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Arduino-Based Alcohol Detection with GSM and GPS

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ABSTRACT: In this Project, a wireless Live box system using sensor GSM and GPS tracking system is developed for accidental monitoring. The method consists of cooperative components of a vibration sensor, GPS device, microcontroller unit, and GSM module. In the occurrence of an accident, this wireless device will send a mobile phone message indicating the current position of the vehicle by GPS to family members, emergency medical service (EMS), and the nearest hospital. The threshold algorithm and the speed of the motorcycle are used to determine falls or accidents in real time. The method are compact and easy to install under the rider's place. A vehicle application can use a vibration, temperature, and gas sensor. The project focuses on building an infrastructure in which vehicle safety authorities can enhance the crash reports post-crash analysis, record the event, and reduce the time to arrive at the crash location. Our research has been targeted towards building an integrated system for emergency rescue services in the event of a road accident. The purpose of the project is for Box to find the accident location using a GPS module and to send this location using a message using the GSM module to the pre-coded number. This system is usually placed inside the vehicle. It reduces the time it takes for emergency rescue to arrive at the crash location. A panic switch is used to control the sending of data

KEYWORDS: Live box, GSM module, GPS, Panic switch.

I. INTRODUCTION

The ability to definitively recognize a vehicle's region and its status is the essential goal of vehicle course taking a look at systems. Furthermore, the fame of vehicles has moreover extended the traffic risks and the road disasters. This is an aftereffect of the shortfall of best emergency workplaces available in our country this construction is a structure that can perceive incidents in basically less time and sends the basic information to the clinical guide place within a few minutes covering geographical bearings, the time and edge wherein a vehicle setback had occurred. This caution message is shipped off the rescue bunch in a short period, which will help in saving significant lives. These structures are executed using a couple of combination strategies that consolidate far-off correspondence, geological arranging, and embedded applications. Our endeavor plans to show an advancement normally distinguishing the accident and a gear GPS reference point reliant upon GSM/GPS development educating at the occasion concerning disaster with sufficient nuances like clear region and time at which incident happened. This endeavor will set up a correspondence between the control station and the unit presented in vehicles. Vehicles will have GPS/GSM engaged after modules and will be followed continuously using cell frameworks. The item introduced in the microcontroller will control the various exercises of the device by really taking a look at the waveform from the vibration sensor. In case of an accident, the device will send an alert message close by region data from the GPS module to the control station using GSM sort out. It is a broad and fruitful response for the helpless rescue response assuming that there ought to emerge an event of setback. The disaster itemizing can normally find a fender bender, search for the spot, and subsequently send the fundamental information to the rescue office covering land works and the time and conditions wherein a car crash happened. At the server end, a control limit will remove appropriate data and store it in a data set, to which disaster information from models will be reviewed dynamically. Our system united pushed the hardware plan and refined control development into a more modest, trustworthy group.

II. LITERATURE SURVEY

2.1 "Design and Development of Automatic Vehicle Accident Detection & Localization of Automobile Using Bluetooth Technology." Nitin Thakre, Prof. Nitin Raut, Prof. Abdulla Shaik (2014)

Cell phone GPS-GSM system is proposed to track vehicles using the Google Earth application developed as an Android application for mobile systems. The remote module has Bluetooth mounted on the moving vehicle, here



Bluetooth will be the medium of communication with the user's mobile for activating the GPS position of the Mobile. In this case, the cell phone will activate its application to track the current position of the vehicle and send it to the remote-located predefined phone for tracking the real-time position of the situation. After data processing, the Google Earth application can be used to view the current location and status of each vehicle using the Android application.

2.2 “Accident Prevention and Reporting System Using GSM (SIM 900D) and GPS (NMEA 0183).” Rashida Nazir, Ayesha Tariq, Sadia Murawwat, Sajjad Rabbani (2012)

Advancements in technology have increased traffic hazards, leading to increased road accidents. Factors such as lack of training, unskilled drivers, poor road conditions, cell phone use, overloading, and poor government plans contribute to these accidents. A research solution aims to detect and prevent accidents, providing intelligent alerts and reports on predefined numbers. The system includes SONAR ranging modules, vibration sensors, GPS receivers, microcontrollers, GSM modems, and an alarm.

2.3 “A study on car involvement in road traffic accidents in Bangladesh”. H.M. Ahsan, M.A. Raihan & M. Rahman. (2011)

This paper outlines the common characteristics of fatal car accidents, it aims to identify the common types and causal factors. Accident rates in urban areas are notably higher than in rural regions, often reaching double the frequency. Effective training for drivers in urban areas, characterized by heavy traffic, is essential. The age group of 26 to 35 sees a high number of casualties. Accidents often stem from careless driving, speeding, and disregarding seat belt usage, leading to frequent instances of rear-end collisions, pedestrian accidents, and head-on collisions.

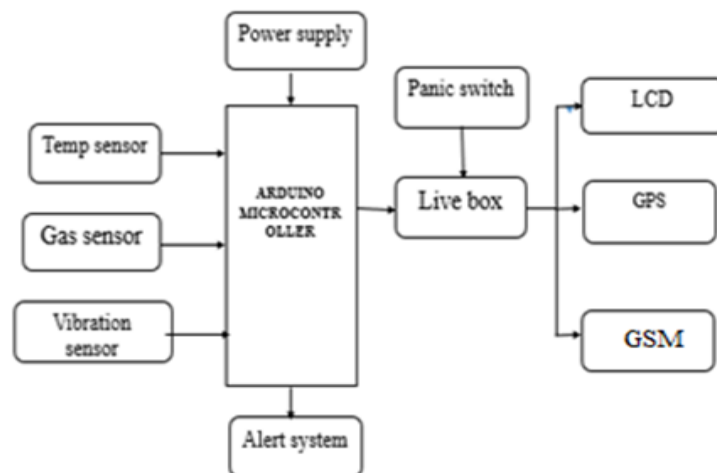
III. EXISTING SYSTEM

Our gadget is autonomous. It doesn't utilize the interior satellite route of the vehicle. It has its own GPS module and receiving wire. We have fabricated the gadget around the possibility that it tends to be fitting and play, has low power utilization, and will be viable with the immense number of vehicles paying little mind to make and show simultaneously be sensibly evaluated so it very well may be broadly conveyed. Actual Damage to the vehicle is one of the trigger occasions. In the probability that a vehicle has harmed a key region of the vehicle, it will go about as a trigger. It is essentially a press button that gets squeezed. It is put with a little security between the undercarriage and the edge of the vehicle.

IV. PROPOSED SYSTEM

To build an integrated system for emergency rescue services in the event of road accidents by live box system. The project focuses on building an infrastructure in which vehicle safety authorities can enhance the crash reports post-crash analysis, record the event, and reduce the time to arrive at the crash location. In the event of an accident, it is reported to the police or a hospital by the locals in the area if they have discovered the wreckage or if the incident happened on sight. Usually, the caller is uncertain of the injuries, and research on the delay of the ambulance to the crash location reveals that even with emergency services in place it can take up to 5 minutes or more in developed countries for an ambulance to arrive

V. BLOCK DIAGRAM





VI. WORKING PRINCIPLE

6.1 Arduino UNO R3 Micro Controller



Fig 6.1 Arduino UNO Board

The Arduino Uno R3 is a microcontroller. It has 14 computerized input/output pins (of which 6 can be utilized as PWM outputs), 6 simple information sources, a 16 MHz precision oscillator, a USB association, a power jack, an ICSP header, and a reset button. It contains everything expected to help the microcontroller; just associate it to a PC with a USB link or power it with an AC-to-DC connector or battery to begin.

6.2 Power Supply

The AC supply is applied to a 12V advance-down transformer. The transformer yield is the 12V AC which is redressed utilizing a diode span. The result of the Diode Bridge of 12V DC is separated by capacitors.

6.3 GPS



Fig 6.3 GPS

Global Positioning System GPS helps in both following and routing reasons. Global positioning frameworks are utilized to monitor the vehicle without the intercession of the driver. Be that as it may, a route framework directs the driver to arrive at the objective with next to no interruptions. Both the following and the route utilize a similar design. As a mishap happens the following stem distinguishes the clumsy vehicle and a message is shipped to the salvage group through an SMS.

6.4 LCD Display



Fig 6.4 LCD



LCD can show numbers, characters, and designs. The presentation interacts with the I/O port of the microcontroller (P0.0-P0.7). The presentation is in multiplexed mode for example just each show stays on in turn. Inside 1/tenth of a second the following presentation turns on. In this manner consecutively here and there will bring about a consistent presentation of the count because of the steadiness of Vision.

6.5 Buzzer



Fig 6.5 Buzzer

A buzzer or beeper is a sound-flagging gadget, which might be mechanical, electro-mechanical, or piezoelectric. Typical employments of ringers and beepers incorporate caution gadgets, clocks, and affirmation of client information.

6.6 Gas Sensor



Fig 6.6 Gas

A gas locator is a gadget that distinguishes the presence of gases in space, regularly as a component of a security framework. This kind of gear is utilized to distinguish a gas spill or different discharges and can communicate with a control framework so an interaction can be naturally closed down. A gas locator can sound a caution to administrators in the space where the hole is happening, offering them the chance to leave. This sort of gadget is significant because many gases can be unsafe for natural life, like people or creatures.

6.7 Vibration Sensor

The measurement of vibrations should be possible utilizing different sorts of sensors. Even though there are no immediate vibration sensors, vibrations can be estimated in a roundabout way, deriving esteems from exemplary mechanical or optical amounts. These sensors contrast in certain highlights. In addition to other things they can be isolated given dynamic and latent conduct, some sensors act relative and others outright. Other particular highlights are the recurrence range, signal elements, and the nature of the estimation information. The accompanying sensors displayed here were first organized in a reaching and a non-reaching bunch and inside these in the sub-things way, speed and speed increase measurement.



VII. OUTPUT

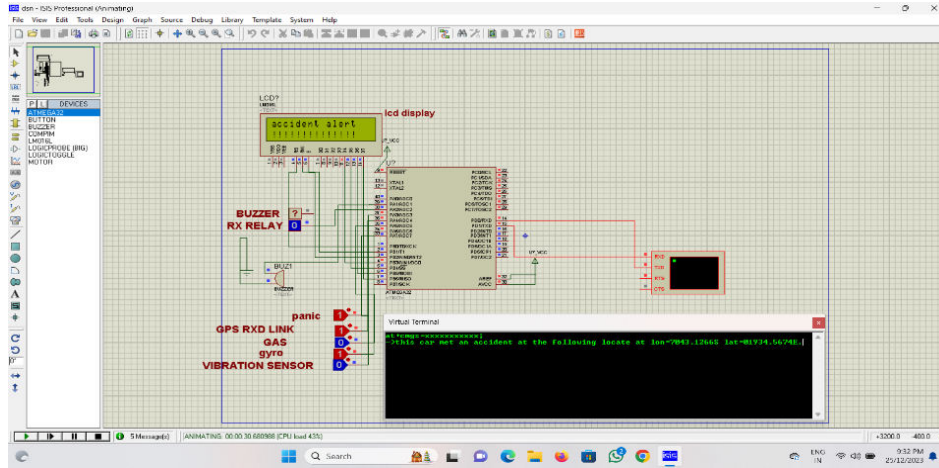


Fig a: Simulation

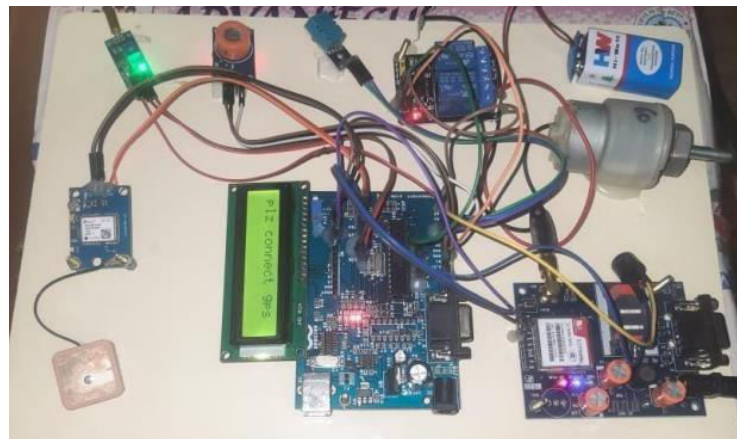


Fig b: Hardware Output

VIII. CONCLUSION

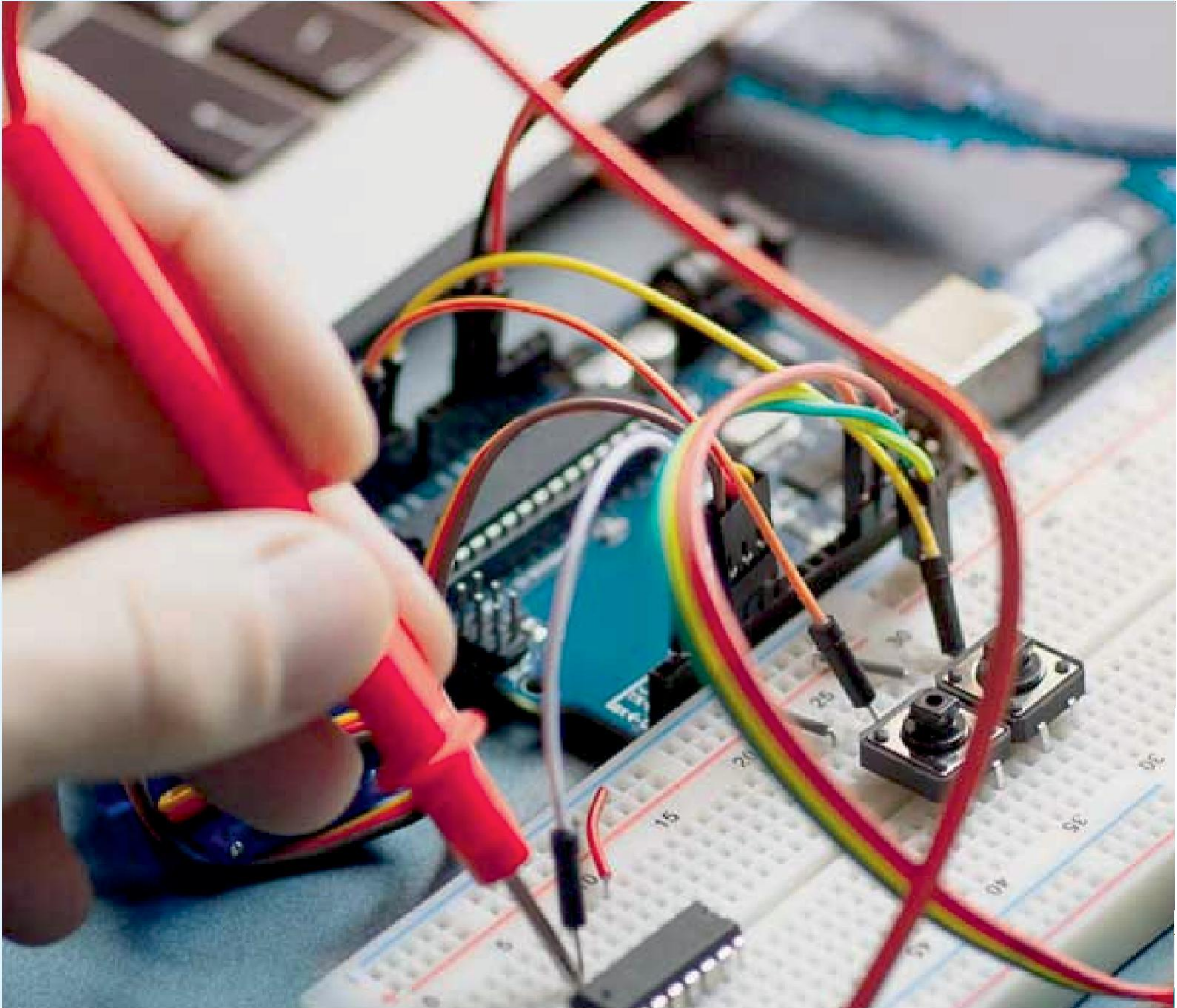
By and large such gadgets and frameworks can be the changing element in street wellbeing. Life is inestimable and we ought to do whatever is conceivable to make streets more secure. WHO has just anticipated 1.9 million losses continuously in 2020. Bangladesh is particularly in danger as the nation is being changed by building more scaffolds, streets, and better transportation systems and new regions are to be created. Bit by bit with help from both the vehicle proprietors and the Government aiding the arrangement of such gadgets in vehicles, we can diminish the effect of the ever so concerning issue of street mishaps. What's more, it will help spare lives, help in better information assortment, and fabricate a foundation arrangement utilizing Emergency Crash Reporting Software to help the salvage administrations of the nation.

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