTION
India is a country which faces terrible road accidents and congestion problems. Speed and use of mobile phones while driving are the major risk factors in driving. It not only affects the security of a crash, but also increases risk of being involved in a crash. So to avoid this problem and with the aim of preventing such risks, we are proposing a system.

Our system consists of five sections. They are (i) Vehicle section (ii) Mobile Unit (iii) Ambulance section (iv) Signal section (v) Hospital section. These sections are used in our system to prevent accident and provide remedial measure.

II. LITERATURE SURVEY
There are various systems to prevent vehicle from over speed and use of mobile phones while driving, thus provide a remedial measure. [1] It alerts the driver about the speed limits and detects the critical area. Here, the FM receiver receives the information about the speed limits; it automatically alerts the driver to reduce the speed according to the time and zone. But it has a complex circuit and the alert sound is not loud. [2] In this system it provides a mobile stand where driver has to place the cell phone. If the driver doesn’t do so then the microcontroller tends the driver to stop the car. But this system causes disturbances to public. [3] This system detects the accident from the map matched position of a vehicle. The GPS provides speed and position of vehicle in every 0.1 second. The present speed will be compared with the previous speed in every 0.1 second through a Microcontroller unit. Whenever the speed falls below the threshold speed, the system generates an accident situation. It is a complex procedure and there are chances of false prediction. [4] In this system, sensors are used to detect the number and speed of vehicles in a lane. And it clears the flow of congestion. Its maintenance cost is high since complex circuit.

III. PROPOSED MODEL
The existing technologies are insufficient to handle the risk factors of driving and emergency vehicle clearance. To solve these problems, we propose to implement our vehicle safety and rescue system. In our system, MEMS sensor determines the angular change of the vehicle to limit the speed and buzzer produces an alerts sound. Speaker and keypad of mobile phone is disabled by RF transmitter and receiver. In case of accident, the GSM sends a message of the hospital and GPS tracks the green light and clears traffic congestion and allow the ambulance to pass the path. Using Zigbee protocol, the ambulance communication with the respective hospital for first aid.

IV. WORKING MODEL
The working of our system is divided into five stages. They are as follows
A. Vehicle Section:
In this section, we use a MEMS sensor to predict the angular change in vehicles. For experiment purpose, ARM is programmed such that the buzzer gives an alert sound in case there is more than one angular change in the vehicle cross. When an accident occurs, the vibration sensor senses the vibration of the vehicle due to accident and the GPS tracks the exact location of the vehicle then the GSM sends the message to the authorized number.

B. Mobile Unit:
Since using mobile phone causes distraction while driving, so we are using RF transmitter in the vehicle section which
transmits RF signal. An additional RF receiver is added to the mobile phone and two relay switches are connected to the speaker and keypad respectively. The transmitted RF signal is received by the RF receiver and this RF signal disables the keypad and speaker of the mobile by using relay switches. The mobile phone gets disabled only when the RF signal is received.

C. Ambulance Section:
The message sent from the vehicle section is received by the ambulance section. Then the ambulance rushes to the accident spot. In case of traffic congestion, the microcontroller in the ambulance transmits RF signal. This RF signal is used to turn on the green light to clear the traffic. Here, a temperature sensor and heart beat sensor are equipped to the microcontroller, to determine the condition of the victim. Using zigbee protocol the information regarding the victim is sent to the hospital.

D. Signal Section:
To control the traffic congestion and pass emergency vehicle smoothly, this section is used. Here the RF receiver, equipped with microcontroller receives the RF signal transmitted from the ambulance section. Thus the signal turns ON the green light till the RF signal is received. For experiment purpose 10m ranged RF transmitter and receiver is used.

E. Hospital Section:
The information about the victim is received at the hospital by using Zigbee protocol. For experiment purpose, the Zigbee used ranges 100m. The message sent from the ambulance section is received at the hospital. Mesh topology is used in transferring the message. The message is displayed in the PC. Since, the voltage of Zigbee (5V) is low then that of PC (12V), a level converter is used to match the level. Thus the message is displayed on the PC.

V. CONCLUSION
With the vehicle safety and ambulance rescue system, it minimizes the risk of accident due to over speed and use of mobile phones while driving. Many lives could be saved when emergency service reaches the spot in time.

VI. RESULT
(a) Vehicle unit  (b) Ambulance unit  (c) Signal section
Thus this system prevents accident due to rash driving and using cell phone while driving. An instant message is sent to the authorized number as accident occurs. Emergency vehicle is allowed to pass the route by clearing the traffic. First Aid is given to the patient by using Zigbee module.

VII. FUTURE SCOPE
This system can be made smarter by adding a system which detects the drowsiness of the driver. Since drowsiness of the
driver also results in many accidents. Our system can
disable the mobile phone with keypad. Further system can
be developed which can disable touch screen mobiles.

REFERENCE


