IOT BASED ACCIDENT PREVENTION AND ALERTING SYSTEM

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Abstract ---At present, road accidents rates have raised, there is a necessity for developing the system. The Aim of the system is to finding the Vehicle Speed and if the speed is increased it is automatically controlled and gives alert to the driver and also create a smart accident detection system using that detects the occurrence of an accident and sends a message to the police station and hospital. The main aim is to design a low cost and an efficient vehicle prevention and vehicle alerting circuit based on an ARDUINO UNO Microcontroller.In this Ultrasonic Sensor is used to measure the distance between two vehicles if the speed is increased it is automatically controlled using DC Motor and alarming the driver with buzzer sound. A vibrating sensor is used to alert when the vehicle is struck with some accident by sending message to the nearby hospital and police station via WIFI Module.

Keywords:ARDUINO UNO Microcontroller,Ultrasonic Sensor,Vibration Sensor,DC Motor.

I.INTRODUCTION

IoT or Internet Things refers to network connected to the physical objects that can communicate and exchange data.Automatic vehicle monitoring has turned out to be a very crucial scenario in the current years. It may improve into possibility by executing the following technologies. This project targets to propose a system, which detects speeding vehicles over a specific speed limit and immediately inform to the driver. At present-day, road accidents rates have raised so, there is a necessity for developing a system that detects an over speeding vehicle. The execution of present Smart Vehicle Over speeding Detector using Internet of Things determines all the road traffic information automatically with intelligence.If this smart sensor technology is used the safety factors, t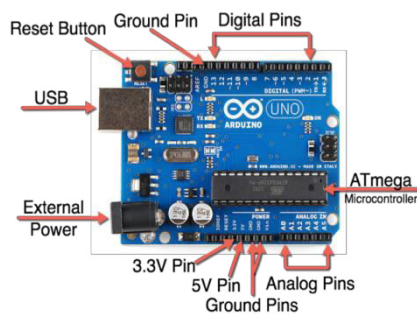hen avoidance of accidents may be attained. The system sends the data wirelessly.In this ultrasonic sensor is used to find the distance between two vehicles. If the over speeding vehicle is detected, then the DC Motor automatically control the speed and gives alert to the drive by sounding a buzzer alarm and to the behind vehicle it gives led intimation.If the vehicle struck or met an accident,then the vibration sensor is used to send message to hospital and policestation via WiFi Module.

II.COMPONENTS DETAILS

A.Arduino uno

ARDUINO UNOstands a microcontroller board based on the ATmega328P. It takes 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a

16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It holds everything required to maintenance the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get happening.. You be able to tinker through your UNO devoid ofworrying too much about doing something wrong, worst case scenario you can replace the chip for a few dollars and start over again.It exists a microcontroller board based on inputs and outputs.It holds everything needed to support the microcontroller; simply connect it to a computer. "Uno" means one in Italian and was selected to mark the version 1.0
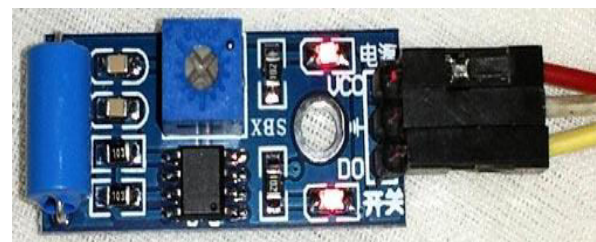
This is a SW-420 vibration module, which can work from the 3.3V to 5V. The sensor uses LM393 comparator to detect the vibration over an threshold point and provides the digital data, Logic Low or Logic High, 0 or 1. During the normal operation, sensor provides the Logic Low and when vibration is detected, sensor provides the Logic High. There are three peripherals available in this module, two LEDs, one for the Power state and other for the sensor's output. Additionally, a potentiometer is available in which can be further used to control the threshold point of the vibration. In this project, we will use 5V to power the module.

B .Ultrasonic Sensor

This include ultrasonic transmitter, receiver and control circuit. An ultrasonic sensor is one which measures the distance of an object.[5]An ultrasonic sensor makes a transducer to send and receive ultrasonic pulses that relay back information about an object's proximity.


C. Vibration Sensor

D.DC Motor

A DC motor is one motor within a class of electrical machines whereby direct current electrical power is converted into mechanical power. Most frequently, this type of motor relies on forces that magnetic fields produce. Irrespective of the type, DC motors have some kind of internal mechanism, which is electronic or electromechanical. In together cases, the direction of current flow in part of the motor is changed periodically.The speed of a DC motor is measured using a variable supply voltage or by varying the strength of the current within its field windrings. While smaller DC motors are usually used in the making of appliances, tools, toys, and automobile mechanisms, such as electric car seats, larger DC motors are used in hoists, elevators, and electric vehicles.
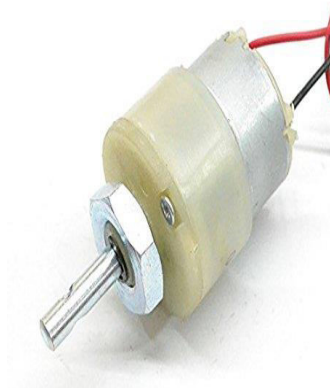
E.Buzzer

A **buzzer** is a small however efficient component to add sound features to our project/system. It is very small and dense 2-pin structure hence can be easily used on breadboard, Perf Board and even on PCBs which makes this a broadly used component in most electronic applications.There are twofold types are buzzers that are commonly available. The one shown here is a simple buzzer which when power-driven will make a Nonstop Beeeeeeppp.... sound, the other type is called a readymade buzzer which will look bulkier than this and will yield

Beep. Beep. Beep. Sound due to the internal oscillating circuit existing inside it. But, the one shown here is most broadly used because it can be customised with help of other circuits to fit easily in our application.

F.Led lights

An LED-Light Emitting Diode module is, a device containing several LED light bulbs, which isconnected to a fixture,containing a battery. LED light products produce light extraproficiently than glowing light bulbs.[6]An electrical current passes through a microchip, which produces the tiny light sources we call LEDs and the result is visible light.

G.Wifi Module

The ESP8266 WiFi Module is a self contained chip with combined TCP/IP protocol stack that can provide any microcontroller access to your WiFi network. This Wifi module has a powerful on-board processing and storage capability which is integrated with the sensors and other application of specific devices to communicate.
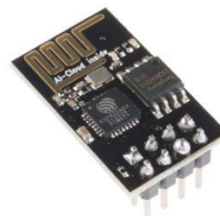
III.SOFTWARE DETAILS

ARDUINO IDE

The Arduino (IDE) is a application where the functions from C and C++ is written. It is used to upload and write programs to Arduino boards.Arduino consists of both physical programmable circuit board (i.e,. microcontroller) and some piece of software, or IDE which runs on the computer.

VI.CONCLUSION

This system would bring the positive impact in reducing the car accidents if it is successfully implemented. The ability of the system which alert the incoming sharp corners to drivers give the drivers many benefits which are can avoid them from having accidents that might take their lives and also can prevent from drivers' cars broken because of accidents. And energy also generated automatically by car passing every speed breaker.

REFERENCES

[1]. Wang Hongjian, Tang Yuelin, RFID Technology Applied to Monitor Vehicle in Highway, 2012 Third International Conference on Digital Manufacturing & Automation

[2].https://www.cookinghacks.com/media/cooking/images/documentation/tutorial908/SIM908_AT_Command_Manual_V1.02.pdf

[3]. Rangan P. R. (2017), "Vehicle Speed Sensing and Smoke Detecting System", International Journal of Computer Science and Engineering, pp. 27-33.

[4].Malik et al.(2014),"Automated Over Speeding Detection and Reporting System"IEEE Xplore,pp.1-7.

[5].Shabibi L. A., Jayaraman N. and Vrindavanam J. (2014), "Automobile Speed Violation Detection System using RFID and GSM Technologies", International Journal of Applied Information Systems, Vol. 7, No. 6, pp. 24-29.

[6].Prasanth P. and Karthikeyan U. (2016), "Effective Tracking of Misbehaviorial Driver & Over Speed Monitoring With Emergency Support", International Journal of Advanced Research in Computer Engineering & Technology, 5 (10), pp. 2527-2529.