Speed Checker on Highway

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Abstract- **Now-a-days we hear news about accidents on Highways very frequently. And in most of the cases main reason of accident is over speed. Although all highways do have signboards indicating maximum speed limit for the sake of driver's safety, but still people does not obey highway speed limit. The project mentioned here is "Speed checker and over speed detector for Highways". This project is designed and developed by taking into consideration the problem mentioned above. We have used two sensors in this project. These sensors detect the vehicle speed. Condition is that, the two sensors should be installed at a distance of 100 meters apart from one another. Liquid Crystal Display (LCD display) is connected to this project. This display will show the vehicle speed. It will also intimate user if vehicle speed crossed the maximum speed limit or not. The project also has a Buzzer. Over speed condition is indicated by turning on the Buzzer. Many analysts and policy makers have argued that building more highways is an Ineffective response to congestion: specifically, that it is infeasible to add enough highways. Capacity in large urban areas to provide much relief. But this making of highways is just showing the path for accidents because of no speed limits in these highways. In order to overcome this problem we have designed equipment called as Speed checker for highways. The proposed system will check on rash driving by calculating the speed of a vehicle using the time taken to travel between the two set points at a fixed distance. A set point consists of a pair of sensors comprising of an IR transmitter and an IR receiver, each of which are installed on either sides of the road. The speed limit is set by the police who use the system depending upon the traffic at the very location. The time taken by the vehicle to travel from one set point to the other is calculated by control circuit. Based on that time it then calculates the speed and displays that on seven segment displays. Moreover if the vehicle crosses the speed limit, a buzzer sounds alerting the police. This concept can be extended in future by integrating a camera with the system which could capture the image of the number plate of the vehicle to sends that to the traffic authorities.**

Key Words- consideration, sensors, congestion, IR

I. THEORY

A. *Principle of Operation*

The system basically comprises two laser transmitter-LDR sensor pairs, which are installed on the highway 100 meters apart, with the transmitter and the LDR sensor of each pair on the opposite sides of the road. The installation of lasers and LDRs is shown fig below. The system displays the time taken by the vehicle in crossing this 100mdistance from one pair to the other with a

resolution of 0.01 second from which the speed of the vehicle can be calculated as follows:
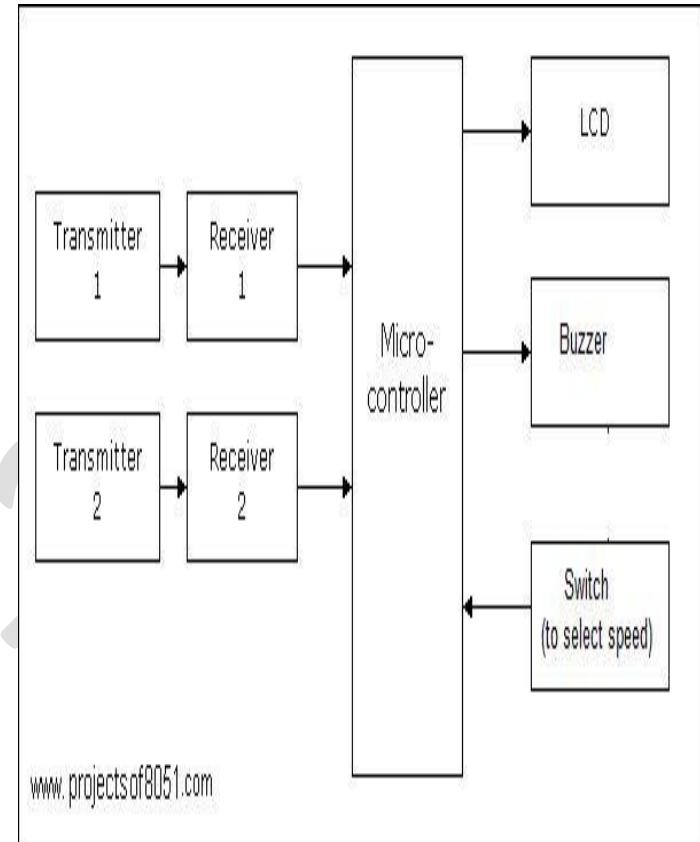

FIG.1-block diagram of speed checker on   highway

$$\text{Speed (kmph)} = \text{Distance/Time}$$

This proposed system consists of a power-supply block, microcontroller, IR sensors, Relays, Buzzer, Lamp and Displays. The entire system gets it power from the power-supply block and the microcontroller acts as the major component of the whole systems. IR sensors are placed on either side of the road, for detecting the speed limit of the vehicle. The microcontroller is programmed by using embedded C programming that calculates the time duration between two sensors, correspondingly gives the speed. If the speed limit exceeds then relay gets activated and the lamp gets 'on' while the buzzing sound gives indication to the police that the vehicle is crossing the speed limits and displays the information on the LCD Display.

Until now we have seen about speed checker to detect rash driving on highways using 555 timer and microcontroller. By adding another advanced wireless technology, we can make the circuit to operate remotely to achieve an efficient rash-driving control system.
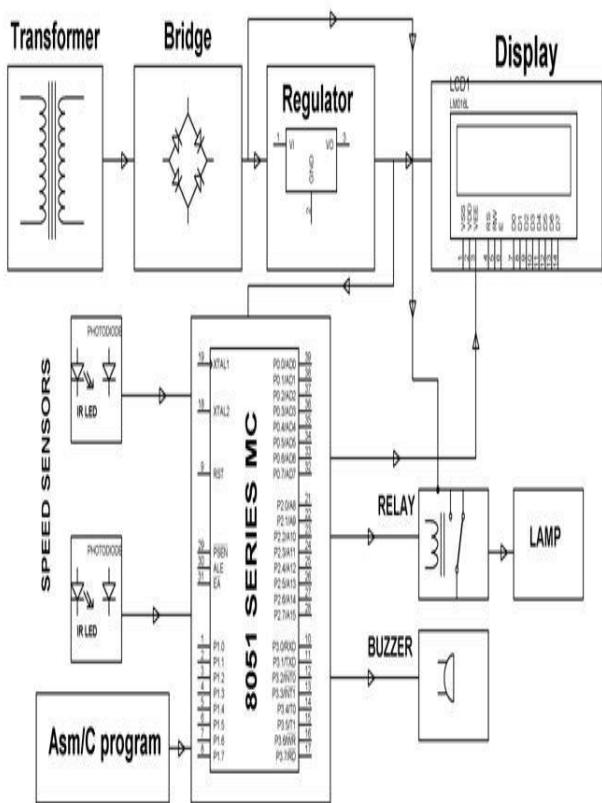
Fig.2- circuit diagram of speed checker on highway

Vehicle Speed = Distance between 2 sensors / Time taken by the timer

This project contains following blocks

1. Microcontroller – We have used 89s51 microcontroller which is 8051 series microcontroller.

2. Sensors – We have used IR sensors i.e. IR transmitters and IR receivers.

II. APPLICATIONS AND ADVANTAGES

1. This can be used at Highways (National Highways, State level Highways).
2. This project can also be used inside university campus areas or inside any company's premises.

III. FUTURE DEVELOPMENT

1. A CCTV Camera can be placed on the highway. If any vehicle has crossed the maximum speed limit then this camera will be triggered to take a picture of the vehicle.
2. We can add voice announcement system. It will intimate the driver that he/she has crossed the over speed condition.
3. We can implement the GSM technology. So that the nearest highway security authorities will be informed about the vehicle which has over speed.

Fig3. - speed checking on highway

IV. ADVANTAGES

1. There are many accidents due to high speed, so by using this technology on highway, we can stopped these types of accidents.
2. The people also safe on road during cross it.

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