Smart Vehicle Using IoT

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*Abstract-***This paper is to represent our project which makes human driving safer and to overcome accidents at reasonable cost with great effect. Now a day's accidents became quite common. As people are buying automobiles, the incidents of accidents are just increasing day by day. Most of the accidents are due to fast driving and drunk driving. Usually the drivers drive the vehicles at high speed without considering the speed limits publicly areas also. Even though the traffic police cannot achieve full response from them and also, it's impossible to watch those areas in the least time to manage their speed. Thus, this project paves way for controlling the speed of the vehicles.   To regulate the speed, we are using an app which is given to their parents. Now parents can control the speed of a vehicle. And controlling a vehicle is completed by using a L293D motor driver. Another problem is alcohol consumption of the drivers so alcohol sensor is employed. The alcohol sensor utilized in this project is MQ3 sensor which to detect the alcohol content in human breath. If the person inside the car has consumed alcohol then it sends alert to the person that he takes alcohol. This is often also using to supply safety for ladies by providing SOS button within the vehicle itself. If the person is in peril, he/she presses the SOS button a notification is send to their parents alongside their location details. This project is fitted inside the vehicle.**

Also, a little measure of improvement proposed during this paper, adds to the higher performance of those devices and cause better women safety.

Keywords- **Arduino ATmega328, alcohol detector, MQ3, App, L293D motor driver,10k pot, GSM.**

I. INTRODUCTION

Drinking and driving is already a significant public ill health, which is probably going to the foremost significant problems. The system implemented by us aims at reducing the road accident within the near future due to drunken and drive. This paper presents the progress in using the alcohol detector, a tool that senses a change within the alcoholic gas content of the encompassing air this device is more commonly mentioned as a breath analysis, as its analysis the alcohol content from person's breath. The system detects the presence of alcohol within the vehicle and immediately locks the engine of the vehicle. When an individual is riding a motorcycle without considering the speed limits there could be an opportunity to met with an accident. In order to prevent this situation an app is to developed to regulate the limit of that bike which app is installed in their parent's mobile. Whenever parents enter the speed within the app. Cloud takes that data and saves in it, then hardware downloads it and control the speed. We use PWM for speed control. If the person is in peril, he/she presses the SOS button then a

notification is shipped to their parents and to police who is nearby (sends the GPS location)

II.EXISTING SOLUTIONS

Speed humps and raised platforms gateway infrastructure treatments indicating a replacement speed regime e.g.: when entering a built-up-area, residential areas or school zones from a higher speed or access road. Police manually checks the alcohol content by using breath alcohol-testing device rather than having to draw a driver's blood to check his alcohol level, an officer can test the driver's breath on the spot and instantly know if there's a reason to arrest the driver.

III.PROPOSED SOLUTIONS

Alcohol detection in vehicle and locking the motor of a vehicle which could resolve drunken driving accidents worldwide.

Vehicle speed limit controller is that the solutions for preventing those accidents. By using this we will control the speed of the vehicle.

IV.BLOCK DIAGRAM
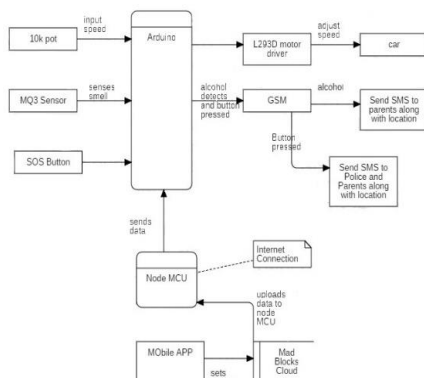
V.HARDWARE REQUIREMENTS

A. Arduino

Arduino Uno is a board for microcontrollers based on the ATmega328 (Database). It has 14 digital input/output pins(6of which can be used as PWM outputs), 6 analog inputs, 16MHz porcelain resonator, USB connection, power connector, ICSP header and reset Button .It has everything needed to support the microcontroller; Connect it to a computer with a USB cable or run it from AC to DC adapter or battery. This is different from all previous cards because it does not use an FTDI serial USB driver chip. Instead, it features the Atmega16U2 (up to the Atmega8U2 R2 version) programmed from USB to serial converter. External power (not USB) can come from an AC to DC adapter (wal - wart) or a battery. The adapter can be connected by plugging a 2.1 mm center positive plug into the board's power plug. The battery cables can be included in the headings of the Gnd and Vin pins of the POWER connector. The board can work with an external supply of 6 to 20 volts. Tfyouusemorethan12V, the voltage regulator will overheat and damage the board. The recommended range is 7 to 12 volts.
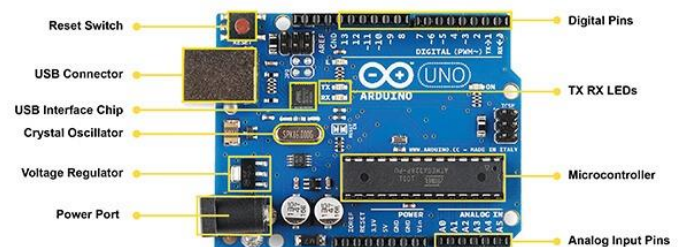
B. Alcohol Sensor MQ3

MQ-3 module is suitable for detecting gases like Alcohol, Benzine, CH_4, Hexane, LPG, CO. MQ-3 gas sensor is SnO_2, which with lower conductivity in air. When the target alcohol gas exists, the sensor's conductivity is higher along with the gas concentration in rising state. MQ-3 gas sensor has highly sensitive to Alcohol, and has good resistance to disturb the gasoline, smoke and vapor. This alcohol sensor is suitable for detecting alcohol concentration on the human breath in the vehicle. It has a fast response time. Sensor provides an analog output based on alcohol concentration of a person. The MQ3 circuit is very simple, all it needs is one resistor. A simple interface could be a 0-3.3V ADC.

C. GSM Module

GSM module is used to establish the communication between a computer and a GSM system. Global Packet Radio Service (GPRS) is an extension of GSM that enables data at high transmission rate. GSM/GPRS module consists of a GSM/GPRS modem assembled together with power supply circuit (like Arduino) and communication interfaces (like RS-232, USB, etc.).

The modem is a very important part here. These modules consist of a GSM module or GPRS modem powered by a power supply circuit and communication interfaces for computer. A GSM/GPRS modem can be a modem device with a serial connection, USB or Bluetooth connection, or it can be a mobile phone that provides GSM modem capabilities. A GSM/GPRS MODEM can perform the following 1. Receive, send or delete SMS messages in a SIM messages during a SIM. 2. Read, add, search phonebook entries of the SIM. 3.Make, Receive, or reject a voice call.

D. 10k Potentiometer

Potentiometers also referred to as POT, are nothing but variable resistors.

A **potentiometer** may be a manually adjustable rheostat with 3 terminals. Two terminals are connected to both ends of a resistive element, and therefore the third terminal connects to a sliding contact, called a wiper, moving over the resistive element.


E. Node MCU

The Node MCU (Node Micro Controller Unit) is open source software and hardware development environment that's built around a really inexpensive System-on-a-Chip (SoC) called the ESP8266. The ESP8266, designed and made by Espressif Systems, contains all crucial elements of the fashionable computer: CPU, RAM, networking and even a contemporary operating system and SDK. Most people call ESP8266 as a WIFI module, but it is actually a microcontroller. ESP8266 is that the name of the microcontroller developed by Express if Systems which may be a company based out of shanghai. This microcontroller has the power to perform WIFI related activities hence its widely used as a WIFI module. There are two of ways to figure together with your ESP8266 module. This may assist you to urge started with ESP8266. A method is by using the AT commands. The opposite way is by using the Arduino IDE. Here we'll use AT commands to send data from Arduino to ESP.
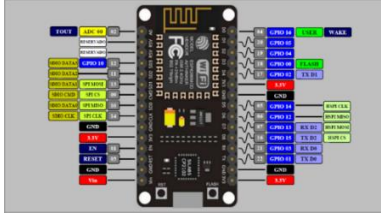
VI. SOFTWARE REQUIREMENTS

The Arduino Integrated Development Environment (IDE) is a cross-platform software (for Windows, macOS, Linux) that's written in functions from C and C++. it's wont to write and upload programs to Arduino compatible boards, but also, with the assistance of 3rd party cores, other vendor development boards. Arduino is an open-source electronics platform supported easy-to-use hardware and software. Arduino boards are ready to read inputs - light on a sensor, a finger on a button, or a Twitter message and switch it into an output activating a motor. you'll tell your board what to try to by sending a group of instructions to the microcontroller on the board. to try to so you employ the Arduino programing language (based on Wiring), and therefore the Arduino Software (IDE), supported Processing. The ASCII text file for the IDE is released under the GNU General Public License, version2. The Arduino IDE supports the languages like C and C++ using some rules of code structuring.
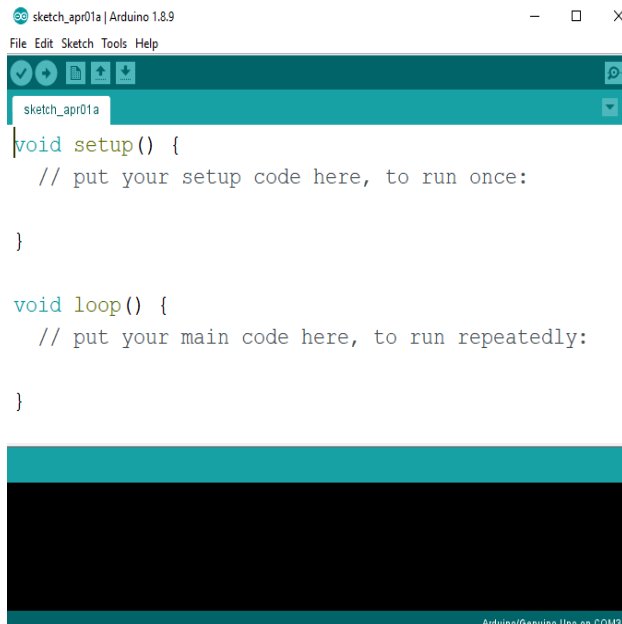
VII. HARDWARE IMPLEMENTATION

When the drunken driver enters in the vehicle alcohol sensor senses the alcohol, therefore message is sent to their parents that alcohol is detected along with their location details and as shown in fig.2 and ignition of vehicle automatically turns off by l293d motor. So, by this the purpose of our project succeeds. When a person is driving a vehicle without considering the speed limits there might be a chance to met with an accident. In order to prevent this situation an app is to developed to control the speed limit of that bike as shown in fig.3. And that app is installed in their parent's mobile. Whenever parents enter the speed in the app. Cloud takes that data and saves in it, then hardware downloads it and control the speed. We use L293D motor driver to control the speed of a vehicle. If the person is in danger, he/she presses the SOS button 3times within the time limit of 10sec then a notification is sent to their parents and to police who is nearby (sends the GPS location) as shown in fig 4.
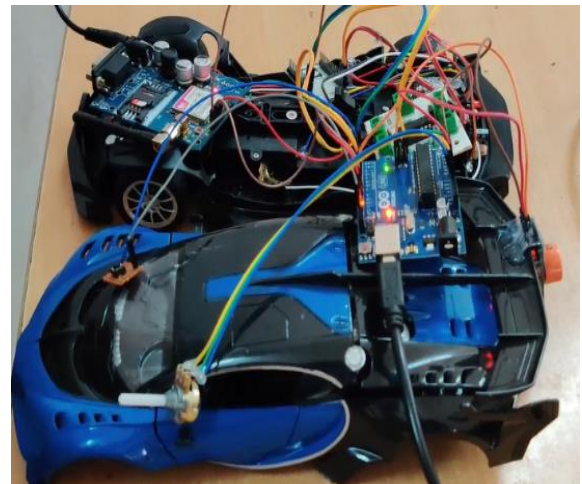

Fig1

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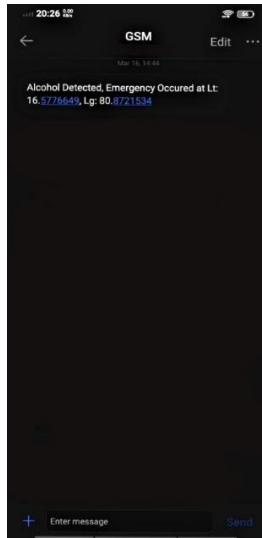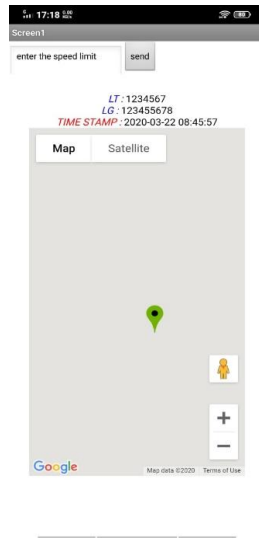[1]https://www.researchgate.net/publication/3243142
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Fig.2   Fig.3
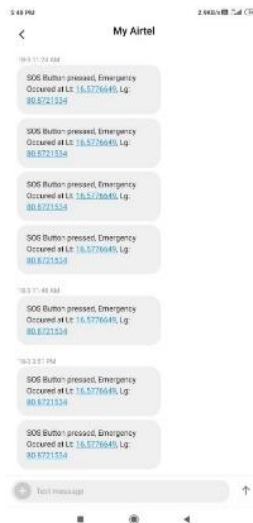
Fig.4

*IX.*CONCLUSION

In this project we used some circuits, sensors and
motor drivers so that the development of a smart
vehicle is accomplished by using the technology of
the Internet of Things. This method is less costly and
more efficient.