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Smart Car with Zone Recognizing Feature Using RFID System

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ABSTRACT:A RFID based safety system is developed to work as an active safety system in automobiles. RFID reader detects the change in electromagnetic radiation emitted by the moving objects in its detection range. The change in the radiation results in activation of the driver circuit and relay. The driver circuit controls the speed of the vehicle and the relay operates the connection of the horn of the vehicle. The gas sensor and pulse rate sensor are used for additional safety purposes. Gas sensor detects toxic gases from the engine and pulse rate sensor for monitoring driver's health instantaneously. Buzzer alarm is used for the intimation of any kind of emergency in the driver's health. The main purpose of this system is to reduce the accidents occurring due to above reasons.

KEYWORDS:RFID, Gas Sensor, Pulse Rate Sensor

I. INTRODUCTION

Nothing is more important to parents than the safety of their children.

Nothing should be more important to drivers than slowing down when kids are present. That's why school zone accidents should never happen. Unfortunately, the statistics have a different story to tell.

[Every year in the United States](#), at least 100 children are killed in collisions while walking to or from school. About half of all deaths of children in or near school zones involve kids who are 15 or older. The Transportation Research Board reports that 25,000 children are injured every year in school zone accidents. Pedestrians and drivers are both responsible for school zone accidents, although drivers bear the ultimate responsibility. Drivers are required to exercise extra caution in school zones, and accidents only happen when drivers fail to carry out that duty.

And according to Central Pollution Control Board (CPCB), silence zone should be there outside the hospital, but the norms seem to be flouted in the city.

To provide a better alternative, a system is developed with RF-id Tags and RF-id readers which will automatically sense such traffic signs automatically and accordingly inform the drives and also assist him in controlling the vehicle voluntarily or forcibly. All in all resulting in a very effective and fail proof system to provide traffic regulation, safety and convenience of the people.

As the whole project not just limited for these few functions, this project can be made mandatory. That way one can provide a more reliable security device and streamline traffic flow. Few additional features are integrated with this system are, "Toxic gas detection", "Driver's health monitoring".

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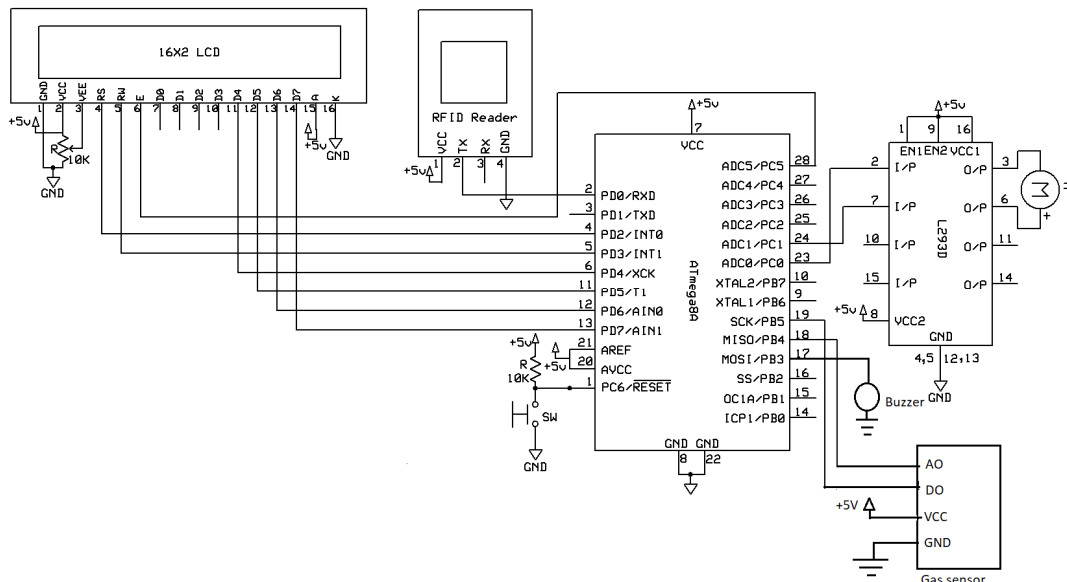
II. RFID MECHANISM FOR DETECTING ZONES

In this project, we are using Multi Integration On Single Chip (MISC) which consists of ATmega 328p. A RFID reader with is connected to the MISC. Whenever the RFID reader detects infrared RFID tag in its range the reader identifies the zone and signals the MISC. The MISC controls the driver circuit LM329 for speed or disconnects the horn based on the zone.

RFID belongs to a group of technologies referred to as Automatic Identification and Data Capture (AIDC). AIDC methods automatically identify objects, collect data about them, and enter those data directly into computer systems with little or no human intervention. RFID methods utilize radio waves to accomplish this. At a simple level, RFID systems consist of three components: an RFID tag or smart label, an RFID reader, and an antenna. RFID tags contain an integrated circuit and an antenna, which are used to transmit data to the RFID reader (also called an interrogator). The reader then converts the radio waves to a more usable form of data. Information collected from the tags is then transferred through a communications interface to a host computer system, where the data can be stored in a database and analyzed at a later time.

III. DRIVER'S HEALTH MONITORING

Gas Sensor And Pulse Rate Sensor Reads The Toxic Gas Present And Driver's Pulse Rate Respectively And Signals The MISC. The MISC Either Opens The Window Or Signals The Buzzer As An Alert. Depending Upon The Cause, The MISC Performs Specified Actions. A Stepdown Transformer Is Used To Decrease The Input Supply To A Suitable Value Such That The MISC Can Able To Perform Well



Ideal sensor for use to detect the presence of a dangerous LPG leak in your car or in a service station, storage tank environment. This unit can be easily incorporated into an alarm unit, to sound an alarm or give a visual indication of the LPG concentration. The sensor has excellent sensitivity combined with a quick response time. The sensor can also sense iso-butane, propane, LNG and cigarette smoke.

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When there is gas leakage the inverting input voltage is greater than non-inverting input. Now the comparator output is -12V so the transistor is cutoff region. The 5v is given to hex inverter 40106 IC. Then the final output data is directly given to microcontroller to determine the gas leakage.

Pulse Sensor is a well-designed plug-and-play heart-rate sensor for Arduino. It can be used by students, artists, athletes, makers, and game & mobile developers who want to easily incorporate live heartrate data into their projects. The sensor clips onto a fingertip or earlobe and plugs right into Arduino with some jumper cables. It also includes an open-source monitoring app that graphs your pulse in real time.

Microcontrollers can't drive the motors directly. So, we need some kind of drivers to control the speed and direction of motors. The motor drivers will act as interfacing devices between microcontrollers and motors. Motor drivers will act as current amplifiers since they take a low current control signal and provide a high current signal. This high current signal is used to drive the motors. Using L293D chip is the easy way for controlling the motor using microcontroller. It contains two H-bridge driver circuits internally. This chip is designed to control two motors. L293D has two sets of arrangements where 1 set has input 1, input 2, output1, output 2, with enable pin while other set has input 3, input 4, output 3, output 4 with other enable pin.

IV. CONCLUSION

RIFD based automobile controlling system has been proven to work satisfactorily by connecting simple components such as RFID reader, RFID tags, drive circuit and relay. Along with this driver's health and toxic gases are monitored instantaneously.

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