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Project Title : DYNAMIC SPEED LIMITER

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TITLE: DYNAMIC SPEED LIMITER

ABSTRACT

Road transportation is the transport of passengers or goods on roads. This transport method can be via bike or automobiles. Road transportation is the cheapest way of transportation compared to other modes of transportation. It provides door to door delivery. In road transportation, we can change the destination and timings according to our needs. But the major disadvantage in road transportation is accidents. By the year 2020, road traffic injuries are expected to be in third place in reasons for hospitalised people. As per the National Crime Records Bureau Data(2015) 141,526 persons were killed and 477,731 injured in road traffic crashes in India in 2014^[1].



TOOLS

HARDWARE COMPONENTS

- Arduino UNO
- Accelerometer
- Ultrasonic sensor
- Raindrop sensor module
- Raindrop sensor panel
- Dc motor
- LCD display
- Buzzer
- Bread board
- Jumper wires

The sensors used in this circuit are mentioned above let's have a glance on it

Ultrasonic sensor:

An ultrasonic sensor is a device that can measure the distance to an object by using sound waves . it measures distance by sending out a sound wave at a specific frequency and listening for that sound wave to bounce back. By recording the elapsed time between the sound wave being generated and the sound wave back ,it is possible to calculate the distance between the sensor and the object.

Accelerometer:

An accelerometer is a device that measures proper acceleration proper acceleration being the acceleration of a body in its own instantaneous rest frame is not the same as coordinate acceleration ,being the acceleration is fixed coordinate system.



Raindrop sensor:

The rain drop sensor module is an easy tool for rain detection. It can be used as a switch when rain drop falls through the raining board and also for measuring rainfall intensity. The module features, a rain board and the control board that is separate for more convenience, power indicator LED and an adjustable sensitivity through a potentiometer.

SOFTWARE COMPONENTS

- Aurdino UNO software

PROBLEM

Over speeding has been identified as one of the top reason for road crashes and deaths. Nearly one-third of all car accidents can be attributed die to speeding. Speeding is a deliberate and calculated behaviour where the driver knows the risk but ignores the danger. Fully 90percent of all licensed drivers speed at some point in their driving career ,and 75percent admit to committing this offense regularly^[2].

Most people would probably agree that going 100mph is foolishly dangerous and will very likely lead to a disastrous car accident. The problem is that exceeding the speed limit by only 5mph in the wrong place can be just as dangerous. So, speed management is a very important tool for improving road safely.

Now -a-days we are using static speed limiters in vehicles. These static speed limiters are used to reduce the speed manually, so the driver should always be alert otherwise it leads to accidents. Hence static speed limiters are unable to reduce the speed of the vehicle quickly. There are different solutions provided by technology to overcome these problems .

- 1) RFID technology
- 2) Using Multi Sensors
- 3) IFMS

RFID technology

For controlling the speed of the vehicles within certain limit in those restricted zones without the interruption of the drivers, here RF communication method was used for controlling purpose. In order to implement this in public the RF receiver and transmitter are attached along with the vehicle.

These transmitters are programmed to send the clouded signals continuously with certain delay in between. Whenever the vehicle enter into these zones their receivers will receive this code and then the speed of this vehicle is controlled automatically with the help of the micro controller unit present inside the vehicles. The micro controllers are programmed such as to control the speed of



the vehicles whenever it receives such codes. The transmitters are placed to transmit the codes up to a certain distance for which the speed should be reduced.

Using multi sensors

Many accidents at high-ways are taking place due to the close running of the vehicles, all of a sudden if the front vehicle driver reduces the speed or applies brakes, then it is quite difficult for the following driver to control his vehicle, resulting in an accident. To avoid this kind of accident, a warning system which contains an alarm and display system can be arranged at the rear side of each and every vehicle. If any short circuit occurs in the engine part, a smoke sensor detects it and gives an alert to the driver to stop the vehicle.

Whenever any obstacle is detected near to a running vehicle when the driver is sleeping or in a drowsy position, an eye blink sensor detects the eye blink if the eyes have been closed for more than 30 seconds, the vehicle stops automatically.

The ultrasonic sensor system continuously sends signals and monitors any car or other obstacles in front of the car. The distance which an ultrasonic sensor can work may be up to 4 meters. When any obstacle or vehicle is detected by the ultrasonic sensor system, it will send a signal to the embedded board. After receiving this signal, the embedded board sends a signal to the motor to reduce the car speed automatically, which can control the speed immediately. The vehicle is controlled automatically without any manual operation when the vehicle is at a four-meter distance away from the front vehicle; it also gives an alarm to alert the driver.

IFMS(Intelligent fuel management system)

A speed limiter is a governor used to limit the top speed of the vehicle. For some classes of vehicles and in some jurisdictions, they are a statutory requirement, for some other vehicles the manufacturer provides a non-statutory system which may be fixed or programmable by the driver.

The automobile division of the Crayson Group is a fast-growing division of the company which has set its mark in the history by developing numerous technologies for enabling better safety and improving efficiency. Crayson Technologies is a part of the Crayson Group, founded in 1974, driven by the same team with the highest ambition, vision, and strive for perfection. Crayson is the first



company around the world which developed IFMS and used it in speed governors. The research and development division of Crayson is accredited with several award-winning technology in hardware, embedded software as well as in systems program

DESIGN, METHODOLOGY, IMPLEMENTATION

DYNAMIC SPEED LIMITER

The dynamic speed limiter is a system that can be implemented effectively for an efficient and perfectly controlled traffic system. This system can limit the speed of a moving vehicle over an area where the speed has to be restricted and retained with in a predetermined value. The dynamic speed governor consists of mainly two parts ,the transmitter section and the receiver section.

BLOCK DIAGRAM

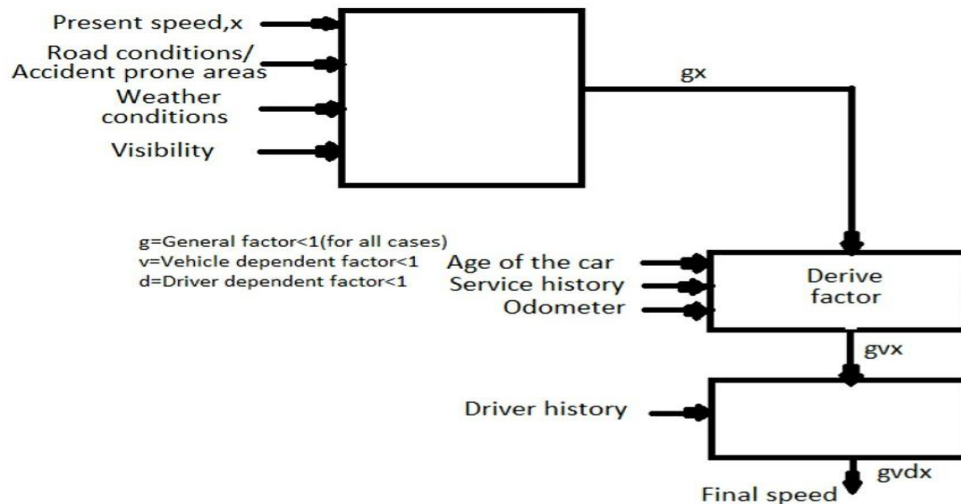
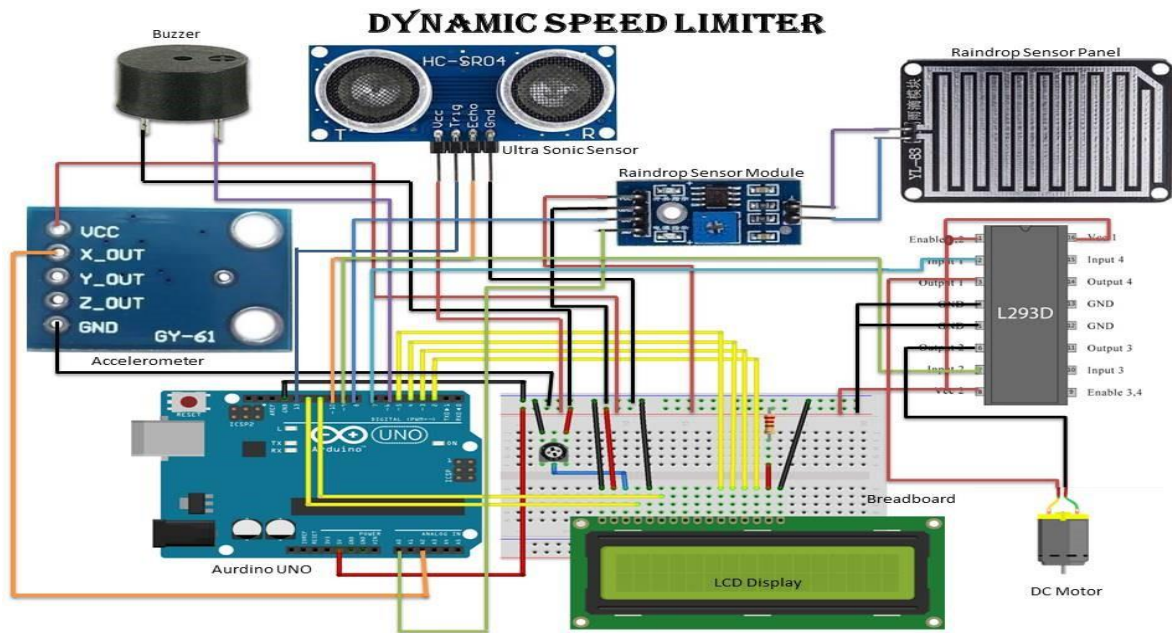


Fig 1.1 In this block diagram mainly we consider three factors they are natural factors like present speed, road conditions, weather conditions , visibility conditions. Derived factors like age of the car, service history, odometer and finally the driver history was also considered.

CIRCUIT



ADVANTAGES

1. Low cost, less complexity
2. Reliable
3. By using this system we can control the speed very easily
4. Easy to implement



REFERENCES

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