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# A Result on Car over Speed Detection Using Arduino UNO & IR Sensor

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**ABSTRACT:** Major causes of accidents and killing many people due to over speeding of vehicles to overcome this problem we designed a proposed System. Project aims is to provide reliable system to detect the speed of vehicle using IR Sensors & display the vehicle speed on LCD (Liquid Crystal Display) & also the system gives the alert through Buzzer if the sensor detects over speed of vehicle.

**KEYWORDS:** Power supply, Arduino UNO, IR sensors, LCD Display, BUZZER

## I. INTRODUCTION

Many road accidents in the world are caused due to rash driving. Government has released the death of people More than 140,000 in India's road last year. Speed of vehicles running on the roads is increased considered by the traffic population to control or monitor the accidents. Over speed driving is highly effective in detection in the system.

On the arduino board there are two IR sensors, IR transmitter (IR LED), one IR receiver (photo diode) are placed in our project. If any vehicle crosses over two sensors connected to the interrupted pin of arduino the full wave & the time between activation of arduino internal timer sensor. Then sensor measure the speed of vehicle on the LCD screen

## II. LITERATURE SURVEY

Vishal Pande et.al has proposed a framework for autonomous speed control of over speeding vehicle using Radio Frequency to design a controller to control vehicles speed and display to monitor the zones which can run on an embedded system platform.

Monika Jain presented a device to detect the rash driving and alerts the traffic authorities in case of any violation. This frame of reference intends to design a system aimed at early detection and alerts vehicles driving patterns which is related to rash driving. Speed limit is by the police at very location who use the system depending on the traffic. This device reports, displays and data base system for over speed violation management.

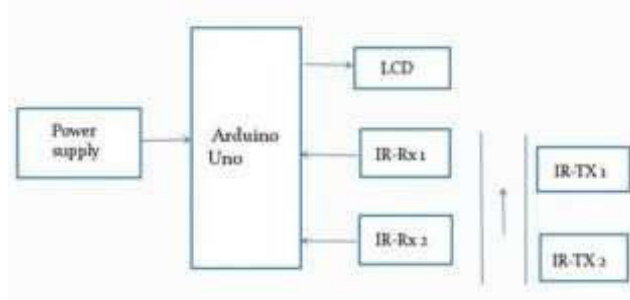
Ni Haling et.al designed a system that detects the speed of the vehicle in the roads, main highways and the places where the drivers over speed. If the speed exceeds the limit, the information will be sent to PC (Personal Computer) which starts the camera which captures the vehicle of over speed.

Amar Narayan et.al developed speed estimation system that alerts drivers about driving conditions, robust and reliable and helps to avoid joining traffic jams is an important problem that has attracted lots of attention recently.

Nehal Kassem et.al introduced a novel RF based vehicle motion and speed detection system which can detect vehicle motion estimates the vehicle speed in typical streets with an accuracy of 90% and detects motion with an accuracy of 100%.



**III. IMPLEMENTATION**



**IV. PROPOSED SYSTEM DEVELOPMENT**

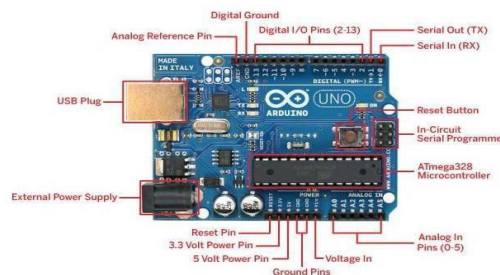
**A. Arduino Uno**

A particular task is performed in each section which a programmer divides into various sections. An Arduino is the most commonly used device for physical computing platforms and interactive development environments. Arduino software performs as a standalone platform on a computer. In the Arduino software, there is an Arduino IDE (Integrated Development Environment). The Arduino IDE is used for programming purposes. In the market, the Arduino Uno is the most commonly used development board. It is a microcontroller-based board on the ATmega328P. The Arduino Uno includes a crystal oscillator, communication protocols, voltage regulators, etc. There are 14 input/output pins, of which 6 can be used for PWM and 6 are analog ports. The Harvard architecture is used in the Arduino, so to run program code and use separate code. In data memory, the board code is stored. In the market, there are various types of Arduino boards: Arduino Leonardo, LilyPad Arduino, Red Board, Arduino Mega (R3), but we use the Arduino Uno (R3).



**Fig 1.Arduino UNO**

The Arduino Uno R3 pin diagram is shown below. It comprises 14 digital I/O pins. From these pins, 6 pins can be utilized like PWM outputs. This board includes 14 digital input/output pins, Analog inputs-6, a USB connection, quartz crystal-16 MHz, a power jack, a USB connection, resonator-16Mhz, a power jack, an ICSP header, and an RST button.



**Fig 1.1 Shows Detail points of Arduino UNO**



### B. IR Sensor

IR sensor module includes mainly the IR Transmitter and Receiver, Variable Resistor (Trimmer pot), output LED in IR LED Transmitter. Light emit by IR LED in the range of Infrared frequency.

Wavelength of IR light is invisible to humans (about 700nm - 1nm).

IR sensor is one kind of transmitter that emits IR radiations. This LED looks similar to a standard LED and the radiation which is generated by this is not visible to the human eye. Infrared receivers mainly detect the radiation using an infrared transmitter. These infrared receivers are available in photodiodes form. IR Photodiodes are dissimilar as compared with usual photodiodes because they detect simply IR radiation. Different kinds of infrared receivers mainly exist depending on the voltage, wavelength, package, etc.

Once it is used as the combination of an IR transmitter & receiver, then the receiver's wavelength must equal the transmitter. Here, the transmitter is IR LED whereas the receiver is IR photodiode. The infrared photodiode is responsive to the infrared light that is generated through an infrared LED. The resistance of photo-diode & the change in output voltage is in proportion to the infrared light obtained.

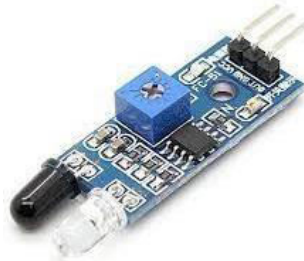


Fig 2. Shows IR Sensor

### C. LCD Display

The term LCD stands for liquid crystal display. It is one kind of electronic display module used in an extensive range of applications like various circuits & devices like mobile phones, calculators, computers, TV sets, etc. These displays are mainly preferred for multi-segment light-emitting diodes and seven segments. The main benefits of using this module are inexpensive; simply programmable, animations, and there are no limitations for displaying custom characters, special and even animations, etc.

The features of this LCD mainly include the following.

- The operating voltage of this LCD is 4.7V-5.3V
- It includes two rows where each row can produce 16-characters.
- The utilization of current is 1mA with no backlight
- Every character can be built with a 5x8 pixel box
- The alphanumeric LCDs alphabets & numbers
- Is display can work on two modes like 4-bit & 8-bit
- These are obtainable in Blue & Green Backlight
- It displays a few custom generated charactersw



**D. Buzzer**

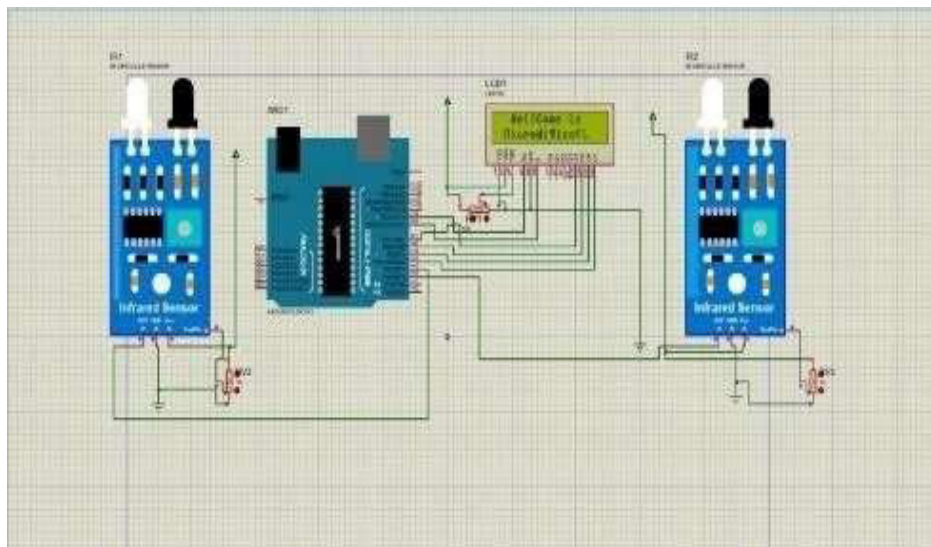
An audio signaling device like a beeper or buzzer may be electromechanical or piezoelectric or mechanical type. The main function of this is to convert the signal from audio to sound. Generally, it is powered through DC voltage and used in timers, alarm devices, printers, alarms, computers, etc. Based on the various designs, it can generate different sounds like alarm, music, bell & siren.



**Fig 3. Buzzer**

The pin configuration of the buzzer is shown below. It includes two pins namely positive and negative. The positive terminal of this is represented with the '+' symbol or a longer terminal. This terminal is powered through 6Volts whereas the negative terminal is represented with the '-' symbol or short terminal and it is connected to the GND terminal.

**E. Architecture of the system**



**Fig 4.Circuit Diagram.**

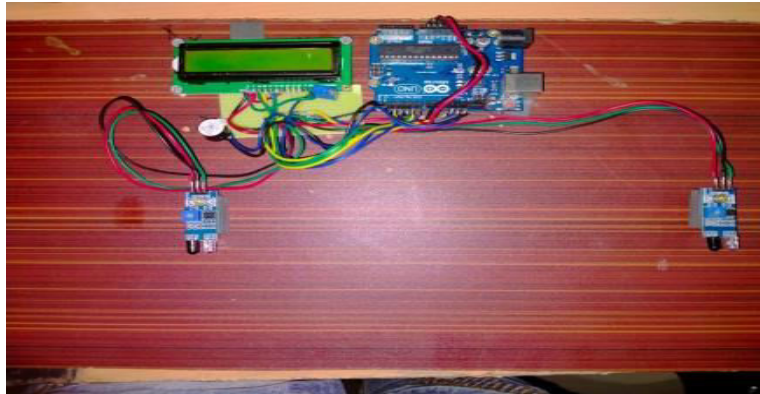


Fig 5. Architecture of the system

### V. FUTURE SCOPE

In this paper we have mentioned the design and construction of speed detection system for vehicles. This design is based on Arduino microcontroller. Using microcontroller we can control the timing conditions based on distance between sensors. 50 km/h speed limit is specified in this in this paper. Approximate value is calculated as per time taken across the two sensors. Distance between the sensors delayed by speed sensing.

### VI. RESULTAND DISCUSSION

Our project Vehicle speed detection using Arduino and IR sensors was designed to detects the vehicle speed with the help of IR sensors and monitors the speed on LCD display and active the buzzer if the vehicle speed was high.

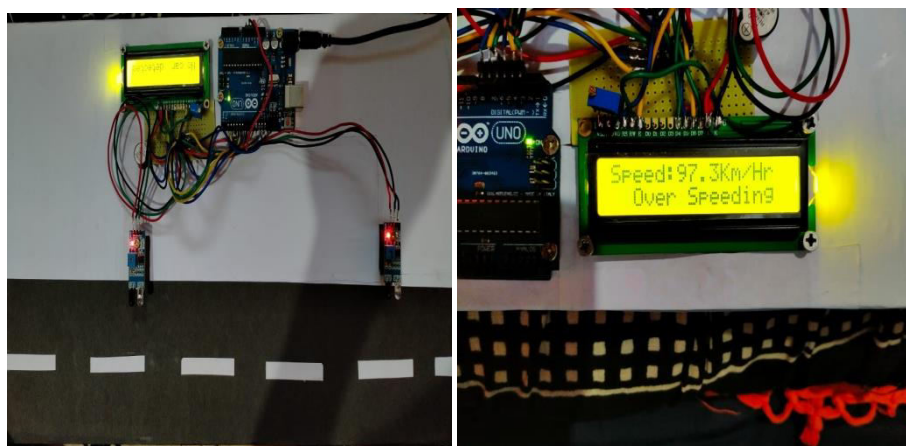


Fig 6. Actual Model of project



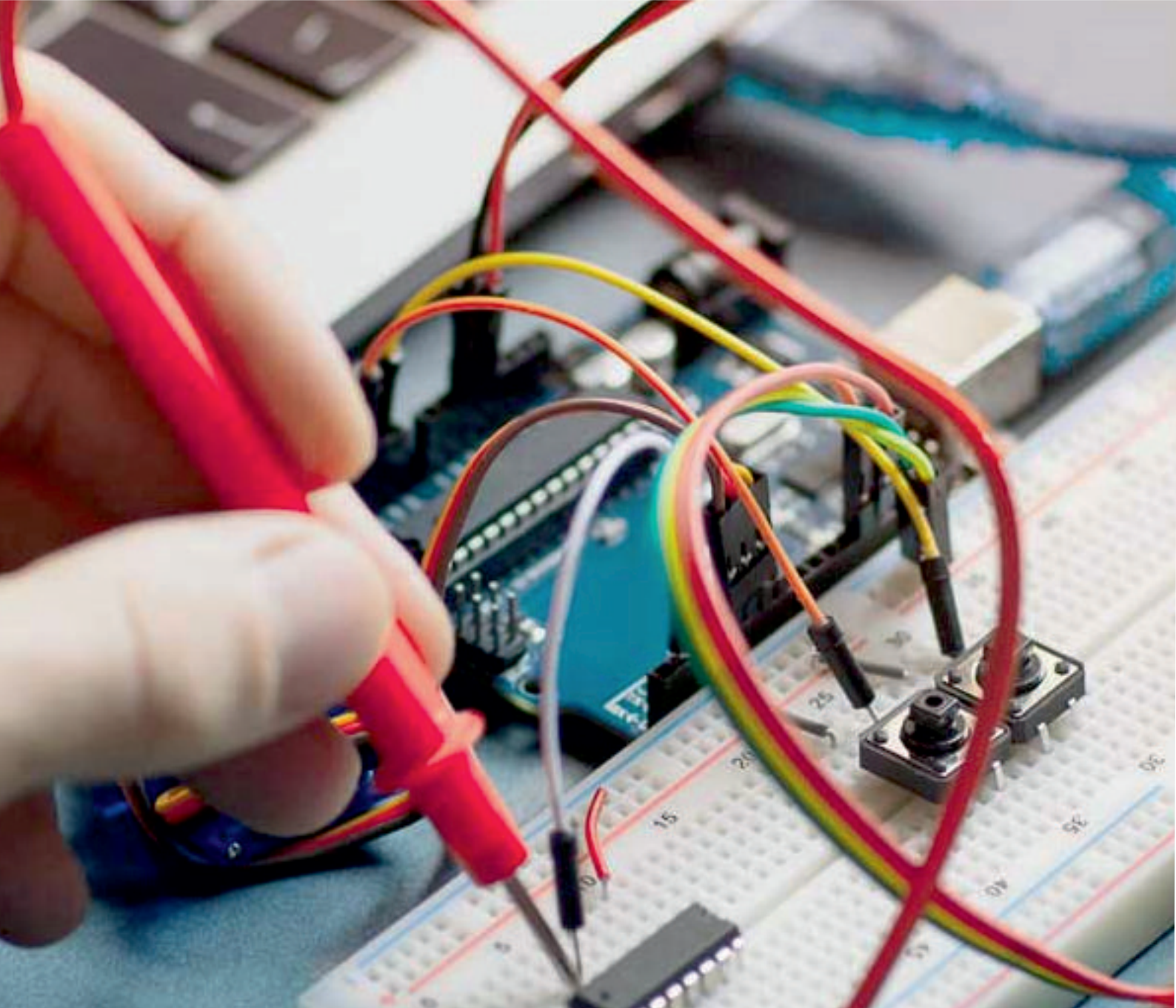
**Fig 7 Model connection actually**

## VII. CONCLUSION

.If more accuracy of the speed and time is required, a greater number of sensors must be used. The over speed detection system can be further advanced by using GSM module and CCTV camera in the circuit. If any vehicle has crossed the speed limit, then this camera will be triggered to take a picture of the vehicle. Employing this over speed detection system, offers several advantages for traffic control department and also safety of commuters.

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