

# REAL TIME BIOMETRIC BASED VEHICLE SECURITY SYSTEM OF SPEED CONTROL

G.Deivamani<sup>1\*</sup>, M.Pullaiyannan<sup>2\*</sup>, K.Sathishkumar<sup>3\*</sup>, S.Sathish<sup>4\*</sup>, M.Vishwa kumar<sup>5\*</sup>

<sup>1</sup>Assistant Professor, Dept. of EEE, Paavai Engineering College, Namakkal

<sup>2</sup>Undergraduate Students, Dept. of EEE, Paavai Engineering College, Namakkal

<sup>3</sup>Undergraduate Students, Dept. of EEE, Paavai Engineering College, Namakkal

<sup>4</sup>Undergraduate Students, Dept. of EEE, Paavai Engineering College, Namakkal

\*\*\*

**Abstract-** In This project has an aim to control the speed of two wheeler automatically in cities and also in restricted areas such schools, parks, hospitals and in speed limited areas etc. Now a days in a fast moving world all the peoples are not have self-control. Such peoples are driving vehicles in a high speed. The police are not able to monitor all those things. This paper provides a way for how to control the speed without harming others. Driver does not control anything during such places; controls are taken automatically by the use of electronic system. In this project we using RF for indicating the speed limit areas it is placed front and back of the restricted zones.

RF receiver is placed inside the vehicle. Speed is acquired by the help of speedometer in the vehicle. The controller compares the speed. If it exceeds the limited speed the controller controls taken automatically. In addition we added biometric and fingerprint based password security system. This system will help for the user of vehicle and prevent from theft.

If user forget the password they can use their fingerprint to unlock the vehicle. Fingerprint is match after enter the password the motor is start. After receiving this signal RF transmitter sends a signal to the motor to reduce the vehicle speed automatically which can control vehicle speed immediately. Vehicle is controlled automatically without any manual operation when the vehicle is at 50 meter distance away from the front school zone.

## INTRODUCTION:

At present accidents are mostly occurs due to rash driving and over speed in road. People do not bother about human lives. The accidents rates are increasing year to year by more vehicles on to ground. The government has taken too many steps to prevent this kind of things but it not enough. Most of the manufactures has developed a laser based control system but its cost is too high. But it is again a difficulty when human crosses the road it cannot detect properly so we tried to develop a system to control these things in a simple manner. At first we have an idea to use laser diodes but it was costly so we go for IR module again there is a draw back in using this it works under line of sight so finally decided to use RF.

Unfortunately, drivers usually do not take these speed limits seriously and ignore them. Road accidents can be prevented by adopting measures such as Traffic management, improving quality of road infrastructure and safer vehicles. To ensure decline in accidents and to improve road safety, speed control techniques such as speed control in school and hospital zones by using RF transceiver.

The RF transmitter is placed in the speed limit areas and RF receiver is placed in the system which is placed inside the vehicle. RF transmitter transfers the information about the speed of the zone to the receiver which is interfaced with microcontroller. The current speed will be sensed by the proximity sensor using dc motor that also sends information to controller. The controller compares both speed, if speed of vehicle is greater than speed limit of the area then message is given to the driver through LCD Display to reduce the speed. And if driver does not decreases the speed, the control transfers automatically. But the driver again operate it manually and exceeds the limited speed the message is given to the nearest RTO Office through GSM. The message contains the current speed and number of the vehicle.

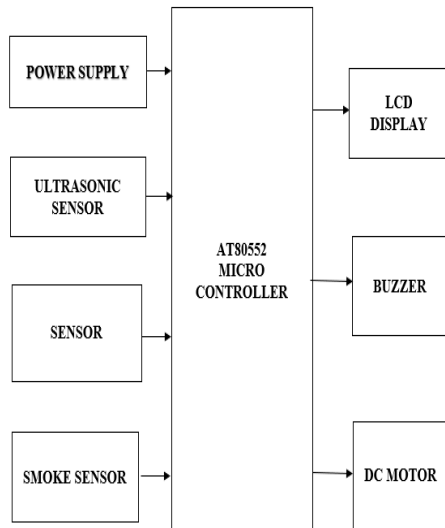
## EXISTING SYSTEM

Objective of this project is to develop a system to keep the vehicle secure and protect it by the occupation of the intruders. The main aim of the project to develop a system automatic speed control of vehicle and accident avoidance using eye blink sensor and ultrasonic sensor .whenever any obstacle is detected in running vehicle depends on distance automatically control the speed of vehicle. The driver in sleeping /drowse position the eye blink sensor detects the eye blink is not more than 30 sec eye closed vehicle stop the automatically, it is not manually. Give alarm to driver alert.

The ultrasonic sensor system continuously sends signals and monitors any car or other obstacles are in front of car. The distance up to which ultrasonic sensor can work may be up to 4 meter. When any obstacle or vehicle detected by ultrasonic sensor system it will send signal to the embedded board. After receiving this signal embedded board sends a signal to the motor

to reduce the car speed automatically which can control car speed immediately. Vehicle is controlled automatically without any manual operation when the vehicle is at 4 meter distance away from the front vehicle. Also give alarm to alert to the driver.

**BLOCK DIAGRAM**



**PROPOSED SYSTEM**

At present accidents are mostly occurs due to rash driving and over speed in road. People do not bother about human lives. The accidents rates are increasing year to year by more vehicles on to ground. The government has taken to many steps to prevent this kind of Things but it not enough. Most of the manufactures has developed a laser based control system but its cost is too high. But it is again a difficulty when human crosses the road it cannot detect properly so we tried to develop a system to control these things in a simple manner. At first we have an idea to use laser diodes but it was costly so we go for IR module again there is a draw back in using this it works under line of sight so finally decided to use RF.

Not take these speed limits seriously and ignore them. Road accidents can be prevented by adopting measures such as Traffic management, improving quality of road infrastructure and safer vehicles. To ensure decline in accidents and to improve road safety, speed control techniques such as speed control in school and hospital zones by using RF transceiver.

**WORKING**

This project is developed based on EMBEDDED and RFTechnology. When a vehicle enters a Danger Zone then the signal will be detected by the Rx which was transmitted by the Tx already placed in the Zone. The Signal received will be decoded by the microcontroller

and alert the driver through a LCD Screen. According to signal received by Microcontroller controls the DC Motor Speed after a few seconds from the time it received the signal.

The signal data is encoded by the encoder and the RF transmitter transmits the signal through antenna. On the receiver end, the antenna receives the signal and decodes it using decoder which is then sent to micro controller. Based on the micro controller output it is passed to car unit which then alters and controls the speed of the car.

**Encoder:**

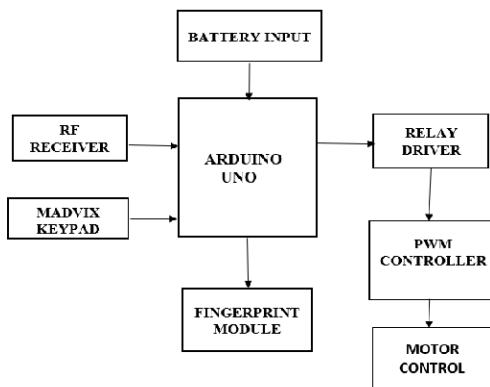
In this circuit HT 640 is used as encoder. The 3<sup>18</sup> encoders are a series of CMOS LSIs for remote control system application. They are capable of encoding 18 bits of information which consists of N address bit and 18-N data bits. Each address/data input is externally trinary programmable if bonded out. It is otherwise set floating internally. Various packages of the 3<sup>18</sup> encoders offer flexible combination of programmable address/data is transmitted together with the header bits via an RF or an infrared transmission medium upon receipt of a trigger signal. The capability to select a TE trigger type further enhances the application flexibility of the 3<sup>18</sup> series of encoders.

In this circuit the input signal to be encoded is given to AD7-AD0 input pins of encoder. Here the input signal may be from key board, parallel port, microcontroller or any interfacing device. The encoder output address pins are shorted so the output encoded signal is the combination of (A0-A9) address signal and (D0-D7) data signal. The output encoded signal is taken from 8<sup>th</sup> which is connected to RF transmitter section.

**RF Transmitter:**

Whenever the high output pulse is given to base of the transistor BF 494, the transistor is conducting so tank circuit is oscillated. The tank circuit is consists of L2 and C4 generating 433 MHz carrier signal. Then the modulated signal is given LC filter section. After the filtration the RF modulated signal is transmitted through antenna.

## BLOCK DIAGRAM



### RF Receiver:

The RF receiver is used to receive the encoded data which is transmitted by the RF transmitter. Then the received data is given to transistor which acts as amplifier. Then the amplified signal is given to carrier demodulator section in which transistor Q1 is turn on and turn off conducting depends on the signal. Due to this the capacitor C14 is charged and discharged so carrier signal is removed and saw tooth signal is appears across the capacitor. Then this saw tooth signal is given to comparator. The comparator circuit is constructed by LM558. The comparator is used to convert the saw tooth signal to exact square pulse. Then the encoded signal is given to decoder in order to get the decoded original signal.

### Decoder:

In this circuit HT648 is used as decoder. The 3<sup>18</sup> decoder are a series of CMOS LSIs for remote control system application. They are paired with 3<sup>18</sup> series of encoders. For proper operation a pair of encoder/decoder pair with the same number of address and data format should be selected. The 3<sup>18</sup> series of decoder receives serial address and data from that series of encoders that are transmitted by a carrier using an RF or an IR transmission medium. It then compares the serial input data twice continuously with its local address. If no errors or unmatched codes are encountered, the input data codes are decoded and then transferred to the output pins. The VT pin also goes high to indicate a valid transmission.

The 3<sup>18</sup> decoders are capable of decoding 18 bits of information that consists of N bits of address and 18-N bits of data. To meet various applications they are arranged to provide a number of data pins whose range is from 0 to 8 and an address pin whose range is from 8 to 18. In addition, the 3<sup>18</sup> decoders provide various combinations of address/ data numbering different package.

In this circuit the received encoded signal is 9th pin of the decoder. Now the decoder separate the address (A0-

A9) and data signal (D0-D7). Then the output data signal is given to microcontroller or any other interfacing device.

### I/O PORTS

Some pins for these I/O ports are multiplexed with an alternate function for the peripheral features on the device. In general, when a peripheral is enabled, that pin may not be used as a general purpose I/O pin. File can be accessed either directly or indirectly through the File Selected Register (FSR). There are some Special Function Registers used by the CPU and peripheral modules for controlling the desired operation of the device. These registers are implemented as static RAM. The Special Function Registers can be classified into two sets; core (CPU) and peripheral. Those registers associated with the core functions.

#### Instruction set summary:

Each PIC 16f877 instruction is a 14-bit word, divided into an OPCODE which specifies the instruction type and one or more operand which further specify the operation of the instruction. The PIC16F877 instruction set summary in Table 2.13 lists **byte-oriented**, **bit-oriented**, and **literal and control** operations. It shows the opcode Field descriptions.

For **byte-oriented** instructions, 'f' represents a file register designator and 'd' represents a destination designator. The file register designator specifies which file register is to be used by the instruction. The destination designator specified where the result of the operation is to be placed. If 'd' is zero, the result is placed in the w register. If 'd' is one, the result is placed in the file register specified in the instruction.

For **bit-oriented** instructions, 'b' represents a bit field designator which selects the number of the bit affected by the operation, which 'f' represents the address of the file in which the bits are located. For literal and control operations, 'k' represents an eight or eleven bit constant or literal value.

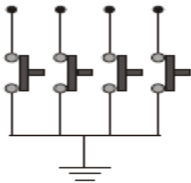
The instruction set is highly orthogonal and is grouped into three basic categories:

- **Byte-oriented** operations
- **Bit-oriented** operations
- **Literal and control** operations

All instructions are executed within one single instruction cycle, unless a conditional test is true or the program counter is changed as a result of an instruction. In this case, the execution takes two instruction cycles with the second cycle executed as a NOP. One instruction cycle consists of four oscillator periods. Thus, for an oscillator frequency of 4 MHz, the normal instruction execution time is 1 ms.

## KEYPAD

A numeric keypad, or num pad for short, is the small, palm-sized, seventeen key section of a computer keyboard, usually on the very far right. The numeric keypad features digits 0 to 9, addition (+), subtraction (-), multiplication (\*) and division (/) symbols, a decimal point (.) and Num Lock and Enter keys. Laptop keyboards often do not have a numpad, but may provide numpad input by holding a modifier key (typically labelled "Fn") and operating keys on the standard keyboard.



## KEYPAD CIRCUIT

Numeric keypads usually operate in two modes: when Num Lock is off, keys 8, 6, 2, 4 act like an arrow keys and 7, 9, 3, 1 act like Home, PgUp, PgDn and End; when Num Lock is on, digits keys produce corresponding digits. These, however, differ from the numeric keys at the top of the keyboard in that, when combined with the Alt key on a PC, they are used to enter characters which may not be otherwise available: for example, Alt-0169 produces the copyright symbol run them is on board.

## LCD DISPLAY

LCD's also are used as numerical indicators, especially in digital watches where their much smaller current needs than LED displays (microamperes compared with mill amperes) prolong battery life. Liquid crystals are organic (carbon) compounds, which exhibit both solid and liquid properties. A 'cell' with transparent metallic conductors, called electrodes, on opposite daces, containing a liquid crystal.

## LCD DISPLAY CIRCUIT

Above is the quite simple schematic. The LCD panel's *Enable* and *Register Select* is connected to the Control Port. The Control Port is an open collector / open drain output. While most Parallel Ports have internal pull-up resistors, there are a few which don't. Therefore by incorporating the two 10K external pull up resistors, the circuit is more portable for a wider range of computers, some of which may have no internal pull up resistors.

We make no effort to place the Data bus into reverse direction. Therefore we hard wire the *R/W* line of the LCD panel, into write mode. This will cause no bus

conflicts on the data lines. As a result we cannot read back the LCD's internal Busy Flag which tells us if the LCD has accepted and finished processing the last instruction. This problem is overcome by inserting known delays into our program.

The 10k Potentiometer controls the contrast of the LCD panel. Nothing fancy here. As with all the examples, I've left the power supply out. You can use a bench power supply set to 5v or us onboard +5 regulator. Remember a few de-coupling capacitors, especially if you have trouble with the circuit working properly.

Supply set to 5v or use onboard +5 regulator. Remember a few de-coupling capacitors, especially if you have trouble with the circuit working properly.

## CONCLUSION

This paper explains the intelligent vehicle control based on the RFID technology. RFID system alerts the driver about the speed limit zone. If the driver is inattentive the speed of the vehicle can be maintained in the limited speed without the intervention of the driver. The system can prevent the road accidents in critical zones. It also reduces the traffic rule violations. Main motive for designing this system is to avoid accidents and alert the drivers about speed limit for safe travelling. It is used to govern and regulate the speed of the vehicle in hospital, school and work zones. Accidents can be prevented which are caused by the negligent driving or speeding by the driver. Thus saves many valuable lives.

## REFERENCE

- [1] Vinod Rao, Saketh Kuma, "Smart Zone Based Vehicle Speed Control Using RF and Obstacle Detection and Accident Prevention," International Journal of Emerging Technology and Advanced Engineering, Vol.4, No.3, 2014.
- [2] Gummarekula Sattibabu, Satyanarayan , "Automatic Vehicle Speed Control With Wireless In-Vehicle Road Sign Delivery System Using ARM 7," International Journal Of Technology Enhancements And Emerging Engineering Research, Vol 2, No. 8, 2014.
- [3] Deepa B Chavan, Abdul Rahim Makandar , "Automatic Vehicle Speed Reduction System Using Rf Technology," International Journal of Engineering Research and Applications, Vol.4, No.4, 2014.
- [4] Jyothi Kameswari, Satwik , "A Design Model for Automatic Vehicle Speed Controller," International Journal of Computer Applications, Vol.35, No.9, 2011.
- [5] Ruikar M. National statistics of road traffic accident in India. J Orthop Traumatol Rehabil 2013.

- [6] Robert Bosch GmbH, Driver assistance systems.
- [7] Sridhar Iyer, RFID: Technology and Applications.
- [8] Sanjay Sharma, Analog and digital communication, fifth revised edition (June 2010).
- [9] Tom Igor, Getting Started with RFID: Identify Objects in the Physical World.
- [10] Krummen, ECUs and Engine Calibration 201, Performance Electronics, Ltd.
- [11]NagakishoreBhavanam,M.Vasujadevi,2014,"Design an automatic speed control and accident avoidance of vehicle using multisensors.
- [12]Sonikumari,JamalAhmed,et.al,2016,"Design an automatic speed control of vehicle using RFID Technology.
- [13]Venugopal.B.K.,Pallavi.P,2017,"Design an automatic security system for smart vehicle using micro controller.
- [14]Vengadesh,K.Sekar,2015,"Design an automatic speed control of vehicle in restricted areas using RF and GSM".
- [15]Berndt, Don, Real-Time Embedded Technology and Applications Symposium (RTAS), IEEE Education & Learning (2005 Conference (VTC Spring), IEEE (2012).