

# Self Aware Intelligent Vehicle System

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## ABSTRACT

*Road speed limits are used in most countries to regulate the speed of road vehicles. Speed limits may also be set in an attempt to reduce the environmental impact of road traffic. Some cities have reduced limits to as little as 30 km for both safety and efficiency reason. In our project we will be implementing a completely new and unique type of system. In our system our car will be self aware and will know in which speed zone it is travelling. The problem is not with setting the rules but making people follow the speed limit rules so speed limit enforcements has to be done very strictly. Speed limit enforcement is the action taken by appropriately empowered authorities to check that road vehicles are complying with the speed limit. Basic Methods used to implement speed limit enforcements are as follows: Automated in-vehicle systems. In our system our car will be self aware and will know in which speed zone it is travelling. If the driver goes above the speed limit a warning buzzer will be sounded reminding him that he is driving over speed limit. If he again drives over the set speed limit then the vehicle itself logs the complaint in its memory & gives an indication to the user that he his action has been logged.*

**Keyword:** - *Intelligent Vehicle, Control unit, Traffic, Speed limit, Speed zone.*

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## 1. INTRODUCTION

In most of countries road speed limits are used to modulate the speed of road vehicles. Speed limits may define maximum (which may be variable), minimum or no speed limit and are normally indicated using a traffic sign. Speed limits are commonly set by the legislative bodies of nations or rural governments and enforced by national or regional police and / or official bodies. Speed limits are usually set to attempt to cap road traffic speed; there are several reasons for wanting to do this. It is often done with an intention to improve road traffic safety and reduce the number of road traffic accident from traffic collisions. In their *World report on road traffic injury prevention* report, the World Health Organization (WHO) identifies speed control as one of various coincidences likely to contribute to a reduction in road accidents. (The WHO estimated that some 1.2 million people were killed and 50 million injured on the roads around the world in 2004.) Speed limits may also be set in an attempt to reduce the environmental impact of road traffic (vehicle noise, vibration, emissions), and to satisfy local community wishes. Most of cities have reduced the speed limits to as little as 30 km/h for safety and adequacy reason.

The problem is not with setting the rules but making people follow the speed limit rules so speed limit enforcements has to be done very strictly. Speed limit enforcement is the action taken by appropriately empowered authorities to check that road vehicles are complying with the speed limit. Basic Methods used to implement speed limit compulsion are as follows:

1. Roadside speed traps set up and operated by the police and automated roadside speed camera systems which may incorporate the use of an automatic number plate recognition system.
2. Speed Guns.
3. Automated in-vehicle systems (VASCAR).

The drawbacks of the above systems are that it requires human intervention or a very higher end technology. Moreover it is not feasible to implement the above systems on all roads and location and will not work in all kind of environment. In our project we will be implementing a completely new hardware. In our system our car will be self aware and will know in which speed zone it is travelling. If the driver goes above the speed limit a warning buzzer will be sounded reminding him that he is driving over speed limit. If he again drives over the set speed limit then the vehicle itself logs the complaint in its memory & gives an indication to the user that his action has been logged.

## 2. LITERATURE SURVEY

Speed limit are usually set to attempt to cap road traffic speed; there are several reasons for wanting to do this. It is often done with an intention to improve road traffic safety and reduce the number of road traffic accidents from traffic collisions. Traffic police who are regarded as peripheral to most police forces, and which gives us intervention and symbolic justice. Traffic police work limited to particular venue, public places those who operate motor vehicle to give a right direction to that user who drives the motor vehicle. A radar speed gun (also radar gun and speed gun) is a device used to measure the speed of moving objects, like speed of moving vehicle. It is also used in professional audience sport, for things such as the measurement of bowling speeds in cricket, speed of pitched baseballs, and tennis. Mainly in our vehicle system a radar speed gun is a Doppler radar unit that may be hand held or vehicle mounted. It measures the speed of the objects at which it is pointed by detecting in a change in frequency of return radar signal. India is the second largest motorcycle (10.5 million produced in 2015 of a total of over 16.1 m two-wheelers) and the fourth largest commercial vehicle manufacturer in the world. Over 13 million people work directly or indirectly in the auto industry. Indian passenger vehicle exports amounted to 622,000 units in 2014-15, while 2.46 m two-wheelers (mainly motorcycles) and 408 000 three wheelers were shipped overseas in the same year. The total turnover of the Indian automotive component industry was estimated at USD 38½ billion in 2014-15. Auto ancillary exports fetched USD 11.2 bn in the same year while the total turnover of India's vehicle tyre industry amounted to an estimated ₹ 450 billion in 2013-14. After the survey of traffic we can see the lot's of accident done by over speeding & in many areas traffic police can not be available so, we did survey on traffic police management or speed limit so we find the solution & implement our project based on traffic rules is "self aware car".

## 3. PROPOSED SYSTEM

In our proposed system, We proposed model for vehicle System has been implemented on the based on the self aware vehicle System. This application helps the driver to control the speed of car as per traffic rules. In this application the driver drives at normal speed but at instant his/her speed will be higher than speed limit then buzzer can give the indication. If again driver cross the speed limit then the system logs the complaint in its memory and when the car cross by traffic control unit it will give the information of car like car number, driver name, speed of car crossed by driver then control unit can take the action.

## 4. SYSTEM ARCHITECTURE

In the system architecture there are three units namely as follows:

1. Speed Zone Transmitter
2. Vehicle Unit
3. Control Unit



1. LPC-2138 is main part of this circuit diagram and it is used to connect all sections which are shown in figure.
2. RF receiver received the signal from speed zone transmitter then this signal gives to decoder .Decoder decode this signal and convert into audio signal.
3. RPM sensor is used as an IR based sensor or hall effect sensor which gives pulses and used for speed measurement of vehicle continuously.
4. RF Transceiver is used for to know the vehicle in which speed zone it can travel ,when the vehicle will be over speeded then buzzer will indicate to driver .
5. LCD display is used to continuously indicate the speed of vehicle .

#### 4.3. Control Unit

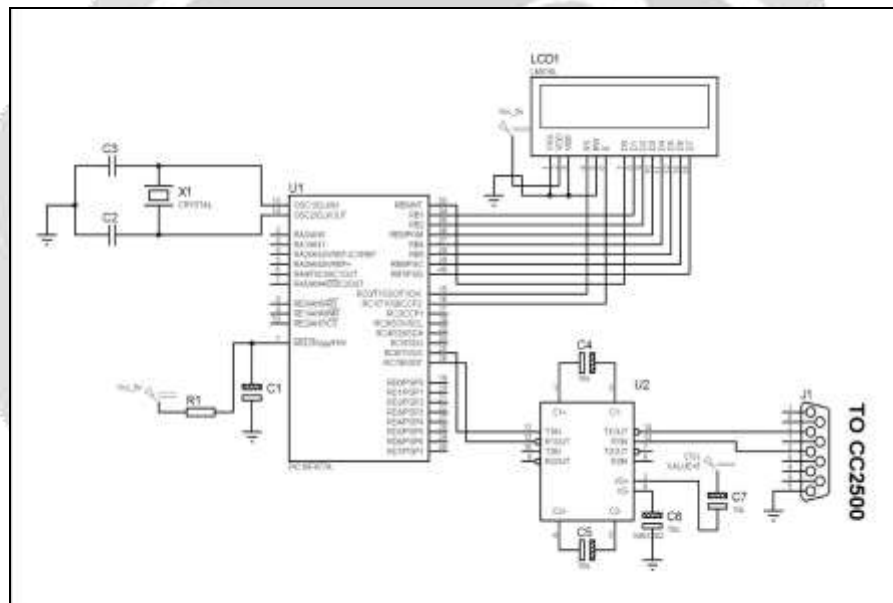


Fig4.3.Control Unit

1. In this circuit diagram the PIC-16f877 is main section RF transceiver continuously check the transmitted signal from the vehicle unit.
2. The received signal is given to the PIC-16f877.
3. CC2500 is transceiver module which is provide easy to used RF Communication .
4. LCD display is used to display the speed zone.

## 5. SYSTEM REQUIREMENT SPECIFICATION

### 5.1 SOFTWARE REQUIREMENTS:

- Proteus Software
- Keil Software

## 5.2 HARDWARE REQUIREMENTS

- ARM 7(LPC2148)
- Buzzer
- LCD
- GSM module
- Microcontroller
- RF Tx & Rx
- MAX232

## 6. TECHNICAL SPECIFICATIONS

### 6.1 ADVANTAGES

1. Can work 24x7 with tiring.
2. Can work in every climatic condition.
3. Will work in all locations in the world.

### 6.2 APPLICATIONS

1. Car security system
2. Managing Traffic
3. In all four wheeler.

## 7. CONCLUSION

After the survey of traffic we can see the lot's of accident done by over speeding and in many areas traffic police cannot be available so, we did survey on traffic police management or speed limit so we find the solution & implement our project based on traffic rules is "self aware intelligent vehicle". By this project vehicle help to controlling those speed it can give indication too driver if it go over-speed, if driver not controlled the speed then it will saved this crossed limit and when vehicle cross traffic control section then it will give this information to control unit and it can take the action .

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