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Vehicle Speed Limit Controller at Restricted

Zones

Hanumanthu¹, P Alekhya², N Usha³, Afroz⁴, M Sridhar⁵

Assistant Professor, Dept. of Electronics & Communication Engineering¹ UG Students, Dept. of Electronics & Communication Engineering²⁻⁵ Christu Jyothi Institute of Technology & Science, Jangaon, Telangana, India

Abstract: The principal aim of the project is to reduce vehicle accidents due to over speed near school zone areas. The main aim of this project is to enhance safety by limiting the speed through automated controls. In this the speed limit is send through the transmitter Rf module to receiver Rf module according to that speed limit vehicles should be controlled automatically. the main merit of this project is to reduce reckless driving and accidents by limiting vehicles speed based on locations such as near schools. This project is Developed to control the speed of the vehicle, when it crosses hospital. in front of hospital zone roads a Rf is placed. A RF component is connected is the vehicle. the signal from the component is given to the microcontroller through a driver Section. the vehicle motor is driven by DC power supply. when the RF Component senses the signal from transmitter, it sends Signal to the microcontroller. Immediately controls the driver section to control the speed of the motor therefore when the vehicle crosses the hospitals, the speed of the vehicle will be automatically decreased. This will prevent unnecessary accidents...

Keywords: vehicle accidents

I. INTRODUCTION

This project is totally based on RF Technology. The existing methodologies can't able to reduce the accidents still now, Because of the rash driving of some drivers. Hence speed control is in need to be implemented in all the vehicles. Here is the new idea of ours to install an automated speed control system in the vehicles mainly in the restricted areas. Here setup device as a transmitter where the multiple devices are combined to monitor the speed of the vehicle when the vehicle enters above the prescribed speed and controls it by placing a receiver at the vehicles, based on the signals transmitted the speed of the vehicle get reduced by interfacing a microcontroller. The current speed of the vehicle is sensed by the dc motor and the output of it was given to the microcontroller where it compares the speed with the prescribed limit and the speed is controlled automatically. The technology used in this system to communicate between transmitter and receiver is RF technology, which covers up to 10-100m within its range



Fig1 : Receiver Block

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Fig2 : Transmitter Block

RF TECHNOLOGY FOR SIGNALS TRANSMISSION

This system controls and monitors the overall vehicles in its covered area. By implementing this system, the accidents are reduced in this fast-moving world. In the developed and developing countries, people finds inconvenience with the road accidents, jamming of vehicles because of the drivers who dislike to obey the laws at the restricted zone, where the speed has to be limited as prescribed in that zone by using an automated speed control system to limit the speed automatically using RF technology

II. EXISTING SYSTEM

The existing system for vehicle speed limit control in restricted zones typically involves one or more of the following:

SPEED LIMIT SIGNAGE:

- Static Speed Signs: Traditional road signs indicate the maximum speed limit in specific zones (e.g., schools, hospitals, residential areas).
- Dynamic Speed Signs: These electronic signs display the speed limit and sometimes adjust based on real-time conditions, such as weather or traffic density.

SPEED MONITORING AND ENFORCEMENT:

- Radar Speed Guns: Law enforcement officers use radar devices to monitor the speed of vehicles in real-time.
- Speed Cameras: Automated cameras capture images of vehicles exceeding the speed limit, leading to fines or penalties.
- Speed Humps or Bumps: Physical structures on the road slow down vehicles mechanically.

GPS-BASED ALERTS:

• GPS-enabled navigation systems alert drivers when entering a restricted speed zone.

III. PROPOSED METHOD

The main objective of this system is to reduce the accident rates in the speed restricted zones like school zone, hospital zone and sharp u -turns due to the negligence of the driver to reduce the vehicle speed to limited speed as mentioned in the signboard in that zone.

In this automatic vehicle speed control system.

When the vehicle enters the speed limiting zone the transmitter block starts to work and transmit the signal to the vehicle receiver which is placed in the vehicle, the Rf receiver which is connected with microcontroller process the signals and compares the speed of vehicle.

The Arduino Uno was used as a controller that two-controller were used here one for transmitter control and other for the receiver and other actions to take place based on the program set up in the controller.

The transmitter circuit is powered by dc battery is enough for the working of RF transmitter which is placed near the restricted zones. The driver of the vehicle will be warned to reduce the speed by giving warning alerts through visual or audible alerts for reducing the speed manually by the driver. If the speed of the vehicle is less than the predefined speed programmed in the microcontroller no action takes place.

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If the speed of the vehicle is greater than the predefined speed then the microcontroller controls the speed of the vehicle motor by sending a signal to the motor driver in it and the motor driver used reduces the speed of the electric motor, if rpm of motor decreases which automatically reduces the speed of the vehicle in that particular zone.

IV. RESULTS AND DISCUSSIONS

When motor rotate, the output of the LCD Display is "Vehicle Running". When RF sense the signal, the output of the LCD Display is "Hospital ahead SPEED LOW" After Detected the Restricted Zone, the motor speed is controlled.



Transmitter circuit and receiver circuit



Automatic Speed controller using Robot car

V. CONCLUSION

The speed control operations were conducted effectively through experimentation. We will increase the number of engines and different engine models in this console in the future. We obtained 10 velocity levels for two directions in this experiment by increasing 10 percent and decreasing 10 percent at its rpm. During the project, we experienced a variety of difficulties. All of our efforts, however, will be realised if we were one step closer to creating a smoother

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route to a better future. An automated vehicle safety control is introduced in this paper because it can improve vehicle safety problems and provide the driver with more vehicle operation comfort, which leads to a reduction in the number of vehicle accidents. An Arduino microcontroller is used to implement the design. For voice recognition operation and training, an EasyVR is used. The required action for vehicle speed control is issued based on the vehicleto-vehicle distance calculation. The design has been equipped with numerous other automatic control functions to maintain a proper road and situation focus; radio control, flasher control, light control. The proposed model has been developed, built, and tested, and it has yielded satisfactory results.

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