

INTELLIGENT SPEED MONITORING FOR AUTONOMOUS CARS

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I. ABSTRACT

Internet of vehicles is a vital part of the smart city is a complex integrated network system, which bridges different people with things that are automated with different environments in cities. This is different from Telemetric and carting, in which vehicles can alter speed within the RFID zone and obtain control on speed by interacting with environments.

This is unique from Telemetric and carting, in which vehicles can run within the connected network and obtain various services by interacting with environments. The vehicle has been the most superior invention of early man which was obedient his commands. Recent breakthrough inventions in latest technologies have changed this model, leading to the way to a better world.

In today's date car has become powerful platform, for obtaining information using sensor devices from the particular zone and system will control car speed according to the zone information. In this we are monitoring driver condition with the help of sensors. If driver is having unusual health condition then the system will give notification to him with the help of Bluetooth device.

Keywords: *Arduino, RFID, Bluetooth, Temperature, Alcohol sensor etc.*

II. INTRODUCTION

The sensors will provide information to the system and the data gets uploaded to the Android application such that the network of vehicles can exchange sensor data among each other to get a well-defined functionality. In the case of smart cars, security of the travelers to the different places with maximum safety. Every city, town and a village can be divided into individual zones. The division depends upon the area under which the business, residential, and industrial regions are included.

Every city, town and a village can be divided into individual zones. The division depends upon the area under which the business, residential, and industrial regions are included. The central district is a busy traffic zone demands the least speed limit, the residential and industrial zones having lesser traffic densities and the speed limits in both cases vary accordingly.

III. SYSTEM BLOCK DIAGRAM

Vehicle section:

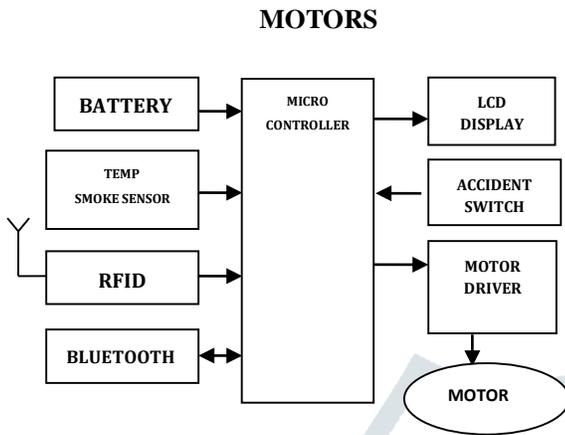


Fig (3.1): Block diagram of vehicle section

Zone section:



Fig (3.2): Zone Section

System overview:

LCD Display:

LCD is most commonly used in hardware projects, this is because of less price, availability and easy usage. We will find this LCD display in our daily life example like LCD Television, LCD Watch.



Fig (3.3): LCD display

The Liquid crystal display has 16 Columns and 2 Rows. So that it can display 32 characters in total because sixteen column and two row and each character contains 5×8 Pixel Dots The LCD should also be guided according to the Pixels position . Hence it will be a difficult task to handle everything with the help of MCU, hence an **Interface IC like HD44780** is used, which is placed on the backside of the LCD Module itself. The task of this IC is to receive the **Commands and Data** from the MCU and manipulate them to display useful information onto our LCD Screen.

Arduino:

Arduino is a hardware kit used for hardware projects. is an open source platform which is easier to implement and use in building electronic projects. Arduino comprises of a microcontroller which is the physical programmable circuit board and a software or IDE that runs on computer, useful to interact with code to to program a physical board.



Fig (3.4): Arduino board

The Arduino platform has been more beneficial and more user friendly for people who have started to work with electronic projects. Unlike most of other existing programmable circuit boards, Arduino does not need a separate hardware component. The new code can be easily loaded onto the board by using a simple USB cable. In addition to that, an Arduino IDE uses a simplified version of C++, making it easier to code the functionalities. Arduino enables a factor that uses the functionalities of the micro-controller.

Bluetooth:

Bluetooth is a technology used to connect and transfer data between different electronic devices in wireless fashion. The distance of data transmission in the bluetooth is relatively smaller in comparison to other methodologies of

wireless communication. This technology eliminates the use of cords, cables, adapters thus permitting the electronic devices to communicate in a wireless manner among each other.

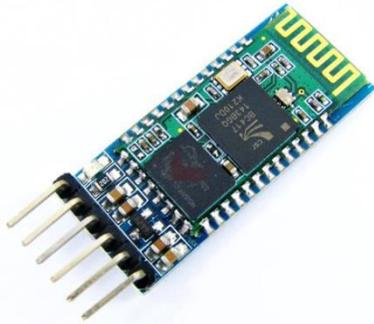


Fig (3.5): Bluetooth Module

HC-05 module is the version which uses Bluetooth SPP module, specially designed creating a setup for wireless connection in a serial fashion. The HC-05 is used, making it the best solution for wireless data transfer.

This Bluetooth module in which ERD version V2.0+EDR enabled with 3Mbps Modulation and complete 2.4GHz baseband. It make use of CSR single Bluetooth chip empowered with CMOS and AFH.

Temperature sensor:

The word thermistor is actually the reduced name of the word thermal resistor, which is a temperature sensitive resistor. It detects even the smallest changes in temperature.



Fig (3.6): Temperature sensor

The variation in temperature is reflected as a variation of the resistance of the device. Thermistors are available in two variants negative and positive. Negative-temperature-coefficient NTC and Positive-temperature-coefficient PTC

are available, but NTC are most widely used. The negative-temperature coefficient means that the resistance increases with the increase in temperature.

Alcohol sensor:



Fig (3.7): Alcohol sensor

Sensitive material which forms the core of the MQ-3 gas sensor is SnO₂, which has a lower conductivity in pure air. The conductivity of the material used in the sensor increases when it is surrounded by impurities. When there is an existence of target alcohol gas, the conductivity of sensor gets higher with the increase in the gas concentration levels.

RFID Module:



Fig (3.8): RFID Module

RFID is the technology that make use of radio waves to identify people and objects. It involves two major parts first part is the combination of antenna and microchip are called

an RFID transponder or an RFID tag and the second part is an RFID reader. The RFID tag emits the radio waves continuously, which are received and sensed by an RFID receiver. Radio Frequency Identification (RFID) is the latest technology that is adapted to track and trace materials, including books.

IV. RESULTS



Fig

(4.1): Hardware model



Fig (4.2): Sensors values shown on LCD



Fig (4.3): Initial condition of vehicle



Fig (4.4): Vehicle enter into zone



Fig (4.5): Accident alert indication on LCD

V. CONCLUSION

With the increasing population, more vehicles are travelling on the roads which leads to increase in the percentage of accidents. Even though the vehicles are getting smart with increasing time, the accidents are still not completely controlled. In such situations, more precautions must be undertaken to prevent the accidents especially in locations where schools, hospitals and the areas which are more populated. To reduce the accident percentage, the technology which used here is RFID. This technology can be implemented even in the least autonomous cars.

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