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Analysis of Accident Prevention and Automatic Detection

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Abstract—Now a days the road accidents are increased to uncertain level according to times of India in every hour 20 to 30 accidents happens. The closing of human life due to accident and not get the medical attention on proper time is to be avoided by using automatic accident detection and ambulance rescue system using microcontroller or microprocessor. The authors were able to program a GPS / GSM module incorporating a crash detector to report automatically via the GSM communication platform (using SMS messaging) to the nearest ambulance agencies, giving the exact position of the point where the crash had occurred. With the help of GPS wireless system is their choice for the automobile GPS/GSM module. The GPS method uses satellite sent positioning signal to handsets equipped with GPS chip, which calculates its own location to approximately 1-10m. The system architecture shows that if a crash occurs in a particular place, the information is been sent to ambulance agencies numbers. By using this project we can save human life by giving the medical service on time .also preventing the accidents by avoiding the drink and drive by locking the ignition when driver detected in drunk status by using alcohol sensor.

Keywords: - Tiny GSM, GPS, Arduino, and SENSORS.

I. INTRODUCTION

Nowadays infrastructure has developed in India but the numbers of accidents are also increased in India due to irresponsibility in driving, drunk and drive, unable to apply sudden breaks in huge traffic area. Even though many accidents are minor but due to lack of first aid and the reaching the ambulance on accident spot on time huge number of people are losing the life every day. .Twenty to thirty people die every hour in road accidents in India times India reports on 2015. To reduce the number of accident and losing the life in accident. We proposed system, which try to prevent the accident by sensing the alcohol level of driver. If driver found in critical level drunk the system automatically block the ignition of vehicle pre prevents the accident. In huge traffic lots of minor accident happening due to unable to apply the brakes on time some time we have to apply sudden break and also we have to make distance in front of vehicle in this case our Automatic system senses the obstacle and applies the smooth breaks as well as sudden break to avoid forward collision of vehicles.

If a major accident happens and driver unable to contact the rescue team during this time our automated system sends the accident information to the nearest ambulance center to recues and the ambulance will reach theaccident spotwithout wasting the time can save human life and reduce number of people dying every day. Our proposed system is to reduce the no of accident and death rate of human due lack of getting the first aid on time

II. SCOPE OF THE PROJECT

- The project can be further extended by using the compact GSM modem and GPS modem so the system will become compact and the SMS can be send through SOS(save our soul)
- This project can save the human life
- Its avoids the accident and drunk and drive
- Sensing physiological characteristics.
- sensing of driver operation
- Sensing of vehicle response.
- Monitoring the response of driver.

III. METHODOLOGY

- Based on embedded system
- GPS and GSM(telecommunication)
- Sensor technology

IV. THE SYSTEM IS WORKING IN FOUR STEPS

- Pre prevention of accident by alcohol detection
- Prevention of accident from forward collision
- Detection the critical level of accident.

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- Sending the accident status and location to nearest ambulance rescue system

A. *Pre Prevention of Accident By Alcohol Detection*

The designed circuitry consists of an alcohol sensor/MQ3 Sensor. We are using a gases alcohol detector which detect the alcohol content from the breathing air of the deriver when the alcohol sensor senses the critical level as set in program and its send the signal to microcontroller and microcontroller activate the relay and trip the power supply to ignition system and its block the ignition of vehicle.

Due to this system a drunk person unable to start the vehicle so he/she can use public service to safe journey. And this system prevents the accident from drunk and drive

B. *Prevention of Accident From Forward Collision*

In huge traffic and highway lots of accidents happens due irresponsible of driver unable to apply the brakes on proper time or due to some human error so in this case we are using a ultrasonic sensor andLIDAR sensor to detect obstacle in front of vehicle. This combination two sensor senses the obstacle at range of 100mts to 30cm and give the digital signal to microcontroller. The microcontroller reads both feedback data from lidar and ultrasonic sensor and give the smooth or sudden Breaking signal to breaking mechanism where the breaking mechanism active the electrical braking as well as mechanical braking to stop the vehicle to avoid forward collision.

C. *Detection the Critical Level of Accident*

A crash sensors and impact sensors are used to detect the accident. When the combination of both crash and impact signals reads the critical value the microcontroller decide the level and status of accident occur in vehicle and sent the accident details to ambulance rescue center.

D. *Sending the Accident Status and Location to Nearest Ambulance Rescue System*

When crash and impact sensors sends the data to microcontroller then based on programming microcontroller decide the accident status and critical levels and track the vehicle location using GPS module and send the status of accident and longitude and latitude co-ordinates to nearest ambulance rescue centers . By using the co-ordinates of longitude and latitude ambulance can reach the accident spot faster and on time.

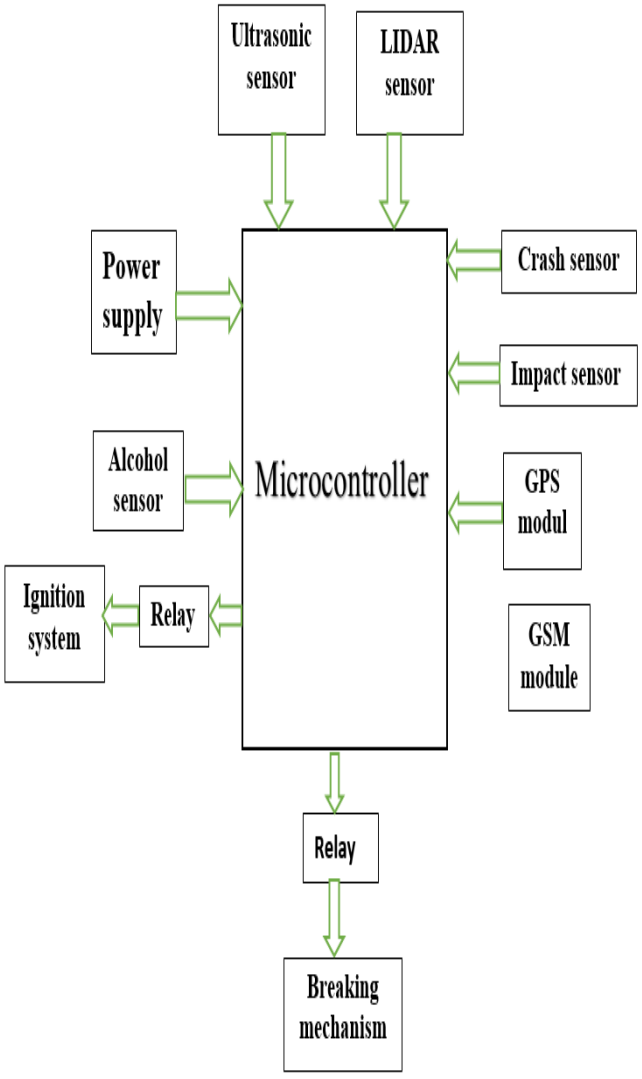
E. *Hardware Section and Its Implementation*

Hardware sections used in our detection system includes GPS modem, GSM modem, alarm module, microcontroller and vibration sensor.

V. COMPONENT

- Arduino microcontroller
- A sensor called MQ3 for the purpose of alcohol detection.
- GPS modem and GSM modem
- MEMS sensors
- Impact sensors
- LIDAR sensors
- Ultrasonic sensors
- Relays
- Motors to apply mechanical braking
- Power supply
- Buzzer

BLOCK DIAGRAM



VI. ADVANTAGES

- Component establishes interface with other drivers very easily.
- Life of the driver can be saved by locking the ignition system of the car.
- Traffic management can be maintained by reducing accidents and traffic jams can be avoided.
- Using GPS & GSM exact location of the Car can be traced on MAP.

VII. APPLICATION

- Automobiles
- Railways

VIII. CONCLUSION

In this paper we proposed and implement the accident avoidance system. Using this system we may avoid many accidents happened due to the following system The system comprises, very low cost components such as ultrasonic sensor ,LCD and GPS and GSM ,MQ3 sensor. Crash sensors and impacts sensors etc.

IX. FUTURE SCOPE

- Implementing this project in India we can avoid the lots of accidents and also drunk and drive
- Using the image processing we can also implements to avoid accidents due to drossiness
- Automatic Braking System which will reduce the speed of the car in highway and traffic area smoothly
- Using camera and image processing we can analyses the driver condition and passenger health condition in accident time.
- Automatic braking System can be set in case of drowsiness.
- When accident happens in highway that time. Bye using high volume buzzer we can make sound to attract surrounding peoples to helps.

REFERENCES

- M Rajendra Prasad, P Aswani Kumar," An Automated Traffic Accident Detection and Alarm Device" in International Journal of Technological Exploration and Learning (IJTEL), Volume 1 Issue 1 (August 2012).
- Lakshmi,J.R.Balakrishnan,"AutomaticAccidentDetection Via Embedded GSM message interface with Sensor Technology " in International Journal of Scientific and Research Publications Volume 2, Issue 4,April 2012.