AUTOMATIC SPEED LIMITER, RELIEVER AND DATA DISSEMINATION IN VEHICULAR CLOUD SYSTEMS

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Abstract: Vehicular communication is a trendy topic in the academia and the car industry. Globally road accident is considered to be an important issue, which can be reduced by proper vehicle parameters and speed monitoring system. More recently, the advancement in wireless sensor technology shows a great promise in designing Intelligent Transportation System due to its flexibility and cost effectiveness for deployment. The main motto of this research is to develop a prototype vehicle speed monitoring system using accelerometer-based wireless sensor. The research focus on unifying the speed monitoring with embedded wireless technology is the new approaches in intelligent vehicle control for critical location application using ARM. In conventional system they are designed to control the speed of vehicles in all days. The main objective of the proposed system is to operate the vehicle in safe speed at critical zones. The aim of this growing interest is to develop an effective communication system for the Intelligent Transportation System (ITS).

Key words: ZigBee, WI-Fi, IRsensors, Gassensor

Design of Proposed Hardware System

The design of entire system consisted of two part which are hardware and software. The hardware is designed by the rules of embedded system, and the steps of software consisted of three parts.
In this Hardware system again divide into two sections one is road side section and another one is vehicle section.
Road Side section:

In this section consists of Microcontroller, IR sensors, Zigbee are the components. The main purpose of this section is to identify the vehicles and intimate the Zone information to the vehicle by using Zigbee Technology. In this we are creating two Zones.
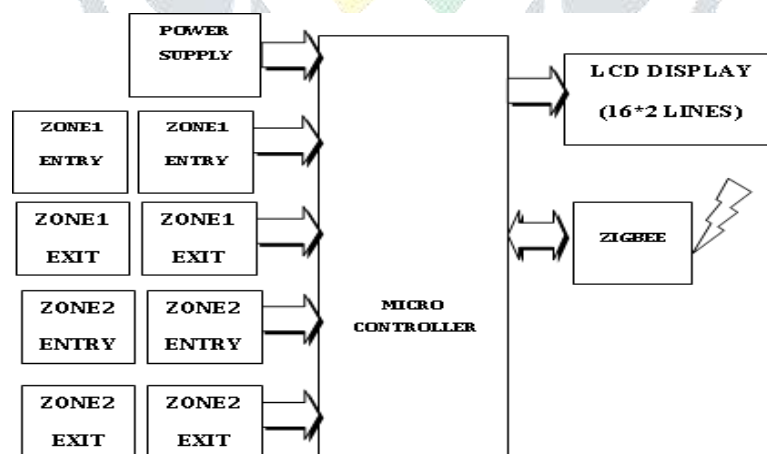

Fig.1.Block diagram of Road section

Vehicle Section:

In this section we are using microcontroller, Zigbee, WI-Fi, Temperature, Gas sensors are components.
In this we are receiving the data related to the zones when we are entering into the zone by using Zigbee module according to that data controller reduce the speed the motor. Here motor represents as engine of the vehicle.
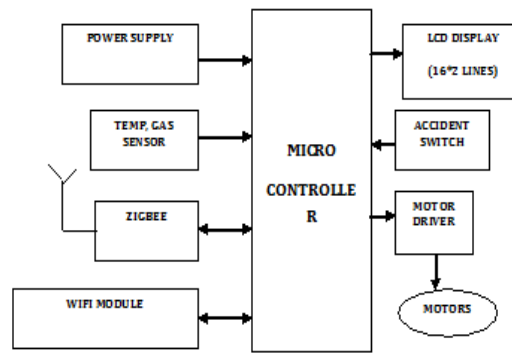
Fig.2.Block diagram of Vehicle Section

In his we are having two sensors for identifying the vehicle parameters. If any value exceeded than threshold value it will identified and display. Whenever any accident occurred that time also information regarding accident will be sent to the vehicular cloud by using Wi-Fi module.

The system uses a compact circuitry built around LPC2148 (ARM7) microcontroller Programs are developed in Embedded C. Flash magic is used for loading programs into Microcontroller.

Board Hardware Resources Features:

IR sensor
The TSOP21 - Series are miniaturized receivers for infrared remote control systems. PIN diode and preamplifier are assembled on lead frame, the epoxy package is designed as IR filter. The demodulated output signal can directly be decoded by a microprocessor. The main benefit is the operation with short burst transmission codes and high data rates. Photo detector and preamplifier in one package
• Internal filter for PCM frequency
•Improved shielding against electrical field disturbance
• TTL and CMOS compatibility
• Output active low
• Low power consumption
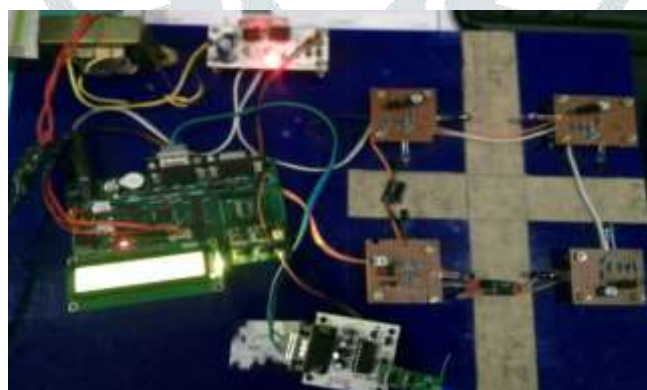• High immunity against ambient light
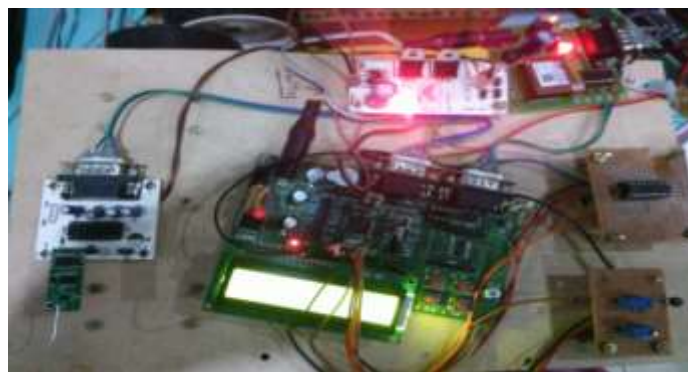
Results:

Fig.3.Road section

Fig.4.vehicle section

Conclusion:

In this article 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 the other vehicle to establish the communication to the other vehicles.This work is more reliable and effective in curbing over speeding, accident avoidance and also to provide noise free zones.

Future scope:

The implementation of this project assures automation of vehicular speed control and safe road transportation in restricted zones. Accounting to its flexibility in implementation various improvisations can be adapted in its applications. To name a few are the technological advantages of GPS and Ad-Hoc networks that can be merged with the present system design and implementation.

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