

Iot Based Traffic Collision Information System

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Abstract- IoT is emerging technology which have broad impact on organization as well as individual, affecting business management and strategy because wide range of technical area.

In this paper, we will represent designing approach of IoT based traffic collision system. As we know IoT is network of different physical devices or objects which connect and exchange data. In this system, we have developed the hardware and software which is used for obstacle detection as well as traffic collision detection. We have used different sensors for detection and analysis of different parameter. If vehicle is near to object or on collision course then system will warn driver if somehow collision occurs. It will sent real time collision location data using special design application for emergency services to relatives, ambulance, etc. as per data base.

Keywords- GPS, IoT, IP, Sensor, Traffic Collision, Wireless Network..

I. INTRODUCTION

This paper uses Internet of Things (IOT) as a solution to the problem of collision avoidance using present day technologies like Global Positioning System (GPS), Wireless Network.

As we know, there is boom in automobile sector, the sales has been reaching sky which is adding vehicle to road day by day. If we look at sale of vehicle in last year is record breaking. Passenger vehicle sales increased 7.57% from a year earlier.

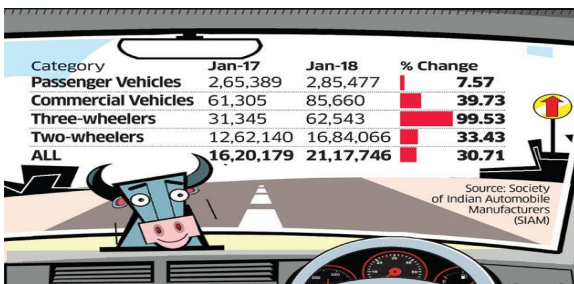


Fig 1: Vehicle Sales India.

More vehicle on road that means more the chances of accidents.

According to World Health Organization (WHO), nearly 1.25 million people died in road accidents, an addition 20-50 million are injured or disabled. Most people died because they don't received proper medical treatment in time.

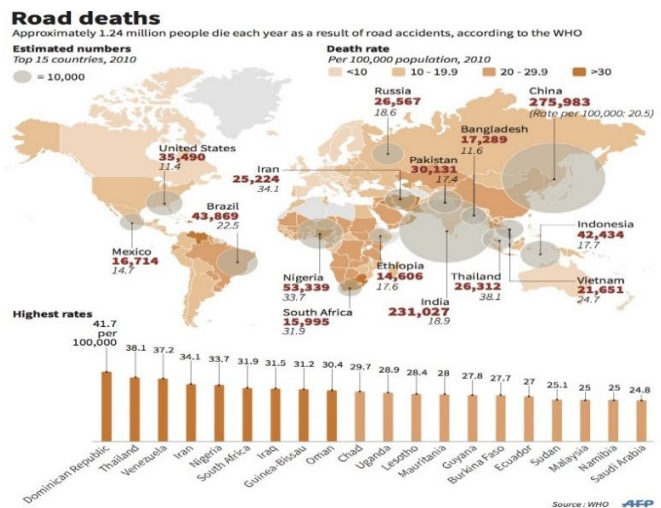


Fig 2: Worldwide Road Deaths

The main objective behind this project is to develop a system which can detect obstacle and traffic collision, and sent real time collision location co-ordinates to ambulance, relatives, etc. as per data base so that driver can receive fast medical service.

II. LITERATURE REVIEW

The Internet of Things (IoT) should be implement perfectly and consistent with extremely large number of different and heterogeneous systems involves. Building a system architecture for the IoT is the complex task, because Internet of Things has large variety of devices, link layer technologies, and services that may be involved in such a system.[1]

The Internet of Things (IoT) vast and newly adapted technology, it is currently used in various applications from

home automation to industry, smart city to e-governances, agriculture to everyday things.

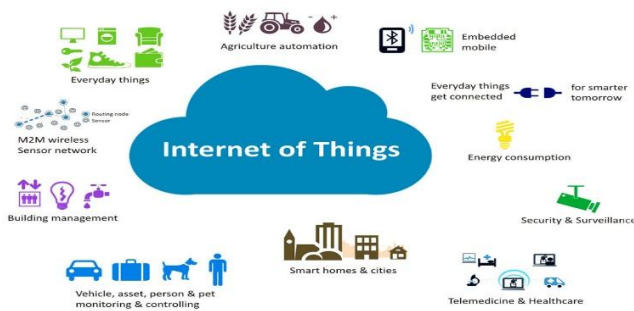


Fig 3: Applications of Internet of Things.

III. PROBLEM FORMULATION

Now a day road accidents have been a major issue. Studies shows that the number of deaths due to road accidents is increasing and making safety a major concern. Our system is design to detect objects which cause road accident and if accident happen provide medical assistance .It will deal with the major issues about traffic collision detection and suggest remedies.

IV. METHODOLOGY

IoT based Traffic collision Information System will consists of following methodology-

Traffic collision information system consists of microcontroller based circuit with impact sensor, ultrasonic sensor, GPS module and computer. Ultrasonic sensor is used for obstacle detection, it will warn driver on detection of obstacle and impact is measured by vibration sensor, if sensor hits its threshold values then system will on GPS module and send the location co-ordinates for emergency services, this process is done by special design application on computer.

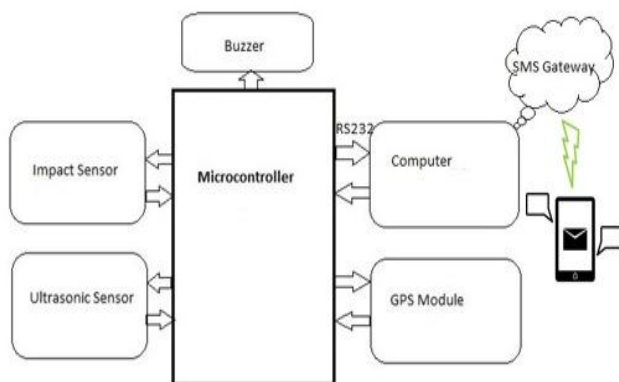


Fig 4: Block diagram of Traffic collision information system.

V. HARDWARE USED

1. Arduino Uno- The Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button.



Fig 5: Arduino Uno

2. GPS Module- GPS is a device that is capable of receiving information from GPS satellites and then to calculate the device's geographical position..



Fig 6: GPS Module

3. Ultrasonic Sensor- An Ultrasonic sensor is a device that can measure the distance to an object by using sound waves. It measures distance by sending out a sound wave at a specific frequency and listening for that sound wave to bounce back.



Fig 7: Ultrasonic Sensor

4. Vibration Sensor- Vibration sensors cover sensors and other instruments used for measuring vibration and acceleration.



Fig 8: Vibration Sensor.

VI. SOFTWARE USED

PC Based Application- For monitoring and controlling of data from hardware system, we have developed application using dot net software.

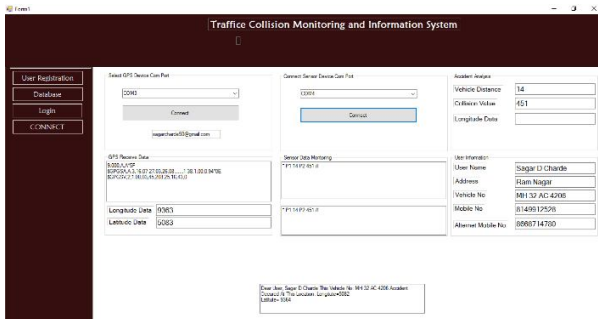


Fig 9: Traffic collision information application.

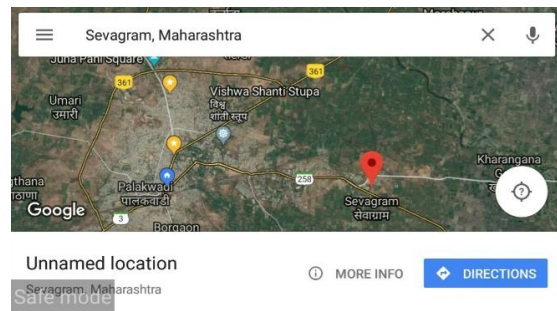


Fig 13: Collision location on map.

In this work, Traffic collision information system detects obstacle and the collision then immediately send message with live collision location for help to hospital, police station, relatives as per data base.

VII. RESULT AND CONCLUSION

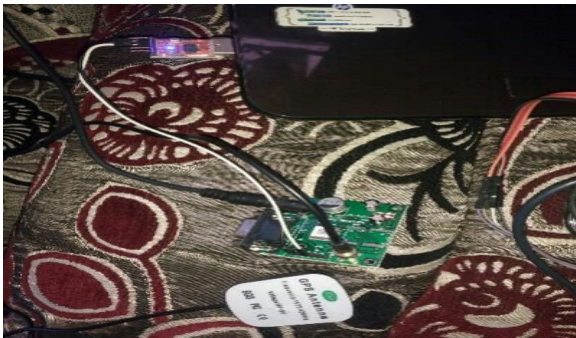


Fig 10: GPS Module connected to PC.

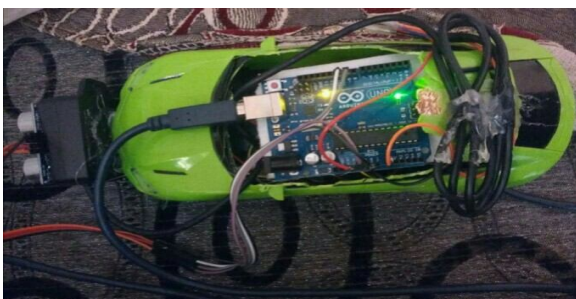


Fig 11: Sensors and circuit motherboard on dummy vehicle.

VIII. ACKNOWLEDGEMENT

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REFERENCES

- [1] Andrea Zanella, Nicola Bui, Angelo Castellani, Lorenzo Vangelista, and Michele Zorzi, "Internet of Things for Smart Cities" IEEE INTERNET OF THINGS JOURNAL, VOL. 1, NO. 1, FEBRUARY 2014.
- [2] Sagar D. Charde, Prof. N.P. Bobade, Dr. D. R. Dandekar, "A Methodology: Iot Based Drowsy Driving Warning and Traffic Collision Information System" International Research Journal of Engineering and Technology (IRJET), e-ISSN: 2395-0056, p-ISSN: 2395-0072 Volume: 05 Issue: 03, Mar-2018.
- [3] X. Li, W. Shu, M. Li, H.-Y. Huang, P.-E. Luo, and M.-Y. Wu, "Performance evaluation of vehicle-based mobile sensor networks for traffic monitoring," IEEE Trans. Veh. Technol., vol. 58, no. 4, pp. 1647–1653, May 2009.
- [4] S. Lee, D. Yoon, and A. Ghosh, "Intelligent parking lot application using wireless sensor networks," in Proc. Int. Symp. Collab. Technol. Syst., Chicago, May 19–23, 2008, pp. 48–57.
- [5] W. Kastner, G. Neugschwandtner, S. Soucek, and H. M. Newmann, "Communication systems for building automation and control," in Proc. IEEE, Jun. 2005, vol. 93, no. 6, pp. 1178–1203.

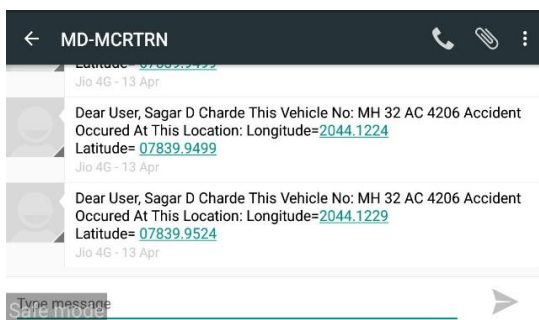


Fig 12: SMS received on mobile with location.