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Intelligent Speed Limit Alert and Control System

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A B S T R A C T

Nowadays, speed limit control systems are getting updated bigger and bigger , because of it more control systems are introduced. The purposed of our system automatically controls the speed of vehicles at speed restricted areas such as school and hospitals, The main reason behind developing this project is to avoid accident of vehicles at speed limit zones and also to help the passengers to cross the road safety without facing any danger from high speed vehicles. Peoples nowadays are keen and stressed to their work so they have no conscious when driving, so they Normally don't follow any rules and regulations, because of it more accidents occurs. the vehicle drivers not consider the passengers who crosses road in speed limited areas and drive their vehicles at high speed. So now accidents are increasing in these areas. The traffic police control the traffic but they are not able to avoid the accidents completely. So to avoid this kind of accidents occurring in speed restricted zones we proposed the system which detects the zone and controls the speed of the vehicle. To solve this problem we developed the proposed system, which not interrupts the vehicle drivers and control the speed of the vehicles up to certain limit in these speed restricted zones automatically and displays the speed limit and also the zone used The LCD displays the lane speed limit. Even through the traffic police controls them we cannot achieve full response from them. Also it is not possible to monitor those areas at all time to regulate their speed. The project is very useful for the common people to walk safely in the roads of speed restricted zones and also drivers can ride their vehicles safely.

Keywords: Vehicle Speed Limit And Display, PIC, A Vehicle Module.

1. Introduction

The Indian Law Commission has an advisory to limit the speed of vehicles at critical zones, to reduce the road accidents and to make a peaceful environment for the people. 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 device as a tag 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 readers 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 RFID tag and reader, which covers up to 10-100cm within its range. This is comparatively cheaper 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

Now–a-days lots of accident happen on the signal due to increase traffic and also due to rash driving of the drivers. As we know when we accelerate the vehicle the engine starts running at higher speed, and when more throttle is opened, the engine suctions sucks more quantity of load (air + fuel), which burns and produces more amount of energy in the form of radiations. In this system we have implemented the speed limiting mechanism which will be effective for the reduction of fuel towards the engine. The objective of the System is to present a conceptual model of a microcontroller based Automatic variable electronic speed controlling. System that can be implemented to control the speed of any vehicle depending on the speed limit. In this system the main element is Speed Limiting mechanism. The Limiting mechanism is a device which is used for controlling speed of an engine based on the load requirement. The basic Limiting mechanism sense speed and sometimes load of a prime mover and adjust the energy source to maintain the desired level.

So its simply mention as a device giving automatic control or limitation of speed. The Limiting mechanism is control mechanisms and it works on the principle of feedback control. Its basic function is to control the speed within limits when load on the prime mover.

2. Literature Survey

Ankita Mishra et al. [1] worked on speed control system by the use of RF design. The main purpose is to design the controller for smart display which is meant for the vehicle's speed control and to monitor the speed zones which have speed limits, and which can operate on an associated embedded system. Smart Display & Control (SDC) can be custom designed so that they can fit into dashboard of the vehicle, and display the information available on the vehicle.

Leite A.V. et al. [10] determined a way for estimation of speed in induction motor with sensor less control. Extended kalman filter was used as speed detection technique. This algorithm used reduce order state space model.

Kassen N. et al. [11] proposed a vehicle speed estimation technique which was reliable and strong. This helps the user with driving guide and lets him not to join the traffic jam. This approach is based on RF. This system gives accuracy of100% for speed estimation and with accuracy of 90% in typical streets.

Gummarekula sattibabu, et.al., Automatic vehicle speed control with wireless in-vehicle road sign delivery system using arm 7:The objective is to design the electronic display controller for Vehicle Speed control and monitor the zones with the help of the embedded systems and they designed to display the information on the dashboard about the zone.

3. Proposed System

The proposed prototype model is made of;

3.1 Hardware:

The major components used are PIC micro controller, Mosfet, vehicle setup with motor. The controller used here is PIC microcontroller. This controller is preferred more because it has minimum power consumption and easily programmable interface with high efficiency. Components include RFID tag and reader, MOSFET, LCD display is also used.

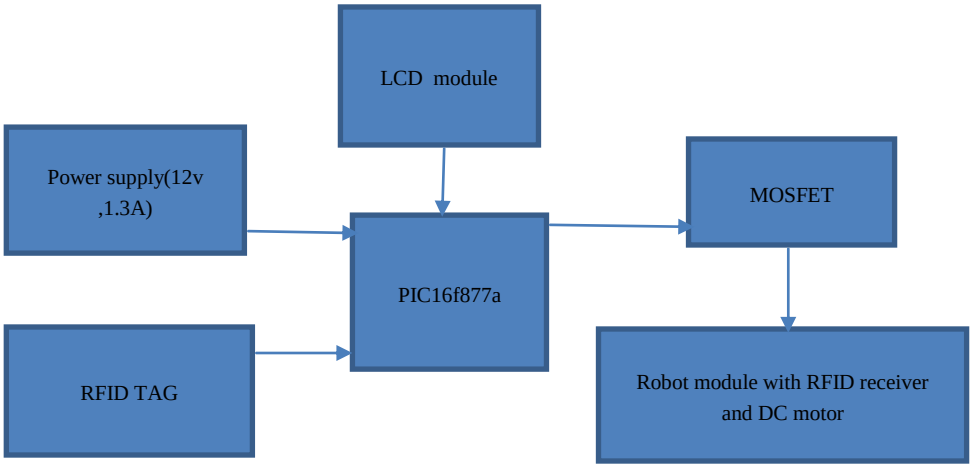


Fig 1 - Block diagram

A) PIC microcontroller: PIC microcontrollers (Programmable Interface Controllers), are electronic circuits that can be programmed to carry out a vast range of tasks.

B) LCD display: It is used to display the output from the microcontroller. LCD (Liquid Crystal Display) is a type of flat panel display which uses liquid crystals in its primary form of operation

C) RFID tag and reader: A security badge is an RFID tag that contains a unique ID scanned by the reader. When the badge is detected by the reader, the reader will read the tag data, process the data if needed, and then pass the data to be validated by the access control system.

D) MOSFET: The main principle of the MOSFET device is to be able to control the voltage and current flow between the source and drain terminals.

3.2 Software:

The basic software requirement is MPLAB ide that helps us in interfacing the motor with the control actions.

4. Results and Discussion

As stated here the controller is connected to MOSFET which is used to provide torque for the dc motor to run. So whenever the zone is detected by the reader it sends control action to controller which sends necessary voltage or current to operate the vehicle. Finally the result and zone detections are displayed in LCD display

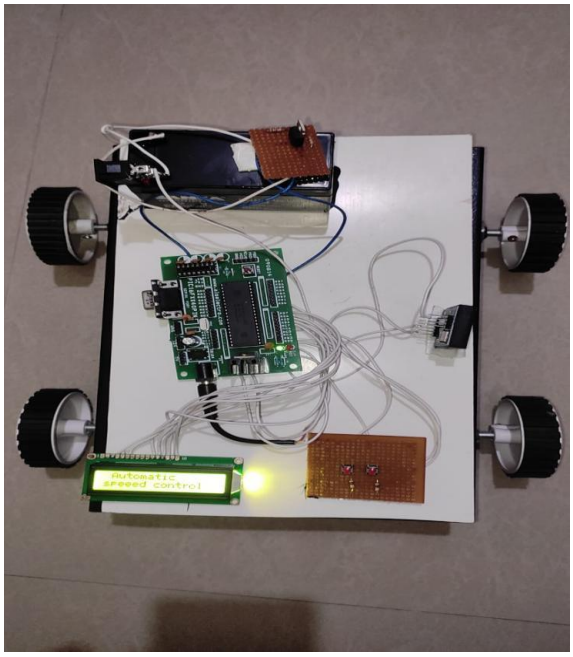
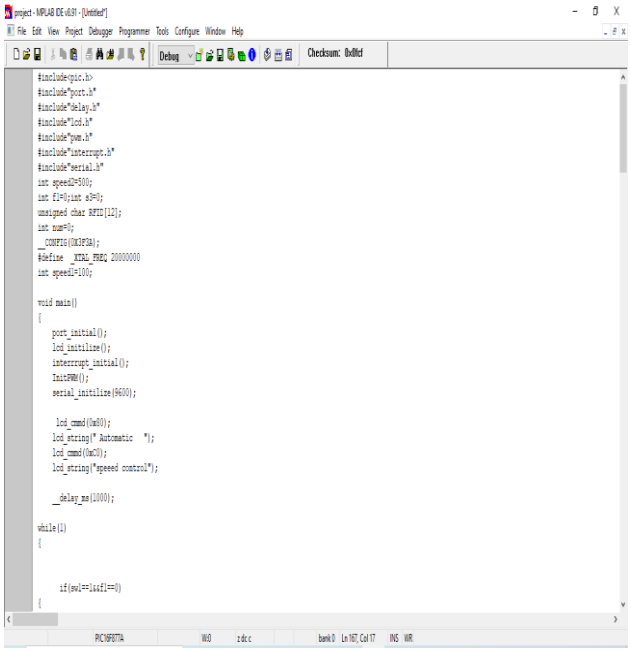


Fig 3- Software Implementation



```
#include<pic.h>
#include"port.h"
#include"delay.h"
#include"lcd.h"
#include"pwm.h"
#include"interrupt.h"
#include"serial.h"
int speed2=500;
int f1=0;int a3=0;
unsigned char RFID[12];
int num=0;
__CONFIG(0X3F3A);
#define _XTAL_FREQ 20000000
int speed1=100;

void main()
{
   port_initial();
   lcd_initilize();
   interrupt_initial();
   InitPWM();
   serial_initilize(9600);

    lcd_cmd(0x80);
   lcd_string(" Automatic   ");
   lcd_cmd(0xC0);
   lcd_string("speed control");

   __delay_ms(1000);

while(1)
{


    if(swl==1&&f1==0)
{
```

Fig 2-Hardware implementation

5. Conclusion

This study shows the role of reducing vehicle speed automatically and its contributions to the safety of pedestrians and road users. It is found that the use of the vehicle speed control system contributes a lot in minimizing the accident rate that occurs due to the negligence of the driver to disobeying roadside signboards in special zones. Though the VSC system in a vehicle is effective, they help much in terms of improving safety, keeping both the passenger safety and the pedestrians on the roads. Considering the automatic VSC system is incorporate in school zones or hospital zones which allows the vehicle to act independently to slow down the vehicle when the vehicle comes at a higher speed which minimizes the accidents due to negligence of the driver actively and in a way more effectively. Hence it is concluded from the above study that the uses of Automatic vehicle speed control systems in restricted zones minimize unwanted accidents to a great extent compared to normal behavior.

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