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# Smart Car Monitoring System Using Arduino Uno

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**ABSTRACT:** In today's 21<sup>st</sup> century road safety has become a crucial part of a human's life. Nowadays the numbers of vehicles are increasing day by day and so the amount of road accidents is also increasing. There are different causes of these accidents such as drunk and drive, over speeding, distraction of driver, drowsiness of the driver, avoiding safety gears like seat belts and helmets. So, in order to provide a solution we have come up with an idea that will help solve this problem. This system has two foremost features. Firstly the system will make sure that if the driver is drunk, a warning message will be displayed on LCD. In spite of the fact if the drivers continues to drive a car, there will be fuel cut off which will make the car slow and eventually stop the car. Secondly, if any accident occurs in the middle of journey then an emergency message will be sent to the nearby Hospital, Police station, and to a relative of the victim. This system provides a way to avoid road accidents which will reduce the number of road accidents.

**KEYWORDS:** GSM module, GPS, ARDUINO UNO R3, MQ3 Alcohol sensor, LCD display, Ultrasonic sensor.

## I. INTRODUCTION

So as we have a tendency to all square measure privy to the actual fact that road accidents are increasing privy to. Street mishap is that the most unpleasant factor to happen to a street consumer, but they happen often. an outsized portion of the road shoppers square measure much conscious of the general standards and welfare measures whereas utilizing streets Speed up will increase the danger of mishap and seriousness of injury throughout mishap and a lot of} faster vehicles square measure additional inclined to mishap than the more slow one. So to unravel this harsh downside, what our contribution to the current forceful issue is sensible automobile observation SYSTEM. therefore what we have a tendency to thrive to form such a system to scale back the amount of road accidents going down on a day after day round the corner. Sadly, generally some road accidents cause death on the spot, then that being one more reason to scale back the amount of deaths. And also the principal use of this explicit system is that the give emergency facilitate to any explicit victim as presently as doable. The foremost reason for road accidents within the country is driving whereas you're drunk. Despite the huge network of roads within the country, most of them have potholes, while not road signs or beneath construction for a protracted amount. And most of the days what happens are that if any victim has more experienced any accident, emergency assistance is not provided thereto victim. Since there's a delay in serving to the victim in some cases these incidents cause unfortunate death. Therefore we expect providing emergency assistance is a really vital issue once it involves road accidents.

## II. LITERATURE REVIEW

The proposed framework will help the pathetic casualties by informing the closest crisis upholds. Since following the accident spot is the significant issue looked by crisis unit. Thus, the point of this paper is to propose a robotized framework which identifies street accidents just as mishaps and the condition of casualty to close by crisis administrations and family members through a mechanized SMS framework and furthermore proposed an applied model to stop vehicle burglary. From the start the approved individual needs to enlist in the framework utilizing his unique mark. He likewise needs to give a particular example and secret key for different people to light the motor aside from him. During the enlistment he needs to give his detail data like name, NID, telephone number, vehicle enrollment number, vehicle distinguishing proof number, relative data for crisis contacts and so forth In the event that any mishap happens to his vehicle, the framework will educate him and furthermore is endeavored to be taken, he will be educated

through this gave data [1]. The number of vehicles is increasing day by day because of which accidents are also increasing enormously. The main reason why these accidents are caused is by the delay of the motive force to hit the brake. This is often a technology for cars to sense associate in nursing close forward collision with associate in nursing other vehicle or an obstacle, and to brake the automotive consequently that is finished by the braking circuit. In car crash detection on normal roads we are going to implement a cheaper and easier way to stop accidents where human cannot apply brakes at the specified time when it is required. In this the ultrasonic transmitter in the ultrasonic will emit waves which will go and crash to the object in front and the waves will receive back to the ultrasonic receiver in the sensor then the distance between the car on which the sensor is place and the object in front will be calculated. If the distance is normal or far then no actions will be taken. If the distance is relatively close and the driver does not apply brakes then the sensor will trigger the circuit and with the help of Microcontroller 8051 it will send the commands of slowing down to the motors and the speed of the motors will be reduced. Still if brakes are not applied by the user and the object gets very close where at point accident can occur then the microcontroller will send the command to the motors and the motors will stop. This paper presents a vehicle checking framework that diminishes number of mishaps, improve mileage, breaking effectiveness, tire expansion helps in appropriate taking care of and upkeep of vehicle. This framework is constrained by a miniature regulator that is stacked with a wise inserted C program. All boundaries are shown on the actual interface i.e. LCD Screen and far off interface utilizing IOT. The proposed paper gives arrangement by keeping fundamental contemplations in view. This paper proposes a thought of utilizing Internet of Things (IOT) which will broaden the working reach. The central issues of this framework are decrease in number of mishaps, burden during driving, to build the sturdiness and life of tires, fills mileage, motor execution, fuel level, checking and to give appropriate vehicle dealing with.

**Microcontroller:** Microcontroller is a little PC on a solitary coordinated circuit having different capacities and memory. Microcontroller is intended for little or committed application. We are utilizing PIC18f452 regulator. PIC 18F is 8 bit regulator. It is having different highlights like Analog to Digital converter, Timers, Two CCP model, Programmable Brown out Reset [4].

**Ultrasonic Sensor:** The transmitter radiates 8 eruptions of a directional 40 KHz ultrasonic wave when set off and begins a clock. Ultrasonic heartbeats travel outward until they experience an item. The article makes the wave be reflected back towards the unit. The ultrasonic beneficiary would recognize the reflected wave and stop the stop clock. What's more, as per the clock, fuel level or weight can be adjusted. **Temperature Sensor:** The LM35 arrangement are accuracy incorporated circuit temperature gadgets with a yield voltage directly corresponding to the Centigrade temperature. The LM35 gadget has a bit of leeway over straight temperature sensors adjusted in Kelvin, as the client isn't needed to take away a huge steady voltage from the yield to get advantageous Centigrade scaling. **Fuel Leakage Sensor:** The Grove-Gas Sensor (MQ5) module is valuable for gas spillage identification. It is appropriate because of its high affectability and quick reaction time estimations can be taken at the earliest opportunity. The affectability of the sensor can be changed by utilizing the potentiometer [4]. The proposed paper will give an answer for the traffic risks and street mishap because of absence of crisis offices. The risky driving can be distinguished utilizing accelerometer in vehicle caution application. It is utilized as crash or turn over locator vehicle during the accident or after the accident. Accelerometers get the sign which is utilized to perceive the extreme mishap. In this paper, when vehicle meets with an accident or turn over the vibration sensor will distinguish the sign and sends it to Arduino Uno. GSM send alert accepting the data. At that point in the wake of adjusting the area important move will be made. During the mishap, if the individual didn't get injury or in the event that there is no genuine danger to anybody's life, at that point the alarm message can be halted by driver by a switch gave. To evade the burning through the hour of the salvage group. This is utilized to distinguish the accident by methods for vibration sensor. In the instance of an accident the framework identifies it utilizing the way that the vehicle would be unexpectedly decelerated in such a condition. An accelerometer ceaselessly screens the speeding up of the vehicle and will distinguish decelerations more noteworthy than limit esteem and send the information to the microcontroller through an ADC. The regulator contrasts this and the edge set worth and promptly sends a SOS message to pre-set numbers. With this message the regulator additionally sends the GPS directions of the vehicle which it consistently gets from the GPS module. This framework will profoundly help the pursuit and salvage of vehicles that have met with an accident. GSM Module, GSM/GPRS Mod em-RS232 is worked with Dual Band GSM/GPRS motor SIM900A, deals with frequencies 900/1800 MHz The Modem is accompanying RS232 interface, which permits you associate PC just as microcontroller with RS232 Chip(MAX232). The configurable baud rate is from 9600-115200 through AT order.

**Force Supply Transformer:** A transformer is an electro-attractive static gadget, which moves electrical energy starting with one circuit then onto the next, either at a similar voltage or at various voltages however at a similar recurrence.



Rectifier: The capacity of the rectifier is to change AC over to DC current or voltage. For the most part in the rectifier circuit full wave connect rectifier is utilized.

Channel: The Filter is utilized to eliminate the throbbled AC. A channel circuit utilizes capacitor and inductor. The capacity of the capacitor is to impede the DC voltage and sidestep the AC voltage. The capacity of the inductor is to impede the AC voltage and sidestep the DC voltage.

Voltage Regulator: Voltage controller comprises a fundamental piece of the force supply part of any electronic frameworks. The primary bit of leeway of the controller ICs is that it directs or keeps up the yield steady, disregarding the variety in the info supply [5].

### III. PROPOSED WORK

In our proposed framework our endeavors to identify alcoholic ness of driver and on the off chance that they have burned-through any liquor then a notice will be shipped off to the closest police headquarters. If alcohol is detected inside the vehicle, Along with this plan we are additionally going to screen conduct of vehicle in both inside and outside of vehicle. Alongside this it will give assistance to the driver if in the event that mishap happens by sending message to emergency vehicle, police headquarters and relative of driver moreover. In framework development, it mostly comprise of two sections specifically as programming part and equipment part. programming part incorporate inserted programming for interfacing of different equipment segment like LCD show microcontroller, sensor, GSM, GPS and so forth while in equipment part incorporate segment utilized, for example, alcohol sensor(MQ-3), GPS, GSM, Obstacle Sensor, LCD show, Fuel Supply Blocker, Ultrasonic Sensor, Heart beat Sensor, Bumper switch. In endless supply of liquor two conditions are checked. The first is that, if driver has flushed, he wish to begin vehicle around then at attempting to the beginning vehicle detecting of liquor will be done at which speed be 0. On the off chance that liquor is identified, at that point signal is passed to microcontroller and vehicle start will be stop right away. So this keeps driver from being drive a vehicle.

#### Hardware Requirements

- Arduino Uno r3
- Alcohol sensor
- Ultrasonic sensor
- LCD display
- GSM module
- GPS
- Motor Wheel

#### Software Requirements

- Arduino IDE

##### a) Arduino Uno r3:

The Arduino UNO is the best board to begin with gadgets and coding. On the off chance that this is your first experience dabbling with the stage, the UNO is the most vigorous board you can begin playing with. The UNO is the most utilized and recorded leading group of the entire Arduino family.

**Alcohol sensor:** An alcohol sensor identifies the mindfulness of liquor gas noticeable all around and a simple voltage is a yield perusing. The sensor can actuate at temperatures going from - 10 to 50° C with a force supply is under 150 Ma to 5V.

##### b) LCD display:

If the driver has consumed alcohol then a warning message will be given to the driver through the LCD. The LCD display will show that is it safe to drive the car or not based on particular circumstances.

##### c) GSM modem:

A GSM modem or GSM module is an equipment gadget that utilizes GSM cell phone innovation to give the information to connect a far off organization. From the perspective on the cell phone organization, they are basically indistinguishable from a normal cell phone, including the requirement for a SIM to distinguish them to the organization.



**d) Motor Wheel:**

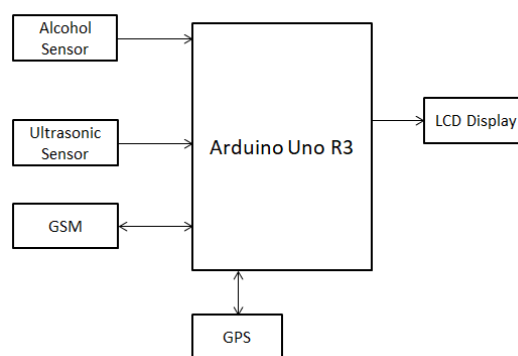
When the driver has consumed alcohol and after getting a warning through the LCD and even though if the driver still continues to drive then the motor will stop making it unable for the driver to drive the car.

**e) Arduino IDE:**

The Arduino Integrated Development atmosphere could be a cross-platform application that's written in functions from C and C++. It's wont to write and transfer programs to Arduino compatible boards, but also, with the assistance of third-party cores, different seller development boards.

**f) Ultrasonic Sensor:**

An ultrasonic sensor is an electronic device that measures the distance of a target object by emitting ultrasonic sound waves, and converts the reflected sound into an electrical signal.



**Figure 1:** Block Diagram

**IV. CONCLUSION**

The proposed system will efficiently detect alcohol through driver’s breath and stop the vehicle by suspending the ignition, instead of directly stopping the vehicle. The proposed system can notify relatives of the driver, police station and ambulance as soon as the accident due to increasing heartbeat and due to which driver are mostly distracted from driving so we can also notify other people’s seated inside vehicle about health status of driver.

**V. FUTURE SCOPE**

Besides, pulse sensor comprises of gadget that can detect or get the sign in beat every moment. There are two heartbeat condition one typical which is called Bradycardia and second is unusual which is called Tachycardia. An ordinary human heartbeat is 70 beat for every moment and female has around 75 beat for each moment. On the off chance that heart beat sensor identifies heart beat rate with anomalous condition fulfilled, it implies high heartbeat rate so this sign is passed to regulator and related message show on LCD with caution and notice additionally ship off relative of driver and to rescue vehicle.

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