

Accident Prevention System Using Alcohol Detector, Speed Control Mechanism And Notification

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Abstract- This paper focuses mainly on road accidents occurring due to poor indication of sign boards and drunken state of drivers in both two wheelers and four wheelers. The alcohol sensor detects the alcohol from breath and stops the engine by micro controller immediately. Speed control will control the speed as the distance is decremented. As the vehicle starts approaching another vehicle the speed of car starts decreasing. When the distance between two cars become less than the danger the car automatically stops and starts a buzzer so that the other drivers will be warned about sudden stop of the car. and also this project sends the notification of near places in the road.

Keywords- Accident prevention, Arduino, Notifications, Speed Control, Alcohol Detection

I. INTRODUCTION

The aim of this project is to minimize the road accidents occurring due to drunk driving which cause the loss of invaluable human life. The main causes of accidents include drunk driving use of mobile phones, collision of vehicle with obstacles, over speeding etc. the main aim behind Accident Prevention System provide is used to detect alcohol level and speed control mechanism and give notification of near places in the road.

The population of our country has been increasing rapidly which indirectly has increased the vehicle density and lead to many road accidents. The main causes of accidents include drunk driving, use of mobile phones, collision of vehicle with obstacles, over speeding etc. A lot of accidents are happening now-a-days cause of increased vehicle density, violating rules and carelessness. The aim of this project is to minimize the road accidents occurring due to drunk driving which cause the loss invaluable human life and other valuable goods, to avoid the heft action by making the car password enabled, detecting accidents and thus tracking the accidental vehicle to serve emergency medical services to the victim present inside the vehicle. The main Aim of the project is to minimize the number of Accidents occurring by using concepts of IoT. The system also focuses on warning the user about

nearby places such as Schools, Hospitals, Senior Citizens Home etc.

Four main operations of Accident prevention system

1. Alcohol Detector
2. Speed control Mechanism
3. Android App for Nearby places notification
4. Owner verification using RFID

This method of analyzing or detecting the resence of alcohol in breath is relatively a. quick analysis as compared to other techniques. The sensors used in this project are smaller in size, not so bulky, hence can be carried.

II. LITERATUREREVIEW

Intelligent automobile system for accident prevention & detection (S.SARANYA, M. SHANKAR , MUTHULINGAM)

[1] From this paper we got idea of seat belt sensor and alcohol sensor. i.e. if seat belt is not weared and driver is alcoholic consumed ignition system remains off . The drawback of this system was that it can only be used with for wheelers. Also, the features covered wereless

Intelligent accident identification system using GPS, GSM modem (S.SONIKA¹, Dr.K.SATHIYASEKAR², and S.JAISHREE)^[2] This paper tells about tracking of location of accident by GPS and convey the msg to coded number via GSM. This makes the awarness about an accident easier, however there can be means top prevent the accident or reducee there number which is not proposed in thispaper.

Real Time Vehicle Accident Detection and Tracking Using GPS and GSM (NAMRATA H. SANE,)^[3] From this paper we get idea of accident sensors i.e limit switches are use in this paper for accident detection. Limit switches are used to detect whether the accident is detected or not. However, there are certain restrictions and the accuracy of the system is 60% only. Also the prevention part is not taken care of.

III. PROPOSED SYSTEM

Three main operations of Accident prevention system

1. Alcohol Detector
2. Speed control Mechanism
3. Android App for Nearby places notification
4. Owner verification using RFID

A. Alcohol Detection:

It has four pins, and is extremely easy to use. What makes this listing so unique is that it has an analog output pin that you can interface with an analog to digital converter, and a digital output that is supplied from a comparator output. The digital output is normally high. When you blow into the sensor the output will swing from 5v (1) to 0v (0). You can calibrate this digital output to swing the on-board variable resistor. You can calibrate the output to swing after you've had one beer, two beers, etc. If alcohol is detected above certain calculated level then the vehicle stops and cannot be started.

B. Speed Control:

The speed control is totally based on the distance of destination or speed breaker or traffic. If the distance is 50cm then vehicle should drive normally but if it is 40cm then speed should less that we required for covered 50cm similar for 30cm and 20 cm. as the distance decrement the speed of the vehicle is also decremented and once the distance become 10cm the vehicle should stop.

C. Mobile Notifications:

An Application is used to getting the nearest place in the road such as google maps. Google maps is used to show as well as give the notification in the form of message to the user in his/her mobile. The notification will be anything that related to coming things in the road like hotel, hospital petrol pump, washroom, or ending road. The notification can be message format as well as in an audio format. Then the owner of the vehicle will know that coming things in the road.

D. Owner Verification:

RFID verification is used to start the vehicle. The valid RFID cards will be provided to the owner. Only upon the swapping of valid card the vehicle will start. otherwise the car will not start moving. We are using EM180 RFID Module for this purpose. Passive RFID Cards are used that have a fixed value on it.

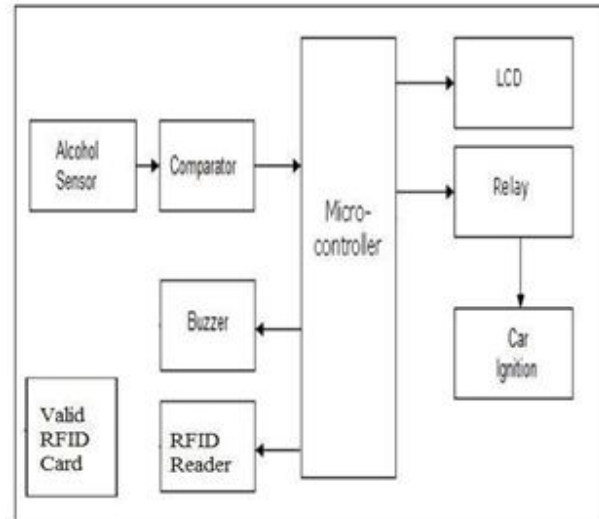


Fig. 3.1 Interfacing Diagram

Development of accident prevention system will be very much useful for road safety. For traffic area as well as normal road driving a vehicle will be dangerous and so the vehicle losses so many things. This project thesis provides a brief overview of the accident prevention system using sensors. RFLD sensors are used to sense the alcohol level of the vehicle owners and light. The information from the sensors in module through Arduino microcontroller. This information received notification of near places in the road is viewed in the application of the Android mobile phone.

Thus this advanced technology helps the police to know the accurate level of the alcohol thus making the alcohol detecting procedure easier.

The block diagram of proposed system is depicted in fig 3.1; it consists of LCD, Microcontroller, RFID Reader, MQ3 and Speed control Module, Buzzer. Power supply- In this system we are using 5V power supply for microcontroller of Transmitter section as well as receiver section.

We use rectifiers for converting the A.C. into D.C and a step down transformer to step down the voltage.

1. Microcontroller- In this work the micro-controller ATMEGA328(arduino) is playing a major role. Micro-controllers were originally used as components in complicated process-control systems. However, because of their small size and low price, Micro-controllers are now also being used in regulators for individual control loops. The purpose of this work is to present control theory that is relevant to the analysis and design of Micro-controller system with an emphasis on basic concept and

ideas. It is assumed that a Microcontroller with reasonable software is available for computations and simulations [3] so that many tedious details can be left to the Microcontroller.

2. MQ3 Sensor- This alcohol sensor is suitable for detecting alcohol concentration on your breath, just like your common breathalyzer. It has a high sensitivity and fast response time. Sensor provides an analog output based on alcohol concentration.
3. LCD- LCD is used to display the data. LCD we have used is 16x2 i.e. 16 characters in 1 line, total 2 lines are there. We could have used a better resolution LCD but due to limitation of money and for project requirement 16x2 LCD is sufficient.
4. Speed control Mechanism:- This mechanism is used to control the speed of DC Motors used in the prototype of our project. This mechanism controls the revolution per seconds of a motor and thus reduces or increases its speed.

IV. RESULT AND CONCLUSION

Thus we successfully developed a system which can be used in various applications such as:

1. School transport vehicle get the notification that the school is in the road
2. This project can be used for cab or car of companies.
3. Alcohol detect by traffic police as well as doctor if it is necessary for the doctor to do some operation.

We made a small robotic vehicle with 4 wheels that resembles a car.

//robot photo

The components and RFID Reader is placed on this vehicle. It moves in forward direction once valid RFID is scanned and no alcohol is detected. If Some condition is false then vehicle does not starts. Once started it continuously checks for obstacle in front. It continuously displays the distance on LCD.

// Obstacle detected photo

also the android application warns about the nearby places. at our location we had a school when we deployed so the app give notification for school.

//School ahead notification Screenshot

Also driver can search for nearby places such as school, hospital, petrol pump, bus stand, railway Stations etc.

//Add App screen Shot here

Thus, all the functions mentioned above are implemented successfully and also the app working is properly implemented.

REFERENCES

- [1] Intelligent automobile system for accident prevention and detection (S.SARANYA, M.SHANKAR, N. MUTHULINGAM)
- [2] Intelligent accidentidentification system using GPS, GSM modem (S.SONIKA1, Dr.K.SATHIYASEKAR2, and S.JAISHREE3)
- [3] Real Time Vehicle Accident Detection and Tracking Using GPS and GSM (NAMRATA H. SANE, DAMINI S. PATIL, SNEHAL D. THAKARE)
- [4] Real-Time Non - intrusive Monitoring and Prediction of Driver Fatigue on highway by Qiang Ji, Zhiwei Zhu, and Peilin Lan, IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY, VOL. 53, NO. 4, JULY 2004. [2] Boston University Computer Science Technical Report No.2005-12
- [5] Real Time Eye Tracking and Blink Detection with USB Cameras Michael Chau and Margrit Betke, Computer Science Department Boston University Boston, MA 02215, USA { mikechau,betke@cs.bu.edu} May 12, 2005 [3] IJCSNS International Journal of Computer Science and Network Security, VOL.9No.3, March2009,
- [6] A Neuro-Genetic System Design for Monitoring Driver's Fatigue N.G.Narole , Research Scholar,G.H.Raisoni College of Engineering, Nagpur, Dr.P.R.Bajaj, Principal, G.H.Raisoni College of Engineering, Nagpur.