Speed Control System For Lower Speed Zone Using Rf Signal Transmission

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Abstract- *A vehicle Speed Control System is designed to control the speed of the vehicle in specific zones to avoid accidents in low-speed areas. In this system, the low-speed zone is considered to be with an RF range. implementation is based on the light vehicle speed control, when the vehicle is running at full speed and gets entered into the low-speed zone its speed will be automatically reduced to the allowed speed in the low-speed zone. The microcontroller will interface with the sensors to detect the speed of the vehicle and based on this input the controller will take appropriate action and generate a control signal for the vehicle control system which then will activate the mechanism of the Speed control in the vehicle and the speed of the vehicle is reduced to the required speedin that zone. The zone will be fixed using the RF range. RF receiver willbe connected with every low-speed zone entrance. And each vehicle carries an RF transmitter with it. So when the vehicle enters the low- speed zone then it will be predicted with the RF receiver and the information will send to the microcontroller Arduino Uno connected here. The speed of the vehicle will automatically be reduced with the help of a motor driver connected with the engine motor.*

I. INTRODUCTION

The development of communication technologies fused with on-board sensors (e.g. radar,lidar, vision camera, etc.) and global navigation systems, vehicles have been equipped with connectivity and automation technologies over the past years. Connected and automated vehicles (CAVs) have easier access to the required traffic information; therefore, they can be controlled more precisely compared to human driven vehicles. With these benefits, CAVs can reduce the number of traffic accidents caused by human error and improve traffic flow stability and throughput. One of the automated functions, adaptive cruise control (ACC), aims to track a desired speed while maintaining a prescribed inter-vehicle distance. For heavy-duty vehicles, the ACC can reduce inter-vehicle distance, thereby decreasing energy consumption due to the decrease in aerodynamic drag resistance. Traffic safety is an important topic in the intelligent transportation research area. As one of the most serious hazards all over the world, traffic accidents cause great casualties and property losses.

II. EXISTING SYSTEM

- In the existing system, we have used IR sensors as IR Transmitter units and IR Receiver units.
- The Transmitter unit is to be placed some meters earlier than the traffic signal.
- The IR Receiver module is been implemented inside the car mechanism.
- The Transmitter section includes an IR sensor, which Transmits continuous IR rays that are invisible to human eyes, and that battery regulator micro controller IR sensor motor driver motor LCD display can be detected by an IR receiver module.

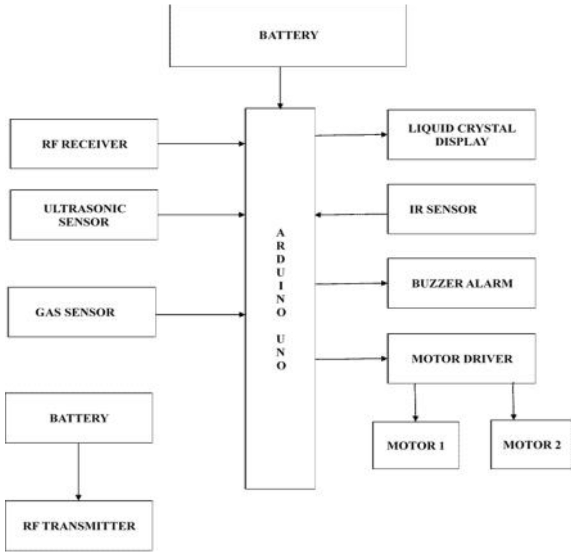
III. PROPOSED SYSTEM

In this project the whole system is being controlled by an Arduino UNO as a microcontroller. The main reason for choosing this as a controller is their advantage of having

IV. HARDWARE DISCRIPTION

Processing speeds and their ability to handle multiple inputs and outputs at the same time without compromising the accuracy and precision of theoutputs. Here chassis are used, considered as vehicles in vehicle wheels connected with the motor. RF receivers are connected to this vehicle. RF transmitters are fixed on the speed control areas in real time. When a vehicle enters the speed control zone areas, microcontrollers reduce their vehicle acceleration.If a person has drunk and drove, automatically the vehicle will slowly stop it.Ultrasonic sensors detect the closer vehicle, if a detected buzzer will alarm it.IR sensor here are used to ensure the wearing of seat belts. LCD is interfaced with microcontroller.

BLOCK DIAGRAM



Block Diagram of Arduino UNO

Arduino UNO Board

POWER SUPPLY

An AC powered linear power supply usually uses a transformer to convert the voltage from the wall outlet (mains) to a different, usually a lower voltage. If it is used to produce DC, a rectifier is used. A capacitor is used to smooth the pulsating current from the rectifier. Some small periodic deviations from smooth direct current will remain, which is known as ripple. These pulsations occur at a frequency related to the AC power frequency (for example, a multiple of 50 or 60 Hz).

LCD (LIQUID CRYSTAL DISPLAY)

WORKING:

When sufficient voltage is applied to the electrodes the liquid crystal molecules would be aligned in a specific direction. The light rays passing through the LCD would be rotated by the polarizer, which would result in activating/highlighting the desired characters. The power supply should be of+5v, with maximum allowable transients of 10mv. To achieve a better/suitable contrast for the display the voltage (VL) at pin 3 should be adjusted properly.LCDs with a small number of segments, such as those used in digital watches and pocket calculators, have individual electrical contacts for each segment. An external dedicated circuit supplies an electric charge.

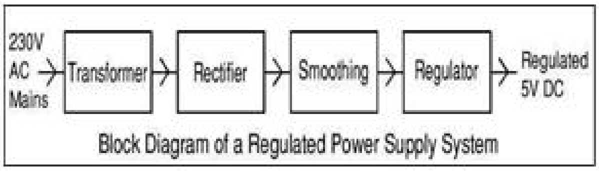


Figure:Block Diagram of Regulated Power Supply System

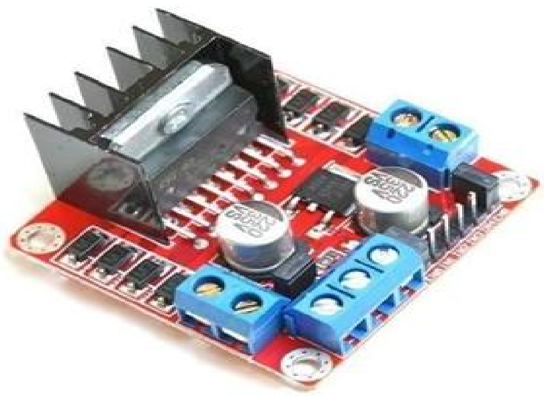
ULTRASONIC SENSOR

An **ultrasonic sensor** is an electronic device that measures the distance of a target object by emitting **ultrasonic** sound waves, and converts the reflected sound into an electrical signal. **Ultrasonic** waves travel faster than the speed of audible sound (i.e. the sound that humans can hear).

Ultrasonic Sensor

MOTOR DRIVER

This dual bidirectional motor driver, is based on the very popular L298 Dual HBridge Motor Driver Integrated Circuit.The circuit will allow you to easily and independently control two motors of up to 2A each in both directions. It is ideal for robotic applications and well suited for connection to a microcontroller requiring just a couple of control lines per motor.



MOTOR DRIVER

V. CONCLUSION

Here by we conclude that this project is very easy to implement on current system, low cost and durable, ensures maximum safety to passengers and public, the driver gets all information about the road without distracting him from driving, driver gets all information even in bad weather conditions, low power consumption. This project is further enhanced by automatic speed control when the vehicles get any hazard signal from outside environment.

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