

Car Speed Detection System

Abstract:

This research paper is intending to develop the car speed detection system using NodeMCU board, IR Sensors, Sound Sensor, Bread board and Cables. This system will allow us to detect accurate speed. This system will give us a broad view to deploy the project in real life. The speed limit is pre-defined by traffic regulatory system. With the help of IR sensor, we can get speed in terms of either kmph or mph. To view the speed of the car, we have to connect our circuit with Computer or Laptop. With the help of Sound Sensor, we can measure sound pollution.

Keywords: NodeMCU board, IR Sensors, Sound Sensor, Bread board, Cables.

Introduction:

Over speed is crucial issue nowadays. Most of the vehicles runs beyond the speed limit. To prevent people from breaking rules, it is necessary to have a good implementation of technology through which we can avoid misuse of laws. One solution to this situation can be digital Car Speed Detection System. We will build a system with the help of NodeMCU board, IR Sensors, Bread board and Cables. We will also require a cable for connecting NodeMCU board with Computer or Laptop. We will keep distance between two IR Sensors as 6 cm. Will provide VCC and Ground to IR Sensor from NodeMCU board. We will read the output on computer screen in Serial Monitor of Arduino IDE. This system will give appropriate speed. With the help of Sound Sensor, we can measure sound pollution. This will help us to detect vehicle which breaks rules applied in accordance with noise pollution. We can take strict action against them.

Literature Survey:

As IR Sensors and Sound Sensor being the core disciplines of the today's world technology field. Many technologies are available to measure speed of travelling car. One of the technology can be by using hardware sensors in the car itself. It supposed to have speed sensors in the car which detect the rotations per minute of the car. This can be used to detect the speed of the car and then transfer it wirelessly [1]. Other technology could be LIDAR technology. It is the technology used in the speed guns held by the police personnel to check the speed of the moving car [1]. Also image differentiation is used in the vehicle detection process. By using basic scientific velocity theory, they proposed they can calculate the speed of moving vehicle in the video scene from the known distance and time, which the vehicle has moved beyond [2]. Also a technology in which moving vehicle video from any video camera or mobile source is utilized. The algorithms are implemented in C language using OpenCV and Visual Studio. Later this code can be ported to a simple processor, where vehicle speed can be measured. E.g: A simple smart phone with average processing capacity [3]. A system that will check on rash driving by calculating the speed of vehicle using the time taken to travel between the two set points at a fix distance. A set point consists of pair of sensor comprising of an IR transmitter and IR receiver, each of which are installed on either sides of road. The time taken

by the vehicle to travel from one set point to the other is calculated by control circuit. Based on the time it then calculates speed and displays that on seven segment displays. Moreover, if the vehicle crosses the speed limit, a buzzer sound alerting the police [4]. A system consisting of two modulated infrared emitters at the receiver consists of photodiode with an optical filter. Both mounted above the plane of detection. Laser beam will be reflected in the pavement and detected by the photodiode. This signal will be amplified and filtered to discard other optical signals different than 1kHz modulated laser and then, processed by computational software for analysis. Every time a vehicle crosses through the infrared light beam path, the system will count it and obtain the occupancy [5]. A system with new type of traffic and flash flood sensors based on combination of ultrasonic rangefinder with one or multiple passive infrared temperature sensors. This sensor combination can be used as a backbone for dual urban traffic flash flood wireless sensor network, since it can monitor vehicle speed counts, density and vehicle types as well as pluviometry water presence and water level with relatively high accuracy [6]. But these systems are proposing expensive techniques and security.

We have to implement a system that will work efficiently with convenient expense. We have to only detect speed of moving car with noise generating by that car. So, in this paper we are invented such type of system where we can detect speed of moving car and noise generating by that car using NodeMCU board, IR sensors, Sound sensor, bread board and some cables. By implementing this system, we are allowed to calculate accurate speed as well as noise generating by that car.

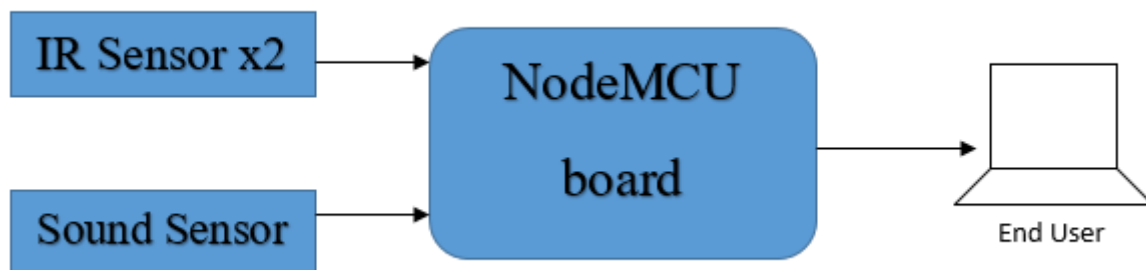


Fig. Block diagram of Car Speed Detection System

Conclusion and Future Scope:

This system will provide an efficient solution to Car Speed Detection by using mentioned components. By implementing this system, it will be efficient to detect the peoples who so not follows rules and regulations made for safety of public. The enhanced digital use of electronic components will help to bring down the over speed issue. This proposed system has more features will be added for the future scope for enhancing better security.

In this we only detected speed of the car and the noise generated by the car but in upcoming days we will implement the system which is an auto-triggered report about the over speeding and over honking to the nearest traffic police along with number of the car. This will improve our proposed system to be more secured and better as it will easily handle the situation.

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