

INRODUCTION

1.1 OVERVIEW

Nowadays people are driving very fast, accidents are occurring more frequently, we lose our valuable life by making small mistake while driving. So, to avoid such kind of accidents, it is necessary to alert the driver and to control the speed of vehicle. Over speeding of vehicles contribute to 41percent of road accident deaths (As per NCRB, ADSI-2015 Report). To tackle this situation, the Central Government along with various State Administrations have decided to limit the speed of vehicles. The speed governors are the most effective tool for handling over speeding. They have been proven effective in curbing road accidents across many countries of the world. Over 50 percent of people who lose their lives in road accident are between the age group of 15 and 39. This is a huge loss for India's man power. The public demands strict implementation of the speed governor's role in making the roads safer by avoiding over speeding. Speed governors are by far the best solution to prevent over speeding of vehicles on roads. The maximum speed limit of the vehicle is decided by the governments. At present, in most states across India, 60kmph and 80kmph are permitted by the government for school buses and trucks respectively. Various state and city level governments are making the use of speed governor mandatory to ensure that the vehicles run within specified speed limit. As a common citizen, we all must ensure to limit the speed of our vehicles to the recommended speed limit. We must also promote travelling in speed governor installed vehicles. Vehicles under the control of speed governors make the travel of children riding in school buses, people travelling in public transports etc. safer and more secure. Nowadays speed governors are not in proper functioning in our public transports. Here, our project Automated Traffic Law Enforcement Device (ATLED) tracks the speed of vehicles and ensures if the speed governors are in proper working condition. ATLED also provides sensors for checking air pollution to ensure that the emission of the vehicle is always monitored. The 6-month valid pollution certificate is not a good way to find the emissions of a vehicle. The vehicle emissions must be tested when the vehicle is running. It is also difficult for the police to check this pollution certificate when the vehicle is running especially if the vehicle is a line bus which has to keep a scheduled time and cannot be stopped without causing inconvenience to the public. ATLED also informs authorities of the pollution level of vehicles which are having very high emission levels.

1.2 WHO NEED TRAFFIC LAW ENFORCEMENT DEVICE AND WHY

If we dig out the facts and causes behind road traffic accidents happening around the world, it would be no surprise to find 'SPEED' as the common and prime culprit. Over the years, many researchers have studied and established the relationship between speed and the increase in the number of road traffic accidents and deaths. Every year, about 1.25 million people around the globe die due to road traffic accidents; which means- 3,400 deaths daily! However, over 90% of these deaths occur in economically backward regions alone. Low and middle-income countries in the African region are said to report the highest rates of road traffic deaths. Installation of Speed governors is found to be the most effective solution to over speeding of vehicles around the world. Over speeding of vehicles results in increasing road accident rates and fatalities that can be avoided by making the vehicle fully under control, by the installation of speed governors. Keeping this fact, in India several rules are implemented for safety on roads, but these are not reflecting in the road accident statistic rates. The increasing fatalities rate shows us that the problem needs to be studied on the basis of technical and modern science. The speed governors are the best solutions for this crisis. Efforts to decrease road accidents has been continuing since all these years, but the current strategies adopted by us in today's day to day increasing traffic is a challenging one. Modern technologies must be incorporated in vehicles for complete road safety solutions.

In automated traffic law enforcement system, the device will track the speed of the motor vehicles, especially public transports, and also ensure that the speed governors are in proper working condition. If any traffic violation is detected by the device it will directly inform the local law enforcement, thereby reducing the work load of the law enforcement personnel. This automated traffic law enforcement device is mostly useful for traffic police, because it reduces the need for checking on roads which causes unnecessary stress and inconvenience.

The most important advantage of this system is the safety of our society. By controlling over speeding, we can save valuable human lives and the pollution control sensors in this system save our environment from pollution.

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1.3 PROBLEM DEFINITION

Aggressive driving is often manifest in irresponsible driving behaviours such as speeding, running red lights, and tailgating. Increased enforcement of traffic laws is viewed as a potential solution for aggressive driving, but in reality, conventional law enforcement has not been able to keep pace with increased traffic volumes and vehicle mileage. This concern has prompted the traffic safety community and public entities in India and around the world to promote and use automated enforcement to improve general deterrence of aggressive driving and compliance with traffic laws; to reduce resource intensive traditional enforcement; and to decrease high-risk enforcement methods associated with high-speed pursuits of traffic control law violators. Traffic cameras, Speed cameras and mainly speed governors were introduced to automate the traffic law enforcement, but these systems require constant maintenance and a lot of man power. The number of vehicles outnumber the number law officials. The lack of equipment to test these systems is also a major factor that cripples the enforcement of traffic laws.

LITERATURE SURVEY

2.1 MARKET RESERCH

2.1.1 AVAILABLE SIMILAR SYSTEMS

DETECTION OF OVER SPEEDING VEHICLES ON HIGHWAYS

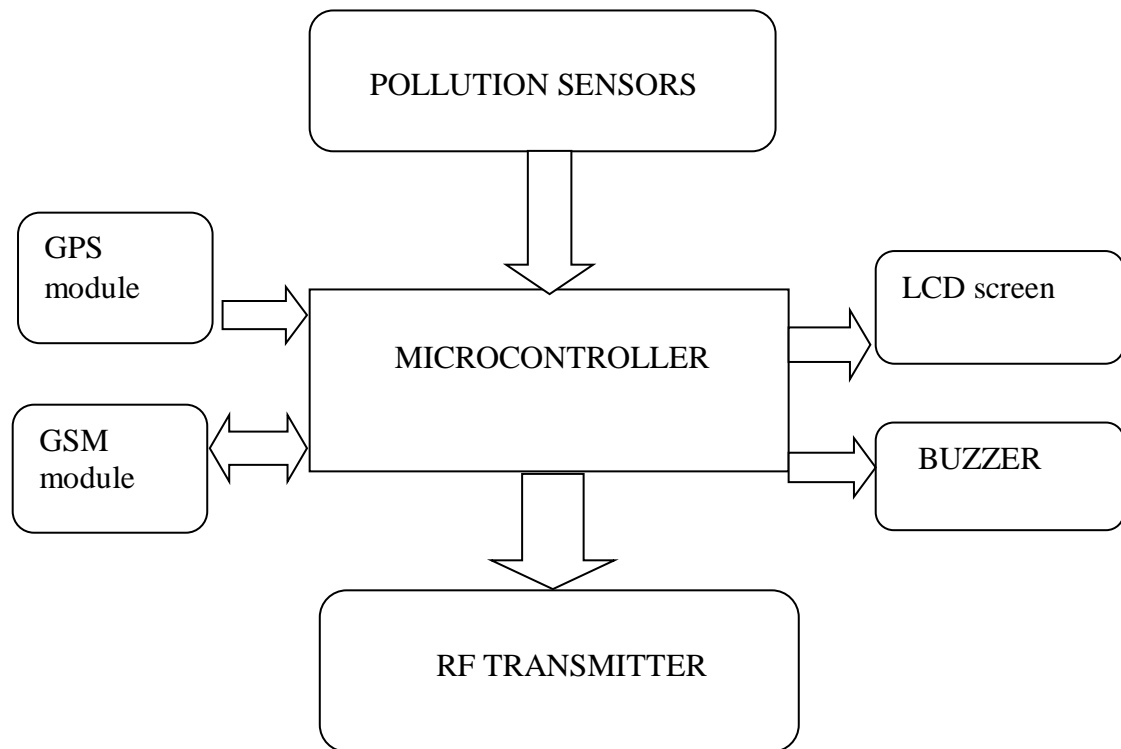
Description: This device detects rash driving on highways and alerts the traffic authorities in case of any violations. Its designed for early detection and alert of dangerous vehicle driving patterns related to rash driving. The entire implementation requires an IR transmitter an IR receiver a control circuit and a buzzer. The speed limit is set by the police who use the system depending upon the traffic at the very location .The time taken by the vehicle to travel from one set point to the other is calculated by control circuit and displays that on seven segment displays. Moreover, if the vehicle crosses the speed limits, buzzer sounds alerting the police.

2.1.2 COMPARISON

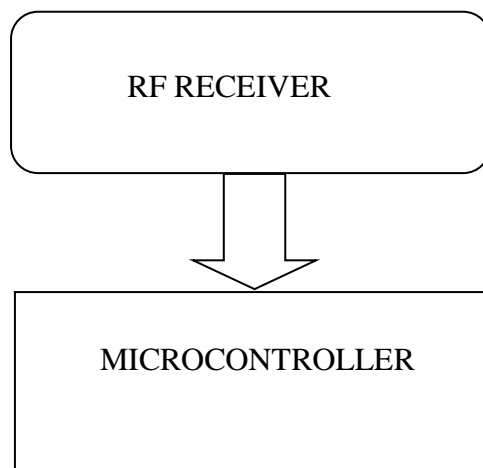
Compared to all other available systems, our system uses GPS for locating vehicles. In our automated traffic law enforcement device, speed is tracked. If any over speed is detected SMS will be automatically sent to the nearby police station, and device will check if the speed governors are in proper working condition. That is the most advantage of our system over currently available systems. Our “automated traffic law enforcement device” also detect the amount of emissions coming out of the exhaust of the vehicle, and thereby reducing the environmental pollution.

SYSTEM OVERVIEW

3.1 BLOCK DIAGRAM FOR IN-VEHICLE MODULE



3.2 BLOCK DIAGRAM FOR POLICE MODULE



3.3 WORKING

Block diagram consist of microcontroller, GSM module, GPS module, RF transmitter, LCD display, buzzer and a pollution sensor. Here we are using ATmega328 microcontroller, which is a 28 pin AVR microcontroller. The micro controller is packaged into a board called Arduino Pro Mini. We are using a package of GPS and GSM which consist of GPS antenna GSM antenna and a SIM808 modem. we are using two pollution sensors here. They are air quality sensorMQ135 and carbon monoxide sensor MQ9.

And about its working, when there is any over speed is detected by the device then it will warn the driver to repair or replace the speed governor with the help of buzzer. If the driver is keep speeding then an SMS will be sent to nearby police station with the help of GSM module, with the number and speed of the vehicle. Then the police can fine the vehicle. Once fined, the police station inform the owner of the vehicle and also sends an SMS to the device. The device emits an RF signal till the fine is paid. This ensures the mobile enforcement unit on the road side can pick up the signal and stop the vehicle to collect the fine. If the fine is paid by the owner, the police can send an SMS back to stop the RF transmission.

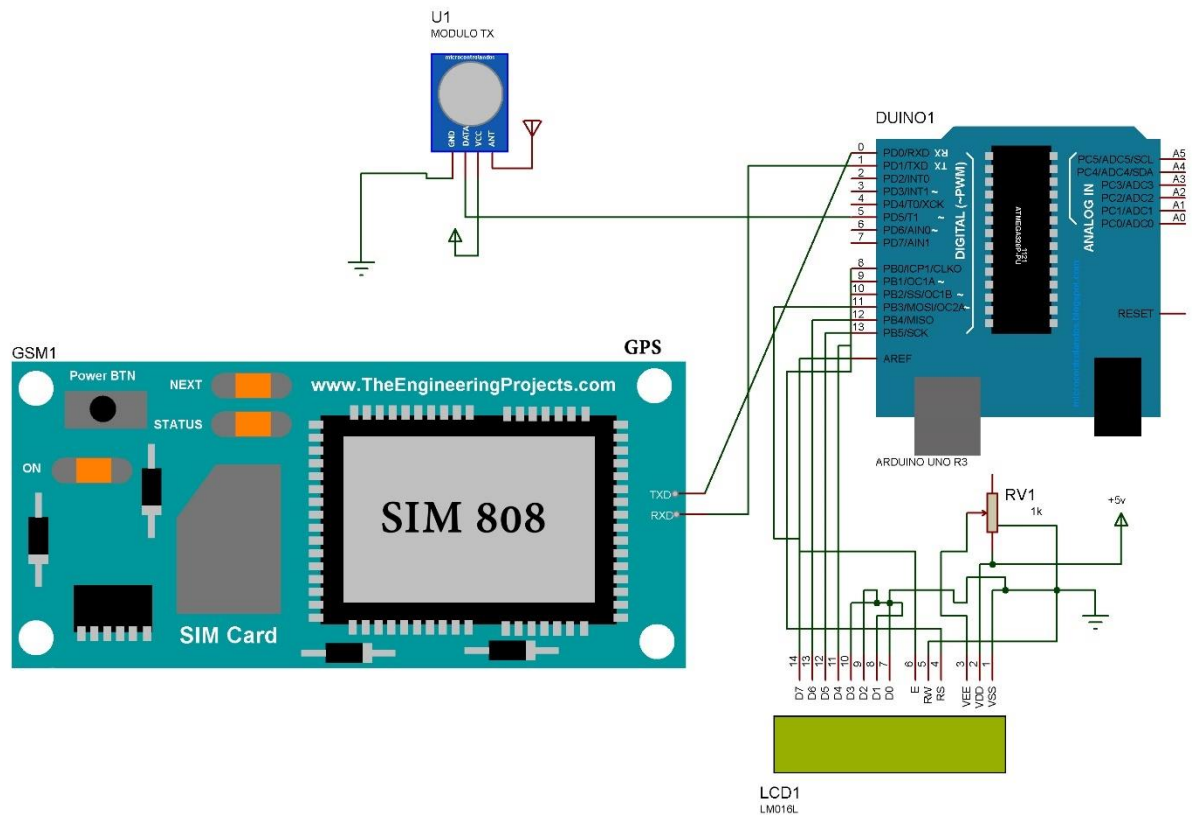
By using pollution sensors, the device can monitor the carbon monoxide emission level of the vehicle so that pollution control can be strictly implemented through fining. Just like speed monitoring, the emissions are also monitored by the system. The threshold for maximum emissions is pre-set and when this threshold limit is crossed, the system warns the driver to switch off the engine and if he does not comply, an SMS is sent to the local police with the location, time and the pollutions level of the vehicle. When the authorities receive the SMS, they can fine the vehicle with ₹100, ₹500 and ₹1000. The authorities must also include the passcode for the device when sending the SMS for fine. The device is phone number locked, which means it will accept SMS the phone number of authorities only.

SYSTEM IMPLEMENTATION

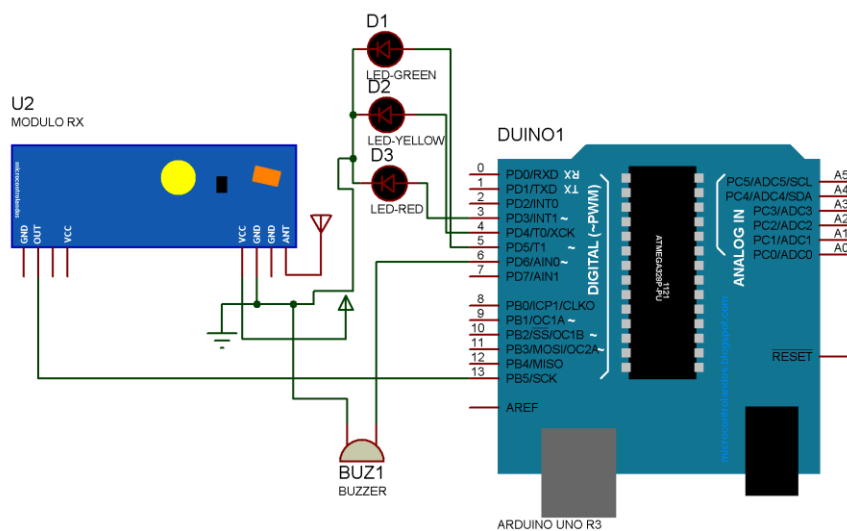
4.1 HARDWARE SECTION

4.1.1 CIRCUIT DIAGRAM

4.1.1.1 IN-VEHICLE MODULE



4.1.1.2 LAW ENFORCEMENT RECEIVER



4.1.2 CIRCUIT DESCRIPTION

The circuit consists of two parts – In-Vehicle Module and Law Enforcement Receiver.

4.1.2.1 IN-VEHICLE MODULE

The In-Vehicle Module consists of an Arduino pro mini micro-controller, a SIM 808 GSM/GPRS/GPS/BT module and RF transmitter and a 5V power supply. The SIM 808 Module is connected to the RX and TX pins of the Arduino to send and receive SMS and to obtain the GPS data. The RF transmitter is connected to transmit signals from the Arduino in case there is some fine amount to be paid. The LCD display is also connected to the appropriate pins of the Arduino to display the messages and warning to the driver.

4.1.2.2 LAW ENFORCEMENT RECEIVER

The Law Enforcement Receiver is a very simple circuit consisting of an RF receiver, 3 LEDs and a buzzer. When a vehicle without an In-Vehicle Module passes, the receiver yellow LED lights up. When a vehicle without any fine passes, green LED lights up and when a vehicle with fine passes, the red LED lights up and also the device sounds the buzzer. The LEDs are connected to the 3rd, 4th and 5th pins. The RF receiver is connected to the 13th pin and finally the buzzer is connected to the 6th pin.

4.1.3 DESCRIPTION OF COMPONENTS

4.1.3 a) AT mega328p

The ATmega328 is a single- chip microcontroller created by Atmel in the mega AVR family.



Fig 4.1.3 a) ATmega328P in a 28-pin dual inline package (DIP)

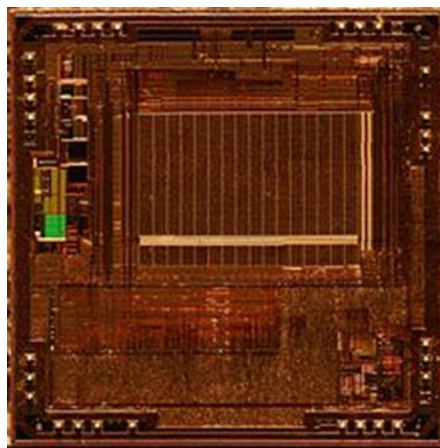


Fig4.1.3 b) Die of ATmega328P

Specifications

The Atmel 8-bit AVR RISC-based microcontroller combines 32kB ISP flash memory with read-while-write capabilities, 1kB EEPROM, 2kB SRAM, 23 general purpose I/O lines, 32 general purpose working registers, three flexible timer/counters with compare modes, internal and external interrupts, serial programmable USART, a byte-oriented 2-wire serial interface, SPI serial port, 6-channel 10-bit A/D converter (8-channels in TQFP and QFN/MLF packages), programmable watchdog timer with internal oscillator, and five software selectable power saving modes. The device operates between 1.8-5.5 volts. The device achieves throughput approaching 1 MIPS per MHz

Key parameters

Parameter	Value
CPU type	8-bit AVR
Performance	20 MIPS at 20 MHz
Flash memory	32kB
SRAM	2kB
EEPROM	1kB
Pin count	28-pin PDIP, MLF, 32-pin TQFP, MLF
Maximum operating frequency	20 MHz
Number of touch channels	16
Hardware Q Touch Acquisition	No
Maximum I/O pins	26
External interrupts	2
USB Interface	No
USB Speed	No

Series alternatives

A common alternative to the ATmega328 is the "picoPower" ATmega328P. A comprehensive list of all other member of the mega AVR series can be found on the Atmel website.

Applications

As of 2013 the ATmega328 is commonly used in many projects and autonomous systems where a simple, low-powered, low-cost micro-controller is needed¹. Perhaps the most common implementation of this chip is on the popular Arduino development platform, namely the Arduino Uno and Arduino Nano models.

Programming

PCINT14/RESET) PC6	1*	28	PC5 (ADC5/SCL/PCINT13)
(PCINT16/RXD) PD0	2	27	PC4 (ADC4/SDA/PCINT12)
(PCINT17/TXD) PD1	3	26	PC3 (ADC3/PCINT11)
(PCINT18/INT0) PD2	4	25	PC2 (ADC2/PCINT10)
(PCINT19/OC2B/INT1) PD3	5	24	PC1 (ADC1/PCINT9)
(PCINT20/XCK/T0) PD4	6	23	PC0 (ADC0/PCINT8)
Vcc	7	22	GND
GND	8	21	AREF
(PCINT6/XTAL1/TO SC1) PB6	9	20	AVCC
(PCINT7/XTAL2/TO SC2) PB7	10	19	PB5 (SCK/PCINT5)
(PCINT21/OC0B/T1) PD5	11	18	PB4 (MISO/PCINT4)
(PCINT22/OC0A/AN0) PD6	12	17	PB3 (MOSI/OC2A/PCINT3)
(PCINT23/AN1) PD7	13	16	PB2 (SS/OC1B/PCINT2)
(PCINT0/CLKO/ICP1) PB0	14	15	PB1 (OC1A/PCINT1)

Pin out of AT mega 48A/PA/88A/PA/168A/PA/328/P in 28-PDIP

Reliability qualification shows that the projected data retention failure rate is much less than 1 PPM over 20 years at 85 °C or 100 years at 25 °C.

Parallel program mode

Programming signal	Pin Name	I/O	Function
RDY/BSY	PD1	O	High means the MCU is ready for a new command, otherwise busy.
OE	PD2	I	Output Enable (Active low)
WR	PD3	I	Write Pulse (Active low)
BS1	PD4	I	Byte Select 1 ("0" = Low byte, "1" = High byte)
XA0	PD5	I	XTAL Action bit 0
XA1	PD6	I	XTAL Action bit 1
PAGEL	PD7	I	Program memory and EEPROM Data Page Load

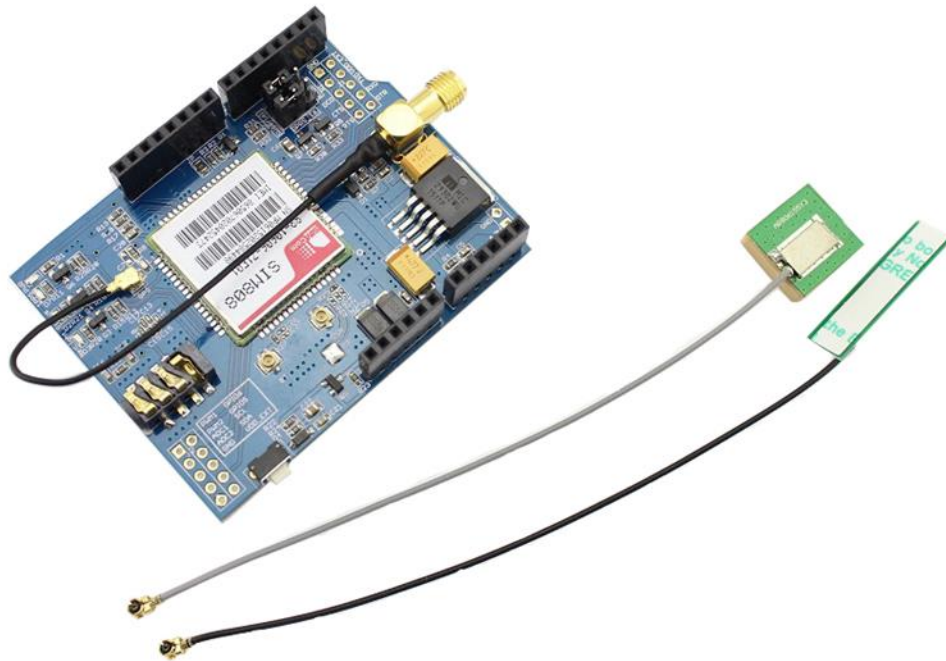
BS2	PC2	I	Byte Select 2 ("0" = Low byte, "1" = 2nd High byte)
DATA	PC[1:0]:PB[5:0]	I/O	Bi-directional data bus (Output when OE is low)

Programming mode is entered when PAGEL (PD7), XA1 (PD6), XA0 (PD5), BS1 (PD4) is set to zero. RESET pin to 0V and V_{CC} to 0V. V_{CC} is set to 4.5 - 5.5V. Wait 60 μ s, and RESET is set to 11.5 - 12.5 V. Wait more than 310 μ s. Set XA1:XA0:BS1:DATA = 100 1000 0000, pulse XTAL1 for at least 150 ns, pulse WR to zero. This starts the Chip Erase. Wait until RDY/BSY (PD1) goes high. XA1: XA0: BS1: DATA = 100 0001 0000, XTAL1 pulse, pulse WR to zero. This is the Flash write command. And so on.

Serial Programming

Symbol	Pins	I/O	Description
MOSI	PB3	I	Serial data in
MISO	PB4	O	Serial Data out
SCK	PB5	I	Serial Clock

Serial data to the MCU is clocked on the rising edge and data from the MCU is clocked on the falling edge. Power is applied to V_{CC} while RESET and SCK are set to zero. Wait for at least 20ms and then the Programming Enable serial instruction 0xAC, 0x53, 0x00, 0x00 is sent to the MOSI pin. The second byte (0x53) will be echoed back by the MCU.

4.1.3 b) SIM808 GSM/GPS/BT**Model: ACS80801S****Fig 4.1.3c) GPRS+GSM+GPS**

SIM808 module is a GSM/GPS/BT three-in-one function module. It is based on the latest GSM/GPS/BT module SIM808 from SIMCOM, supports GSM/GPRS Quad-Band network and combines GPS technology for satellite navigation. It has high GPS receive sensitivity with 22 tracking and 66 acquisition receiver channels. Besides, it supports A-GPS that available for indoor localization, and it also supports for Bluetooth 4.0.

The module is controlled by AT command via UART and supports 3.3V and 5V logical level.

Features:

- Quad-band 850/900/1800/1900MHz.
- GPRS multi-slot class12 connectivity: max. 85.6 kbps (down-load/up-load).
- GPRS mobile station class B.
- Controlled by AT Command (3GPP TS 27.007, 27.005 and SIMCOM enhanced AT Commands).
- Supports Real Time Clock.
- Supply voltage range 5V ~ 12V.
- Supports for Bluetooth 4.0.

- Integrated GPS/CNSS and supports A-GPS.
- Supports 3.0V to 5.0V logic level.
- Low power consumption, 1mA in sleep mode.
- Supports GPS NMEA protocol.
- Standard Micro SIM Card.

Application Ideas:

M2M (Machine 2 Machine) Applications - To transfer control data using SMS or GPRS between two machines located at two different factories.

Remote control of appliances - Send SMS while you are at your office to turn on or off your washing machine at home.

Remote Weather station or a Wireless Sensor Network - Make it with [Crowduino v1.0] and create a sensor node capable of transferring sensor data (like from a weather station - temperature, humidity etc.) to a web server (like pachube.com).

Vehicle Tracking System - Install GPRS+GSM+GPS Shield in your car and publish your location live on the internet. Can be used as a automotive burglar alarm.

Cautions:

Make sure your SIM card is unlocked.

The product is provided as is without an insulating enclosure. Please observe ESD precautions especially in dry (low humidity) weather.

The factory default setting for the GPRS Shield UART is auto Bauding. It supports baud rate from 1200 bps to 115200bps. (Can be changed using AT commands).

Specifications

4.1.3 c) BUZZER

A Buzzer or a beeper is an audio signalling device, which may be mechanical, electromechanical or piezoelectric. Typical uses of buzzers and beepers include alarm devices timers and confirmation of user input such as a mouse click or keystroke.

A mechanical buzzer is a joy buzzer is an example of a purely mechanical buzzer. An electro mechanical is based on an electro mechanical system identical to an electric bell without the metal gong. Similarly, a relay may be connected to interrupt its own actuating current, causing the contacts to buzz. Often this units where anchored to a wall or ceiling to use it as a sounding board. The word buzzer comes from the rasping noise that electro mechanical buzzers made. A piezoelectric element may be driven by an oscillating electronic circuit or other audio signal source, driven with a piezoelectric audio amplifier. Sounds commonly used to indicate that a button has been pressed are a click, a ring or a beep.



Fig 4.1.3 d) buzzer

4.1.3 d) LCD DISPLAY

The LCD is 16*2 and 20*4 line interactive displays. It needs a power supply of +5v. The module has inbuilt controller chip, such as an HD44780, which act as an interface between CPU and the row and column drivers. The controller take care of generating characters, refreshing the display and so on. The module has a back light driven by a pair of pads separate from the interface pads. The LCD module works in two modes for communicating with the microcontroller 8 bit (byte) mode and 4 bit (nibble) mode. In the latter case only the higher nibble that is pins DB4 – DB7 is used for communication. For controlling the LCD module have used only the port D

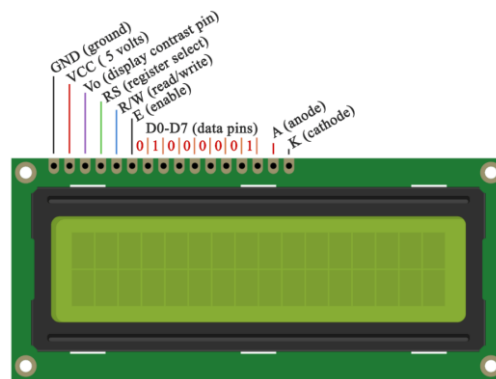


Fig 4.13 e) LCD Display

Contrast: A variable voltage applied to this pin controls the contrast. Use a potentiometer and adjust until you see the background.

Register select: This pin selects whether you are sending the module a command or data.

Read/Write: This pin allows for bidirectional communications. For the discussions here unidirectional communication will be used. Ground this pin.

Enable: This is the latch pin. A high to low transmission causes the value on data lines to be latched by the module.

DB0- DB7: Apply the data or commands to this pins. The SPI module and a 74595 can be used to make a serial interface. The same latch pin can be used for both because the 595 latches on LH while the LCD latches on HL.

STRUCTURE:

LCDs are fabricated by sandwiching liquid crystal material of 0.005 inch to 0.305 inch between two glass plates. The glass plates have a preferential direction (produced by rubbing or some other lithographic techniques) so that these directions orient the liquid crystal molecules. The plates are oriented so that the preferential directions are perpendicular to each

other causing a 90° twist in the liquid crystal molecules. Between liquid crystal and glass plates, there is a thin metal layer. On the glass plates, these metal layers are formed by metal evaporation at vacuum, and these form the electrodes between which an alternating voltage is applied across the liquid crystal sandwiched. The glass plates are separated by a spacer known as edge seal. The metal layer between glass plate and liquid crystal is transparent.

4.1.3 e) POLLUTION DETECTORS

AIR QUALITY DETECTOR MQ135

Air quality click carries an MQ-135 sensor for detecting poisonous gases that impact air quality in homes and offices. The click is designed to run on a 5V power supply. It communicates with the target microcontroller over the AN pin on the micro BUS™ line.

Air quality click is a simple solution for adding a high sensitivity sensor for detecting a variety of gases that impact air quality in homes and offices. It carries an MQ-135 sensor. The click is designed to run on a 5V power supply. It communicates with the target microcontroller over the AN pin on the micro BUS™ line.

Detecting gases

Air quality click is suitable for detecting ammonia (NH₃), nitrogen oxides (N O_x), benzene, smoke, CO₂ and other harmful or poisonous gases that impact air quality. The MQ-135 sensor unit has a sensor layer made of tin dioxide (SnO₂), an inorganic compound which has lower conductivity in clean air than when polluting gases are present.

Calibration potentiometer

To calibrate Air quality click for optimum performance, use the on-board potentiometer to adjust the load resistance on the sensor circuit.

Key features

- MQ-135 sensor
- SnO₂ gas sensing layer
- Interface: AN
- 5V power supply



Fig 4.1.3 f) air quality sensor MQ135

CARBON MONOXIDE DETECTOR

Carbon monoxide detector mainly detects the amount of carbon monoxide coming out of the exhaust of the vehicle



FIG 4.1.3g) carbon monoxide sensor MQ9

4.1.3 f) RF TRANSMITTER

An RF module (radio frequency module) is a (usually) small electronic device used to transmit and/or receive radio signals between two devices. In an embedded system it is often desirable to communicate with another device wirelessly. This wireless communication may be accomplished through optical communication or through radio frequency (RF) communication. For many applications the medium of choice is RF since it does not require line of sight. RF communications incorporate a transmitter or receiver.

RF modules are widely used in electronic design owing to the difficulty of designing radio circuitry. Good electronic radio design is notoriously complex because of the sensitivity of radio circuits and the accuracy of components and layouts required to achieve operation on a specific frequency. In addition, reliable RF communication circuit requires careful monitoring of the manufacturing process to ensure that the RF performance is not adversely affected. Finally, radio circuits are usually subject to limits on radiated emissions, and require Conformance testing and certification by a standardization organization such as ETSI or the U.S. Federal Communications Commission (FCC). For these reasons, design engineers will often design a circuit for an application which requires radio communication and then “drop in” a pre-made radio module rather than attempt a discrete design, saving time and money on development.

RF modules are most often used in medium and low volume products for consumer applications such as garage door openers, wireless alarm systems, industrial remote controls, smart sensor applications, and wireless home automation systems. They are sometimes used to replace older infrared communication designs as they have the advantage of not requiring line-of-sight operation.

Several carrier frequencies are commonly used in commercially available RF modules, including those in the industrial, scientific and medical (ISM) radio bands such as 433.92 MHz, 915 MHz, and 2400MHz. These frequencies are used because of national and international regulations governing the use of radio for communication. Short Range Devices may also use frequencies available for unlicensed such as 315 MHz and 868MHz.

RF modules may comply with a defined protocol for RF communications such as Zigbee Bluetooth low energy, or Wi-Fi, or they may implement a proprietary protocol.

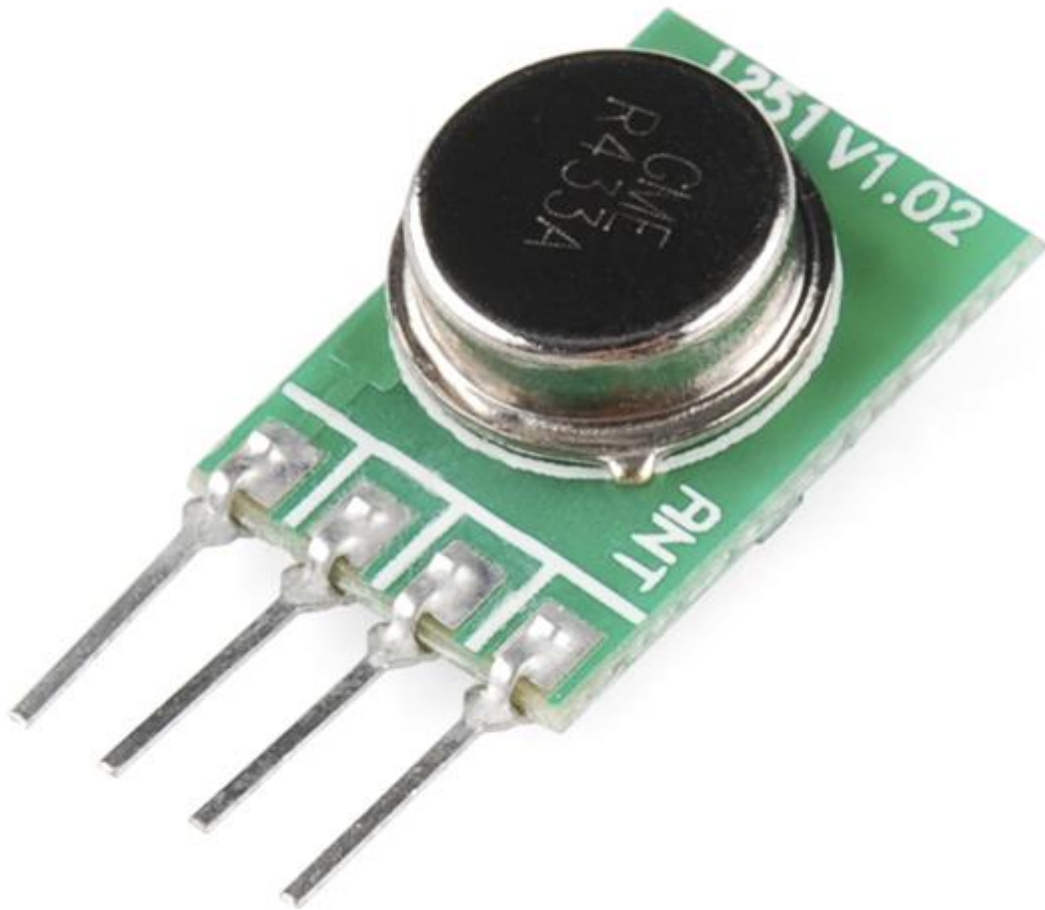


Fig 4.1.3h) RF transmitter

Host microcontroller interface

RF modules typically communicate with an embedded system, such as a microcontroller or a microprocessor. The communication protocols include UART, used in Digi International's X-Bee modules, Serial Peripheral Interface Bus used in Anaren's AIR modules and Universal Serial Bus used in Roving Networks' modules. Although the module may use a standardized protocol for wireless communication, the commands sent over the microcontroller interface are typically not standardized as each vendor has its own proprietary communications format. The speed of the microcontroller interface depends on the speed of the underlying RF protocol used: higher speed RF protocols such as Wi-Fi require a high-speed serial interface such as USB

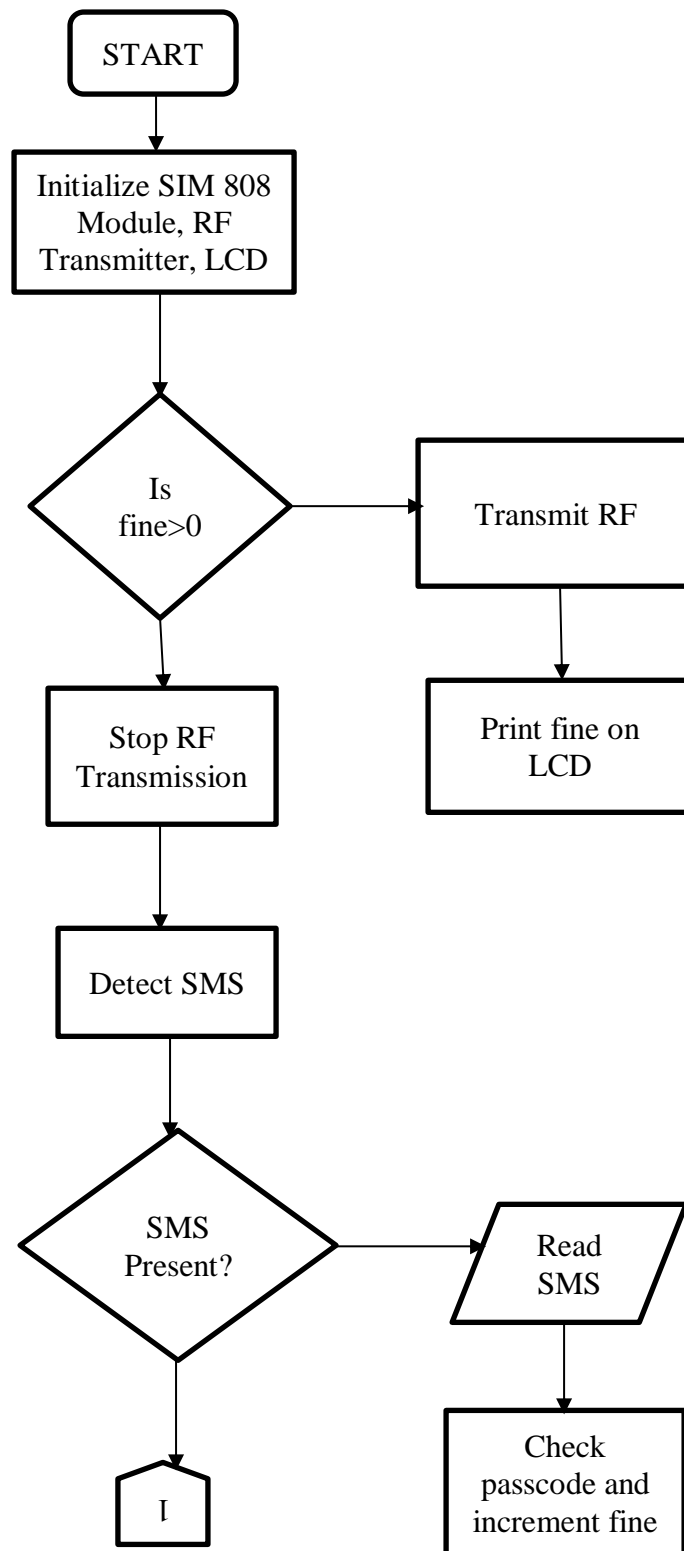
whereas protocols with a slower data rate such as Bluetooth Low Energy may use a UART interface.

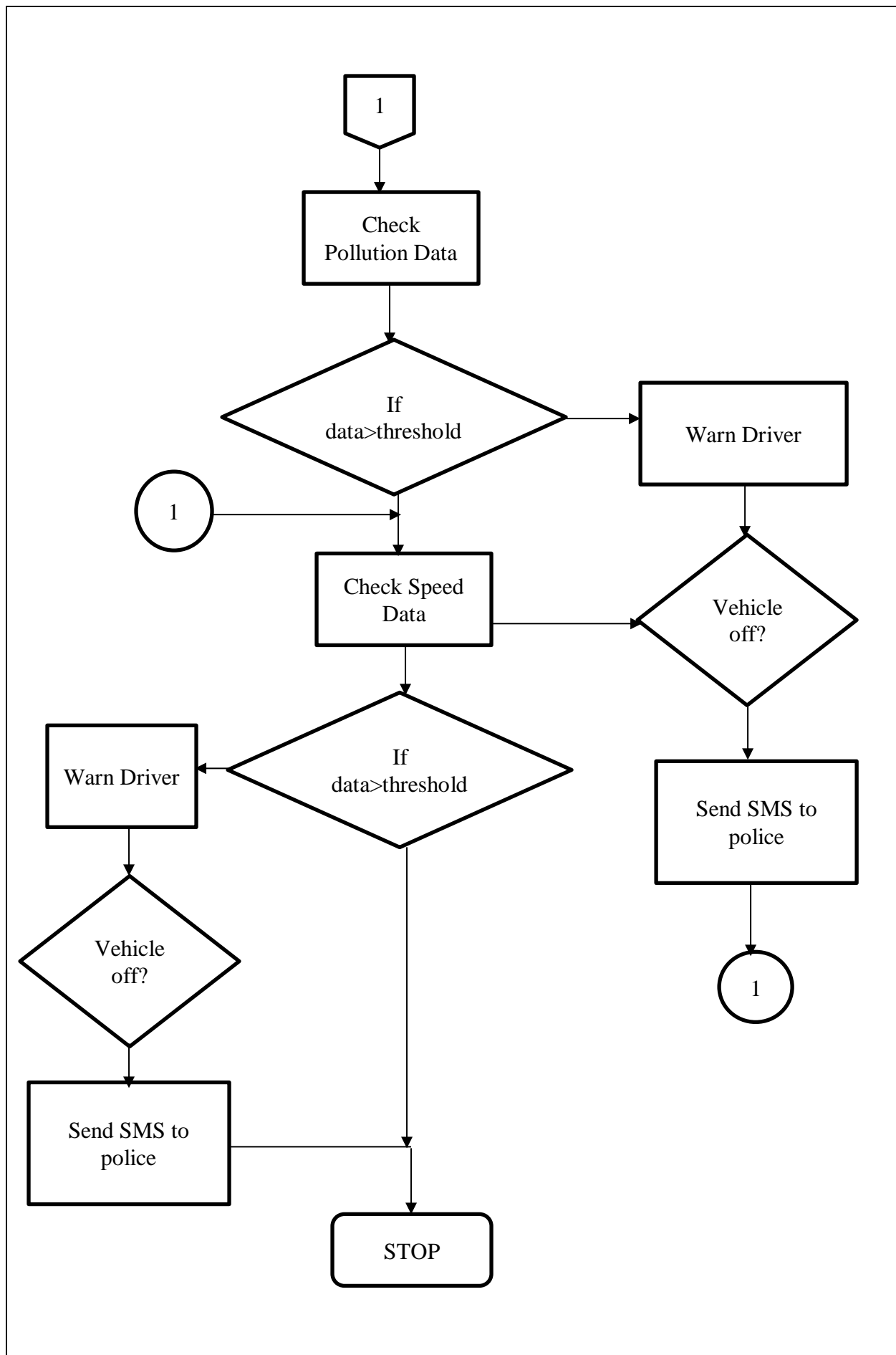
Typical applications

- Vehicle monitoring
- Remote control
- Telemetry
- Small-range wireless network
- Wireless meter reading
- Access control systems
- Wireless home security systems
- Area paging
- Industrial data acquisition system
- Radio tags reading
- RF contactless smart cards
- Wireless data terminals

4.2 SOFTWARE SECTION

4.2.1 FLOWCHART





4.2.2 SOFTWARE TOOLS USED

4.2.2.1 Proteus

Proteus is the best simulation software for various designs with microcontrollers. It is mainly popular because the availability of almost all microcontrollers in it. So it is a handy tool to test programs and embedded design of electronics hobbyist, through this software, simulate the programming of microcontroller. After simulating circuit in proteus, can make PCB design.

Proteus is a virtual system modelling and circuit simulation application. The suite combine with mode SPICE circuit simulation, animated components and microprocessor models to facilitate co-simulation of complete microcontroller based designs. Proteus also has the ability to simulate the interaction between software running on a microcontroller and any analog or digital electronics connected to it. It simulate i/o ports , interrupts , timers ,USARTs and also other peripherals present on each supported processors.

Proteus PCB design combines the schematic capture and ARES PCB layout programs to provide powerful, integrated and easy to use suite tools for professional PCB design.

4.2.2.2 Arduino IDE



Fig 4.2.2.2 a) Arduino IDE

The Arduino Integrated Development Environment - or Arduino Software (IDE) - contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus. It connects to the Arduino and Genuino hardware to upload programs and communicate with them.

APPLICATIONS

- Applicable in all public transports for speed controlling, detecting the carbon monoxide level, detection pollutants like alcohol, benzene, ammonia, Nitrous Oxide etc.
- Can be used private parties to monitor and track their vehicles.
- Can be used to track vehicles given for rent etc.

RESULT AND FUTURE ENHANCEMENT

The Automated Traffic Law Enforcement Device (ATLED) was designed programmed and constructed. The device works as expected and can relay information really fast. The device works efficiently and uses very low amount of power. It prevents tampering with speed governors and ensures the speed limit and emission control.

In the future, this device can be made to display the data through internet TCP service. It can also be used to track the people breaking red lights, drunken driving and even ensure that the people drive around with insured vehicles. The device can also be programmed to switch off the vehicle during a traffic law violation or when the police pulls it over.

CONCLUSION

We all know that accidents in our traffic increasing day by day. There is about 1.5 millions of peoples are killed by road crashes per each year and as many as 50billions are injured. Rapid motorization coupled with poor road conditions, lack of safety features, poor road maintenance, Lack of police enforcements leads to road accidents. And one important thing for road accident is over speed. In order to reduce over speed and thereby reducing rate of accident our Kerala motor vehicle department has issued an order which make use of speed governors compulsory for all public transports. Here we proposing a system which track the speed of the vehicle and check whether speed governors are in proper working or not. This project makes the work of police officers easier and also ensures safety in roads.

REFERENCES

www.wikipedia.com

scholar.google.co.in

www.arduino.cc

www.instructables.com

www.quora.com

www.youtube.com

IDIEN Arduino Reference Book

www.ebay.in

forum.arduino.cc

forum.sparkfun.com

APPENDIX