



# AUTOMATIC SPEED REDUCER USING RF MODULE

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**Abstract :** Bad visibility conditions which occur due to fog in winters or night time driving are the major causes of road accidents in India. The principal cause for such accidents is the unintentional ignorance of speed breakers which May be due to the driver not being able to detect them or may be due to over speeding of vehicles. This paper brings an Idea of an intelligent speed breaker system that helps in detecting speed breakers well in time so that such accidents can be avoided. This system makes use of a RF module that warns the person who is driving about the existence of a speed breaker in proximity, with this it assists in automatically reducing the vehicle's speed if no action is taken by the driver in time. Through Internet of Things (IoT), GPS Location (latitude & longitude) of speed breaker can be sent to cloud Using GPS and stored on cloud to use it for future to avoid mishaps.

**IndexTerms –Smart Speed Breaker, IR Sensor, Servo Motor, AVR ATmega328, Arduino,Relay.**

## I.INTRODUCTION

India has the world's second largest road network as a developing country. Almost 97,991 km was provided by National highways over a total length of 5 million km of road network. Because of its sheer magnitude, the Indian Government already faces a great challenge to provide a world class path. A person on average spends from 30 to two Hours a day driving anywhere. That's about 360 hours in one year. Imagine what type of stress the individual places on His body and unnecessary burden. Given all this, roads are India's biggest mode of transport. Nearly 90% of transport by Passenger and industry is done through roads. The fast-growing population raises traffic, and good traffic management Is very necessary for safety and also decreases travel time. The solution that is now available every day and that is widely used is a nice, but not the best solution. In short, All vehicles are collectively liable and the path dangerous or accessible. When heavy cars and small vehicles are slowed Down, more time is needed to regain their previous speed by vehicles as traffic increases. Slow speed cars also get shocks And noise that they are not deserving of. Internet of Things (IoT) is now a critical subject in the technology industry, Software engineering, policy and has become important news in both print media and social media. This technology is Implemented in a wide variety of networked devices, systems and sensors using advancements in computing power,Declining electronics, and networks to manage original competences that are not possible previously. Day by day new Topics and analysis on IoT issues abundance of conferences, studies and articles and discussion of the IoT uprising's Potential influence from new technology openings and business innovations main concerns about security, privacy.

## II. RELATED WORK

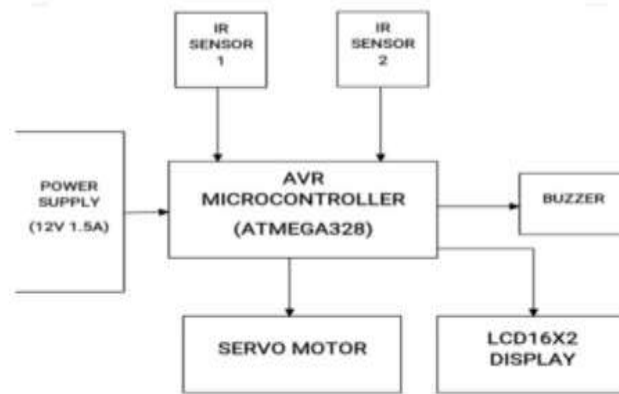
Speed breakers are mostly present in heavy traffic areas and also in hilly areas due to the presence of this speed Breakers accidents are increasing.Many of them has invented different solutions to solve this problem like raising the Speed breaker height such that the driver knows the speed breaker is present before it And also other solution is one girl Discovered app using Google maps such that the vehicle detects the speed breaker and warns the driver But there are Various dis advantages due to this methods and to over come it now we had made automatic speed reducer system using RF Module

Main components used in this project is

- LCD-Lcd means liquid crystal display which is used to display the text message
- Buzzer-Which used to alert the vehicles behind
- Microcontroller -it is used to shift the vehicle to automatic mode if driver doesn't respond to text message
- Relay-which is used to convert two batteries in normal mode to single battery in auto mode

### III. METHODOLOGY

The way as our Model works with the components used can understood much better with a scenario that we would Like to share as Follows



#### A. IR Sensor

An infrared sensor is an electronic device that emits in order to sense some aspects of the surroundings. An IR Sensor can measure the Heat of an object as well as detects the motion. These types of sensors measures only infrared Radiation, rather than emitting it that is Called as a passive IR sensor. Usually in the infrared spectrum , all the Objects radiate some form of thermal radiations. These types Of radiations are invisible to our eyes that can be detected By an infrared sensor. The emitter is simply an IR LED (Light Emitting Diode) and the detector is simply an IR Photodiode which is sensitive to IR light of the same wavelength as that emitted by the IR LED. When IR light falls On the photodiode, the resistances and these output voltages, change in proportion to the magnitude of the IR light Received.

#### B. AVR ATMEGA328 Microcontroller

The ATmega328 is a single-chip microcontroller created by Atmel in the megaAVR family (later Microchip Technology acquired Atmel in 2016). It has a modified Harvard architecture 8-bit RISC processor core. The Atmel 8-Bit AVR RISC-based microcontroller combines 32 KB ISP flash memory with read-while-write capabilities, 1 KB EEPROM, 2 KB SRAM, 23 general-purpose I/O lines, 32 general-purpose working registers, 3 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 5 software-selectable power-saving modes. The device Operates between 1.8 and 5.5 volts. The device achieves throughput Approaching 1 MIPS/MHz. The Arduino will Perform the task of ploughing, the ploughing will perform in three modes on, off, mid condition. ploughing is also Known as tilling. The command will get from Arduino and then task will get performed. If speed of vehicle is detected Then Microcontroller compares real time speed with database speed and make decision. If over speed is detected it Automatically create speed breaker

#### C. Servo Motor

Servo motor is a device that produce rotary motion or linear motion in the actuator that allow for precise control Of angular or linear Position. This Servo Motor used, provides only 180-degree rotation or half rotation. It has three Pins

- Red-Red pin -- +9V
- Brown-Brown pin— -9V
- Orange is given an output and is connected to Arduino digital pin.

This Servo motor is directly controlled by the controller and it doesn't require the motor driver board. In modern cars, servo Stepping on the motors are used to control its speed. When gas pedal, it sends electrical signals to the car's Computer. The computer then processes that information and sends a signal to the servo attached to the throttle to adjust the engine speed.

#### D. LCD Display

It is 16x2 means 16 columns and 2 rows in display. simultaneously LCD display speed and speed breaker status.

#### E. Buzzer

A buzzer or beeper is a signalling device, usually electronic, typically used in automobiles, household appliances ,Such as a microwave Oven, or game shows. It most commonly consists of a number of switches or sensors connected To a control unit that determines if and Which button was pushed or a preset time has lapsed, and usually illuminates a light on the appropriate button or

control panel, and Sounds a warning in the form of a continuous or intermittent Buzzing or beeping sound.If over speed is detected then buzzer beeps Before creating speed breaker.

#### F. Power Supply

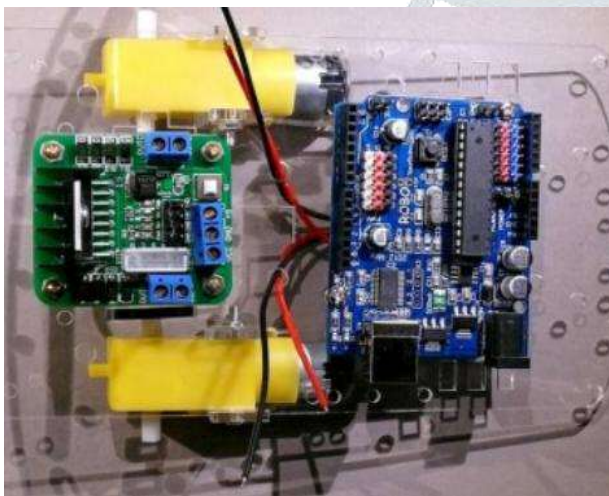
For getting +5volts supply,the +12 volts supply from power supply output is taken.And is given to 7805. The Minimum input to 7805 is +7 vdc and maximum input is +35 vdc. And we are giving +12vdc as input to the 7805.Therefore, the output of the 7805 is constant regulated +5vdc

### IV. EXPERIMENT RESULTS

The Hardware and software are used in this project will mentioned below:

#### G. Hardware and Software to be Used

- 1) Software :
  - a) Programming Language : Embedded C
  - b) Express PCB
  - c) VP812 burner



- 2) Hardware :
  - a) AVR ATMEGA328 Microcontroller
  - b) IR Sensor
  - c) Servo motor
  - d) Buzzer
  - e) LCD

### V. CONCLUSION

Studies say that the Indian road network, spanning over 5 million kilometers, carried almost 90 percent of the Country's passenger traffic. With the rapid increase in no. Of cars and over-crowded Indian roads, road safety is a major Concern for the country's citizens. The main reason for road accidents is badly designed speed breakers, drowsiness, over Speeding, foggy weather etc. Our proposed system provides the efficient way to deal with this problem with promptness and minimizing the speed

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