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Embedded Based Vehicle Speed Control System Using Wireless Technology

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ABSTRACT

As accidents are very prone nowadays so there is an increased need to prevent them. This project presented here is an approach towards vehicle navigation & safety implementation. In this smart zone sensing system, with the help of wireless network module and sensors the parameters of the vehicle are controlled by sending and receiving the signals accordingly. This project aims at automatically controlling the speed of vehicles at speed restricted areas such as schools, hospital zones etc. Nowadays the drivers drive vehicles at high speed even in speed limited areas without considering the safety of the public. The traffic police are not able to control them with full effect. Also, it is not practical to monitor these areas throughout. This paper paves way for controlling the speed of the vehicles within certain limit in restricted zones without interruption of the drivers.

Keywords: ARDUINO, GPS, LCD, L239 Driver, Buzzer.

1. INTRODUCTION

Nowadays accidents are very prone as everyone ignores the sign boards and do not consider the speed limits. As an example, near school zone, the sign board displays "School Zone Ahead, Drive Slowly", or near a hospital, "Hospital Area-Do not Blow Horn", but in reality, rarely this is practiced. Drivers go at very high speed as usual near school zone, or operate the harsh horns loudly causing inconvenience to the patients in the hospital. Even though these are meant for the safety of the vehicles travelling and also for the general public, it is hardly practiced by the vehicle drivers. As a result, it makes the whole concept of displaying warning sign and messages on the roadside boards meaningless. So, to prevent accidents and make the driver follow rules automatically as well as add to the driver's convenience we can vary some parameters of the vehicle.

An embedded system is one kind of a computer system mainly designed to perform several tasks like to access, process, and store and also control the data in various electronics-based systems. Embedded systems are a combination of hardware and software where software is usually known as firmware that is embedded into the hardware. One of its most important characteristics of these systems is, it gives the o/p within the time limits. Embedded systems support to make the work more perfect and convenient. So, we frequently use embedded systems in simple and complex devices too. The applications of embedded systems mainly involve in our real life for several devices like microwave, calculators, TV remote control, home security and neighborhood traffic control systems, etc.

2. LITERATURE SURVEY

In Rubini.R, et al [1] proposed a system has an alerting, recording and reporting system for over speed violation management. The Zigbee transmitter sends the speed limit of the particular lane entered by the vehicle and also gives alerts like "road works", "steep slopes", "school zone" in the form of acoustical messages and also in LCD. The receiver unit placed in the vehicle receives the messages and sends to the microcontroller. When speed of the vehiclenears the speed limit it displays the warning and if exceeds he limit, the microcontroller records the violated speed and time. The LCD displays the lane speed limit and shows the number of times, speed was violated. A GSM module sends message to the nearest traffic personnel immediately after a violation occurs. An authenticated device is also provided, which can be operated only by the traffic police in which he can retrieve the data stored at any time. Increase in the count of violation increases the penalty amount which can be collected in toll gates located nearby.

In S.P. Bunker, *et al* [2] described a real-time online safety prototype that controls the vehicle speed under driver fatigue. The purpose of such a model is to advance a system to detect fatigue symptoms in drivers and control the speed of vehicle to avoid accidents. The main components of the system consist of number of real time sensors like gas, eye blink, alcohol, fuel, impact sensors and a software interfacewith GPS and Google Maps APIs for location.

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In Jyotika Kapur et al [5] dealing with India there has been an increase of 17.4% in the total number of road accidents during the period of 2011-2012. This percentage has raised eyebrows and caught the attention of many to curb the growing rate. It is found that 80% of the times it is the fault of the driver. This can be avoided if we could device a mechanism which could alert the driver about the coming jeopardy. This can be achieved by monitoring the distance between two cars using Bluetooth. If the distance decreases than the one specified, the driver would be signaled and according to the signal, necessary actions will be taken by the mini gadget present in the car. This paper proposes that with the help of Bluetooth technology, we can keep track of the speed of the car and take appropriate actions to avoid accidents.

3. PROPOSED SYSTEM



Fig.1-Block Diagram of Embedded based speed control system using wireless technology

In the proposed method we are using GPS to track the location, GPS is interfaced to the Arduino controller. we need to set the coordinates as threshold, based on the coordinates we set motor speed will reduce. Whenever the vehicle entered at particular Zone buzzer will give alerts and motor speed will reduce. Here the main controller is Arduino controller, for we are interfacing the modules which we have using. The data will be displayed on LCD.

4. SOFTWARE REQUIREMENTS

The proposed system has implemented **Arduino IDE** where IDE stands for Integrated Development Environment – An official software introduced by Arduino.cc, that is mainly used for writing, compiling and uploading the code in the Arduino Device. Almost all Arduino modules are compatible with this software that is an open source and is readily available to install and start compiling the code on the go.

Flowchart



Algorithm

Step1: Start the system

Step2: initialize power supply to ARDUINO and GPS as well as L239 Driver and LCD

Step3: Set GPS co-ordinates of critical areas like school area and hospital area

Step4: There are two areas one is normal areas and criticalareas

Step5: The location set by us is tracked by GPS and it displays on LCD.

Step6: After tracking the location of critical areas the speed of the vehicle is automatically reduced

Step7: After clearing the critical areas the speed of the vehicle comes to normal

Step8: Stop the system

5. CONCLUSION

The proposed system mainly designed in order to avoid accidents and to alert the drivers about the speed limits for safe traveling. An effective solution is provided to develop the intelligent vehicle which will operates on safest speed at critical zones and monitor various parameters of vehicle in- between constant time period and will send this data to thebase unit is explained in this paper. Controlling the vehiclespeed automatically in real time is very difficult. So, in order to avoid those difficulties, instead of controlling the vehicle speed automatically, this research paper succeeded in alerting the driver about the speed limits and detecting the critical area. The entire system is control and the advantage of small volume and high reliability.

Conflict of interest statement

Authors declare that they do not have any conflict of interest.

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