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Rash Driving Detection System on Highway

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Abstract - *In India accidents on highway and road due to rash driving and over speed cost them loss of life of people and loss of billions of rupees in Indian economy. The purpose of this project is to develop safety on highway and road by detecting the rash driving and over peed of vehicles which allows violators to be detected rash driving detection system is used to detect on over speed of vehicle. Existing system is not able to detect the speed of the vehicle and to identify the number plate of the vehicle. This system actually find out which vehicle violating the Traffic rules by over speeding and identify of that vehicle. It begins with the analysis of the speed of the over speed vehicles. Vehicle is identified by calculating the speed of the vehicle by sensing the speed of that vehicle. When any driver while driving make over speed of his vehicle the IR sensor sensed the speed of the vehicle. Thus the speed of the vehicle can be identified. Other aspects discussed include the various forms of rash driving practices, methodology for detection of speed, appropriate conclusion and recommendations were given from gathered information*

1.INTRODUCTION

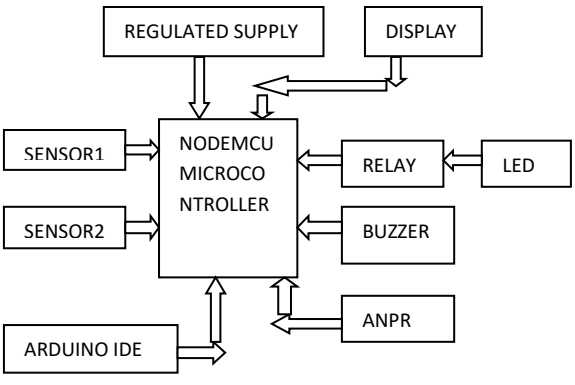
Accident due to rash driving on highway is very common problem in our country, where casualties and loss of human life and economic loss is tremendous. In India, every year there is an increase in the number of accidents due to rash driving on highways, which results in loss of human life, economic loss and traffic jam and which we are facing the frequent problems of road safety, over speed, overtake of vehicle on highway. Accident on highway is very major serious concern, and this issue is needed to be solved as early as possible. The rash driving monitoring id an important research in road safety on highway and prevention of number of accidents became a big problem for the traffic authorities. In this abstract, we propose the rash driving speed detection system to detect the rash driving, over speeding of the vehicle. The proposed system will be installed on highways, which any vehicles violates the traffic speed rules by over speeding, rash driving, it will send the data of that vehicles to the Traffic Authorities. In this system two Infrared sensor is used, here one sensor is placed on one place and second sensor is placed away from first sensor. These two sensor are connected with microcontroller. If rash driving, over speeding occurs, then these sensors sense the speed of the vehicle, then relay will activate, LED lamp will glow and buzzer starts an alarming. The information will then be quickly processed by the microcontroller and acknowledgement will be sent to the traffic authority.

2.LITERATURE SURVEY

1: T. Shyam Ramanath, A. Sudharsan : carried out research to monitor the driver by using advanced cell sensors. Rash driving is detected using increasing speed sensors. There an electronic unit with two sensors, GPS and accelerometer, model of Hypothetical by increasing speed and speed information analysis to distinguish Rash driving and over speed of vehicle.

In this paper, The Author proposed a method for predicting driver style. In this method, They divided the driver style into three types, into Normal, Aggressive and very aggressive. They gathers data from the accelerometer and added it to a single classified on Dynamic Time Warping Algorithm. If a drivers style become aggressive this system gives signal in the audio .

3. PROPOSED TECHNIQUE



4. METHODOLOGY

Two IR sensors is interfaced with nodeMCU and regulated supply is given to the NodeMCU. . One sensor is placed at one position and second sensor is placed at another position with some distance between two sensors. If any vehicle move at a normal speed the sensors detect normal

speed and the system will act as a normal operation. When any vehicle move with rash driving and over speed occur on highway, this sensors sense the speed of the vehicle, and this speed is fed to the nodeMCU and relay will activate. After the relay activate, LED lamp will glow and buzzer starts an alarming. The ANPR camera will capture the image of the vehicles number plate and image of the vehicle driver. The gathered information is send to the Traffic Authorities and alert the Traffic personnel.

The Traffic authorities will identify the vehicle from the data and name of the vehicle Driver. The Traffic Authorities will punish the vehicle driver for violating the traffic rules by issuing penalties.

Here we used 12 volt step down transformer to step down the 230V into 12V so the power supply will be 12 volt. System will require 5 Volt and we used voltage regulator 7805 and we get 5 volt power supply which is given to our system. 5V supply is given to nodeMCU.

Thus by evaluating and analyzing the speed differences and calculating the speed of the Vehicle, this prevents the number of road accidents on highway due to rash drving and will reduce the number of casualties

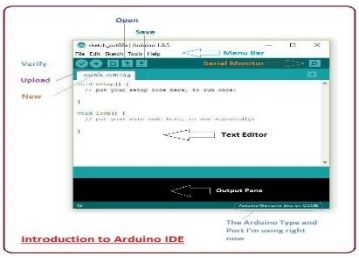
5. COMPONENT DETAILS

NodeMCU microcontroller board : NodeMCU is an open source IoT platform. It includes firmware which runs on the ESP8266 Wi-Fi SoC from Espressif system and hardware which is based on the ESP-12 module. Voltage regulator is used to keep the voltage at 3.3 V. It can supply up to 600mA. The regulator output is broken out to one sides and labeled as 3V3. This pin is used to supply power to external

- ADC channel- A 10 bit ADC channel.
- UART interface – used to code serially.
- PWM outputs – its pins used for LED purpose.
- SPI, 12C and 12S – to hook up all sorts of senors and peripherals.

Software Details

The Arduino based project provides the Arduino integrated development environment (IDE),Which is a cross-platform application written in the programming language Java. It originated from the IDE for the language processing and wiring.



ANPR (Automatic Number Plate Recognition) Camera :

ANPR is a technology that uses optical character recognition on images to read vehicles registration plate to create vehicle location data. It read the number plate of passing vehicles and them in database of vehicles. It has a high accurate system , it has the capability of reading vehicles number plates without intervention of human. It is a technological tool which is used in providing .assistance to the enforcement of the law as well as ensuring safety on highway roads.

Solid State Relay:

Solid state uses solid state components to perform the switching operation without moving any parts. To control the energy required is much lower as compared to the output power to be controlled by this relay that results in the power gain higher when compared to the electro magnetic relays. A solid state relay is an electronic switch device and it is used for the purpose of ON or OFF, when an external supply voltage is applied to the control terminals of solid state relay.

LIQUID CRYSTAL DISPLAY (LCD) :

LCD it is a flat panel display or electronically modulated optical device and it uses the properties of light modulating of liquid crystals combined with polarizers. 16X2 and 20X2 LCD are mostly connected to the microcontroller. It means 16 characters per Lines by 2 lines and 20 characters per line by 2 lines.

LED :

LED are semiconductor device and it is made out of silicon. When it glows, it emits photons Current passing through the LED. LED produces a light by heating a metal filament. LED are lower energy Consumption, has longer lifetime, improved robustness, smaller size and fast switching. It is the special type of PN junction diode. The LED is specially doped and it is made of a special type of semiconductor.In the forward biased state LED emits light

INFRARED SENSORS :

An IR (Infrared) is the electronic device and it measures and detects infrared radiation of the surrounding environment. Two types of Infrared sensor 1- active sensor and 2- passive sensor.

6. CONCLUSION

In our country accidents due to rash driving and over speeding especially on highways is Common and it is increasing every year. It causes casualties and loss of human lives in large Numbers. To solve this problems government need to think of an idea to provide safety and Security on highway roads while driving. With the help of this system we can identify the vehicle and person accurately who violates the rules while driving. We can identify the location of the vehicle. The proposed system is little bit complex, but it is an automated speed and rash driving. It saves the human life and increase the safety level on highway roads.