

Driver Information and Security System

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Abstract- Many a times the warning sign on the road sides becomes difficult to watch for the drivers and the driver may sometimes miss the warning notes. These warning notes may be speed breakers ahead or narrow bridges or even accident zones etc. This becomes tedious during rainy seasons and at nights. Sometimes the boards may be so dirty and the driver may not read anything and even if he tries to read it with a wide eye there is a chance for the drive to lose concentration on the road.

Currently almost every individual has own vehicle and chances of accidents has been increasing. This paper deals with the discussion about the technology used in avoiding accidents by giving information about the road conditions using GPS and GSM connected with MICROCONTROLLER.

Index Terms- Micro-Controller, GPS, GSM

I. INTRODUCTION

Technological approaches for detecting and monitoring the information about the vehicle and the roads. Now many are interested in the development, validation testing, or early implementation stages. Every year in India, more than 50% casualties and 1.4 million injuries are caused by vehicle-related accidents. Driver information and security systems aim to support the driver on the strategic level of the driving task, such as advanced route navigation

As the name indicates, this paper is about making vehicles more intelligent and interactive which may notify or resist user under unacceptable conditions, they may provide critical information of real time situations to drivers. The main concept in this design is introducing the mobile communications into the embedded system. This will be accomplished with the help of Global positioning system and Global System of Mobile wireless communication technology. We will use microcontroller which will greatly improve the overall performance of the system. It will effectively improve the security & safety of the vehicle. The client interacts through this system with vehicles and determines their current locations and status using Google Earth. The user can track the position of targeted vehicles on Google Earth.

II. OBJECTIVES

- The main objective of this project is to guide the drivers about the road conditions to avoid accidents.
- In the case of accidents, the system sends alert message and location (latitude and longitude) to the family members of the driver through vibration sensors and GPS.

III. METHODOLOGY

COMPONENTS USED

- Controller ----Atmel 89S52.
- LCD DISPLAY-----16X2.
- MOTOR DRIVER-----L298D
- BLUETOOTH MODULE ----HC05
- RF RECEIVER-----ASK 455MHz
- VIBRATION SENSOR.
- GPS RECEIVER-SIM900A.
- GEARED DC MOTOR-12V DC.
- BATTERY-12V/7.2AH.
- REGULATOR-7805.

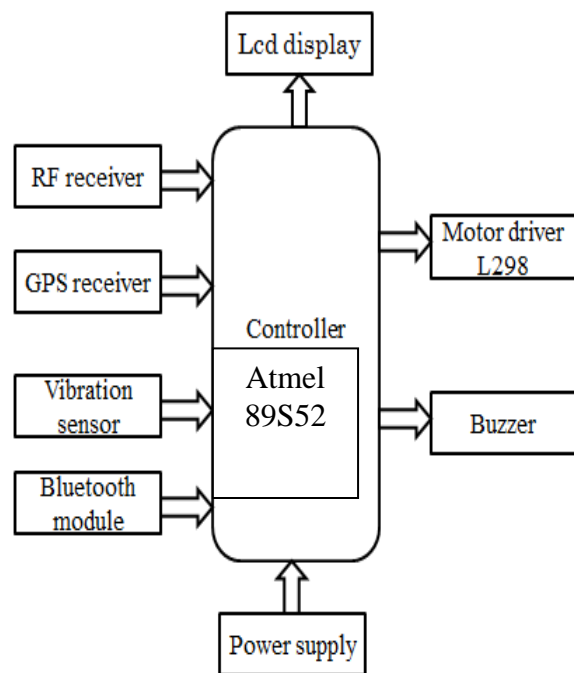


FIG 1.BLOCK DIAGRAM

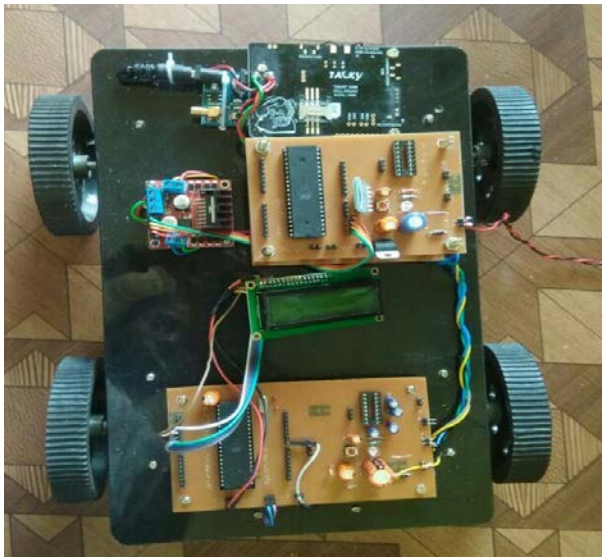


FIG 2.WORKING MODEL

1. MICRO CONTROLLER -P89V51RD2

The Atmel 89S52 is an microcontroller with 8KB Flash memory and 256 bytes data RAM. Microcontroller acquires and stores different parameters of vehicle. The main block of vehicle parameter monitoring system is Atmel 89S52 micro controller which is heart of the system which provides monitoring and controlling actions.

It senses signals from input blocks and processes output blocks. The software program is stored in the microcontroller on chip memory, according to which it provides the controlling actions. With the help of different sensors various parameters are monitored.

2. LCD DISPLAY

The LCD block is provided for visual display of the message. Also it continuously displays the measured parameters. It displays the conditions of the roads according to the data in microcontroller.



FIG 3.LCD DISPLAY

3. MOTOR DRIVER – L298D

A very popular and reasonably priced all-in-one H-bridge motor driver is the L298. It can control two motors, not just one. It can handle 2amps per motor, through to get the maximum current be sure to add a heat sink. The L298 has a large cooling flange with a hole in it, making it easy to attach a homebrew metal heat sink to it.

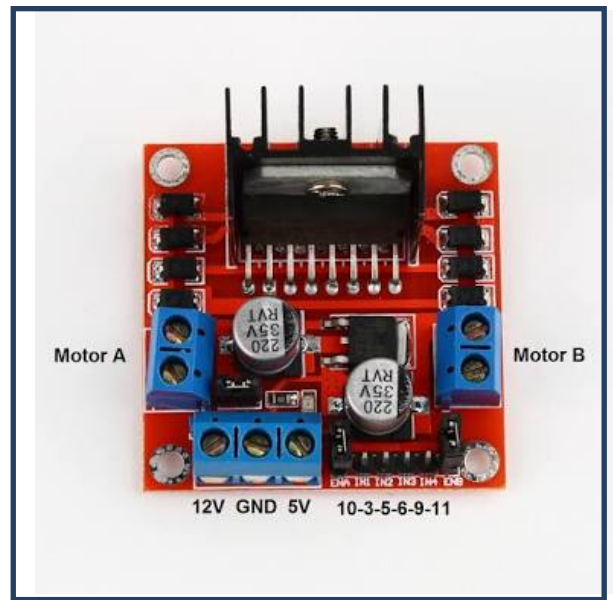


FIG 4.MOTOR DRIVE L298D

4. BLUETOOTH MODULE -----HC05

The HC05 Bluetooth module can be used in a Master or Slave configuration, making it great solutions for wireless communication. We can use it simply for a serial port replacement to establish connection between microcontroller and GPS, PC to our embedded system. It has 6 pins Vcc, GND, TX, RX, KEY and LED.

After the connection is established the Bluetooth module can transmit and receive data regardless of the mode it is running. Here we are using mobile to connect to Bluetooth module, using Slave mode. The default data transmission rate is 9600kbps. The range for Bluetooth communication is usually 30m or less. The module has a factory set of pins '1234' which is used to connect to mobile.

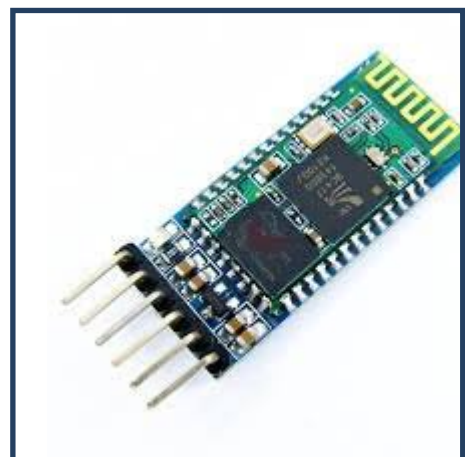


FIG 5.BLUETOOTH MODULE

5. RF RECEIVER-ASK 455MHZ

RF receiver transmits the signals from longer distances and making it suitable for long range applications. It can travel even there is an obstruction between transmitter and receiver.

6. VIBRATION SENSOR.

These are used to measure vibration of vehicle in case of accidents. It is made up of a piezo electric material if any stress applied to this material it sends the signal to the microcontroller, in which it stores the data and send the messages to the feeded number through GPS and GSM.

7. GPS RECEIVER-----SIM900A.

It is used for vehicle navigation and it is device capable of receiving information from GPS satellites and then to accurately calculate the Geographical location. Here it sends the information in latitude and longitude manner.

8. GEARED DC MOTOR-12V DC

A geared DC Motor has a gear assembly attached to the motor. The speed of the motor is counted in terms of rotation of the shaft per minute. The gear assembly helps in increasing the torque and reducing the speed.

9. REGULATOR-7805

Voltage source in a circuit may have a fluctuations resulting in not giving fixed voltage outputs. Voltage regulator IC maintains the output voltage at constant value. It provides a +5V regulated supply with provisions to add heat sink as well.

IV. ADVANTAGES

- Security of vehicle.
- Records driving data, collision data and position data.
- Analyze the accident data.
- Sends location of vehicle and its maintenance to base station through GPS.

V. DISADVANTAGES

- Existing system do not work if the system itself damaged in the vehicle accident, Also this system is not very effective in case of accident of heavy vehicles.
- It does not work without network.
- The systems fail in the absence of power supply.

VI. APPLICATIONS

- Automotive application.
- Modern cabs, cars, auto rickshaw and trucks.
- Public transport system

VII. FUTURE SCOPE

- There is a scope for improvement and as a future implementation we can add a wireless webcam for

capturing the images which will help in providing driver`s assistance.

- We can extend this project in future by adding anti-theft detection, control and security features.

VIII. CONCLUSION

In this project we can avoid the most of the accidents happens because of the road conditions and high speed. And we can guide the vehicle drivers about the road conditions using sensors.

Even if any accidents happen this system detects an accident and sends information to service provider with location through GPS and GSM. On the whole, this system is very cost effective and efficient. This system can be easily implemented in real time.

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