

ALCOHOL DETECTION SYSTEM IN VEHICLE AND SMART HELMET

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ABSTRACT:

The main aim of our studies paper is to represent our assignment which makes human driving more secure and to reduce accidents. This venture is developed via integrating alcohol sensor with Arduino board. Arduino processor is capable of take care of more skills than traditional microcontrollers. The alcohol sensor used in this task is MQ3 which to discover the alcohol content material in human breath. Since sensor has excellent sensitivity range round 2 meters, it can suit to any vehicle and might without issue be hidden from the suspects. This task is fitted within the vehicle. To decorate the protection we use the specific characteristic of human i.e. particular fingerprint. So, identifying someone thru fingerprint and implementing it for safety will help lot. The rising call for of safety in two wheelers and the problems of out of place keys is probably resolved by way of this gadget. The protection of people sitting inside the vehicle. What's more, moreover Aim to make an apparatus the use of the Internet of Things idea to go over wounds in wheelers the utilization of a microcontroller and accelerometer and tell the specialists further to the crisis contact of the rider. Likewise plot the mishaps happening inside the city for moreover examination.

Keywords: *Fingerprint Sensor, Sim900, Dc motor, LED, buzzer, Ultrasonic sensor, Mq3, Arduino Uno.*

Introduction:

Drinking and utilizing is as of now a significant open wellness issue, which is probably going to get one of the most sizable issues in near future. The framework actualized with the guide of us dreams at decreasing the street mishap sooner rather than later in light of smashed and drive. This paper blessing the advancement in the use of the liquor identifier, a gadget that detects a change inside the alcoholic gas substance of the enveloping air these tool is extra normally called a breath investigation, since it assessment the liquor content from man or lady's breath. The device identifies the nearness of liquor in the vehicle and immediately bolts the motor of the car. The proposed gadget makes use of alcohol sensor, in general fuel sensor, pressure sensor and accelerometer. When the rider wears the helmet and buckles the belt of the helmet, strain sensor senses the pressure of the helmet and allows the automobile to begin. Alcohol sensor checks whether or no longer the rider is underneath the have an impact on of alcohol or now not. If alcohol content material fabric is detected then it doesn't permit the rider to begin the car.

B. Related Works:

IoT and happenstance control are areas wherein quick improvement is being made. White et al. focused on utilizing the sharp cell phone for mishap identification and warning [5]. Zhao [6] diagrams the impacts of spot notoriety on cell gadgets, and utilizing this for more astute touch of fate checking structures in vehicles. Be that as it may, vehicles are usually intended to diminish the worry at the driver. In this manner, the weight experienced by means of a phone won't be corresponding to the weight experienced by method of in-vehicle sensors which may be introduced internal parts the car. This may realize misinformed discovery of a bit of destiny. In addition, power ate up by utilizing the GPS beneficiary in a phone is high, rendering the battery presence to be decreased at a fast rate.

Challenges associated with computerized detection and notification of accidents:

1. Need to spare you bogus positives from being achieved Network of sensors associated with the mishap discovery structures is used to choose if an incident has happened. The other in increasing speed is a key pointer. At the point when the driver accidentally drops the head protector, there are potential outcomes of a phony great being achieved as a result of the sudden changes inside the accelerometer esteem. Since the notice around the spot of destiny is being dispatched to the crisis reaches it is basic to stifle counterfeit positives. Else it will realize the defective working of the

machine and wastage of assets on counterfeit episode reports.

2. Identification of the mishap powers suitably conventional bit of destiny recognition structures depend upon sensor systems implanted inside the vehicle. For instance, the sensors happen upon airbag organization, speeding up/deceleration and so forth, however it isn't possible to get such superb segments of information from wheelers. Therefore, with the to be had resources and controlled strategic ability, right discovery of incident is required.

3. Postponement in warning achieving the crisis contacts As soon as the observing framework distinguishes a spot of destiny, the data should be safely moved to the crisis contacts. On the off chance that the contact passes up a major opportunity the mishap warning, at that point the gadget should be structured to recursively convey the message until the message has been recognized.

C. PROPOSED METHOD:

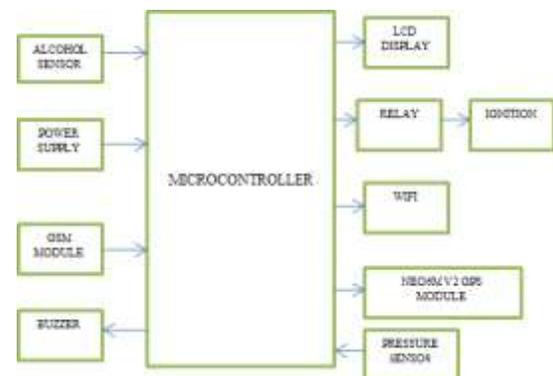


Figure: 1 Proposed Architecture

All the elements are interface to the board and altered as unsurprising with their fee to behave in synchronization. The arduino board is the pertinent unit of the system. The

arduino uno is the microcontroller board. It is a programmable microcontroller for prototyping electromechanical devices. It has 14 virtual facts sources/yield pins can be used as PWM yield sincere statistics sources, a sixteen MHz stoneware resonators the arduino shifts from all first board is that it does not use the FTDI USB to successive point of view energy chip. The trustworthy gasoline sensor-MQ3 is proper for alcohol perceiving, this sensor may be utilized in a breath analyser. It has a high affectability to alcohol and little affectability to benzene.

The affectability can be adjusted by the usage of the potentiometer tricky cloth of MQ3 gasoline sensor is SnO₂, which with decay conductivity in truthful air. Right whilst the goal alcohol gasoline exist, the sensors conductivity is better alongside attitude the gasoline affirmation rising, use of sincere electro circuit, convert trade of conductivity to narrate caution signal of fuel concentration. MQ3 gas sensor has high affectability to Alcohol, and has reasonable insurance from upset of fuel, smoke and smoke.

It has awesome affectability grouping cycle 2 meters. The sensor is probably used to stumble on alcohol with splendid centre; it's a ways effortlessly and suitable for stand-apart application. Liquid pearl display is the electronic display module and finds wide levels of employments.

A 16X2 LCD show may be very basic module and its miles typically use in numerous devices and circuit. These modules are had to seven regions and world elegance multi portions LEDs. The manner of questioning being: LCDs are judicious;

without problem programmable; revel in no hassle of demonstrating novel or maybe custom characters (no longer in any manner like in 7 components), developments, and so on. A sixteenX2 LCD suggests it can show sixteen characters with admire to line and there are 2 such lines. In this LCD each character is regarded in 5X7 pixel matrix the facts registers stores the records to be appear on the LCD.

At whatever point the rider wears the head defender, a press button is crushed and the sign is despatched through RF transmitter to the RF beneficiary equipment which what's more sends it to Ignition Relay. If the sign is high, the hand-off will do and the sign is driven by methods for the Driver IC to the Microcontroller. Thusly, the circuit works and the extraordinary imprint module is set up to identify the one of a kind sign of genuine person. The individual needs to test his fingerprint.

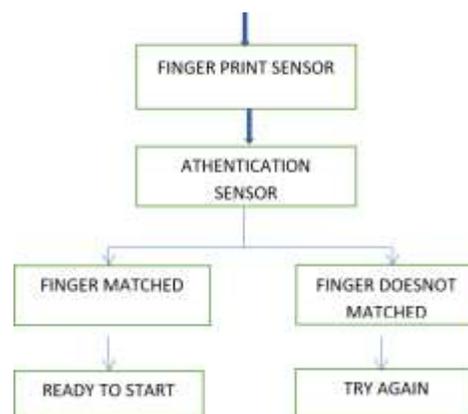


Figure: 2 Flow chart of Engine Ignition part

Fingerprint at the module and the master fingerprint is assigned. Number of users fingerprints will be saved inside the memory of module which may be assumed because

the slave. In order to start a vehicle, the legal rider have to experiment his fingerprint at the sensor and put on the helmet over his head, and if the fingerprint fits with the stored data, a “FINGERPRINT MATCHED READY TO START” message is displayed over 16x2 LCD display. If the fingerprint doesn’t fits with the stored data, the microcontroller pins are reset to zero Volt, and LCD displays “FINGERPRINT DOSEN’T MATCH UNABLE TO START” after which a message displays “TRY AGAIN”.

Flowchart of the Proposed System:

Flowchart of the proposed machine explains the functionalities of the sensor system. Sensor manner is defined for distinctive sensor.

Initialization of sensors:

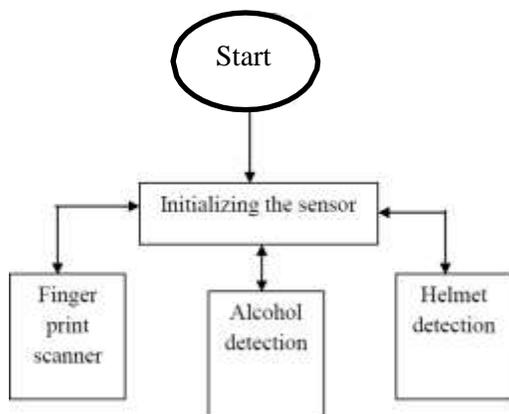


Figure: 3 Flow chart of Helmet part

Here it initializes all of the sensor required for ignition gadget to begin. Firstly it initializes alcohol and helmet sensor. After pleasing the situations of alcohol and helmet sensor,

Fingerprint scanner is initialized to start ignition device. Figure indicates the initialization the sensor.

Helmet detector Flowchart:

Here Firstly, helmet sensor senses whether or not rider wearied helmet or now not. If rider has now not worn the helmet then ignition device won’t turn ON. If rider worn helmet it ship message to Arduino to turn ON ignition system.

Sensing of helmet is accomplished switch used is pressed whilst helmet worn, and sends sensed virtual data.

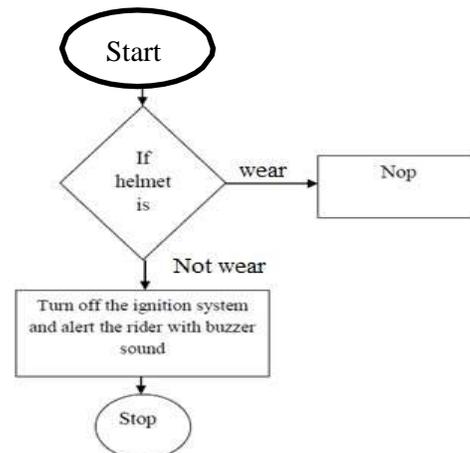


Figure: 4 Flow chart Helmet detector

If alcohol is detected in rider breath then, ignition gadget won’t flip ON. If alcohol isn’t always detected in rider breathe then, ignition device flip ON. Figure suggests the flow diagram of alcohol sensor.

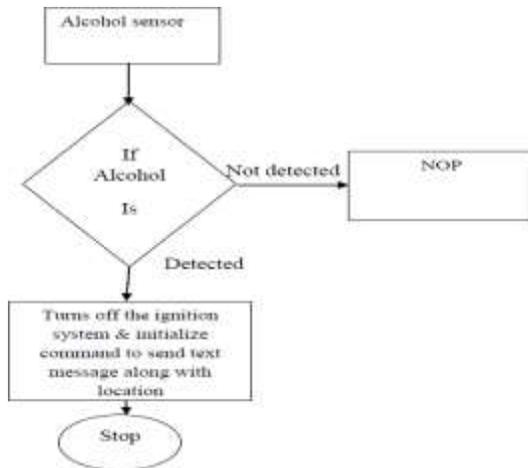


Figure: 5 Alcohol Detection

D. RESULTS ANALYSIS:

The gadget also contains a strategy to verify that the rider wears his protective cap without which his vehicle would no longer start. The Gas sensor MQ3 has radical affectability to liquor and imparts sign to hinder the vehicle. Biometric sensor test the unique finger impression to permits the approved person or lady best to start the vehicle in some other case now not start. Accelerometer ADXL335 will identify the tilt and document the qualities dependent on co-ordinate machine and sends the sign to the arduino board Pressure sensor comes into photograph while the rider wears the protective cap and clasps it.

A variety of knock switches are introduced in the protective cap which give a sign to the microcontroller demonstrating that the rider has worn his head protector. On the off chance that no sign is procured with the helpful asset of the microcontroller, at that point it doesn't permit the motor start to occur or turns off the motor on the off chance that the rider evacuates his head protector simultaneously as riding. Results show that the protective cap got proficient to adequately come to be conscious of the mishap impacts multiple times out of the 290 occasions wherein 15 have been phony

positives i.e. a precision of 95.3% and sends the warning with the privilege and present day arranges 97% of the time. This spot of destiny identification final product depends absolutely on the edge level set at 20,001 gadgets of speeding up interchange in a period range of 52ms. For testing purposes; the other in increasing speed limit has been set fittingly. The cap does now not signal while it's far quickened/decelerated bit by bit as may be the situation in real life. It blares and sends a notice with the geographic facilitates even as a dazzling quickening is recognized in a short range of time or the bike slips and slides The time taken to convey the warning after the bit of predetermination has been identified is significantly less than 10 seconds on a normal. Gsm Message can be sent while rider meets with a mishap. This is be accomplished the utilization of android application, sensors, Wi-Fi and Cloud. Cloud sends the records to the concerned character through Wi-Fi or SMS. GPS module will send area detect the police headquarters or emergency vehicle.

Here it clarifies results acquired by means of one of a kind sensor .Figure and decide 3.6 demonstrates the Bike and protective cap utilized for genuine time venture.



Figure: 6 Helmet Model

This above parent suggests the alcohol sensor fixed within the helmet module for

the detection of alcohol consumption of the rider and this output of alcohol sensor is received with the aid of the Arduino Uno and sends the corresponding sign to the ignition unit by means of the transmitter used in it, then the ignition module gets the signal and sends the textual content message to the respected guardians or the nearest RTO as described on the programming.

Rider wearing helmet result:

With the assistance of stress sensor driving without protective cap can be stayed away from. Weight sensor detects the weight of wearing cap, here yield might be high or yield is low. Whenever yield is inordinate then rider is conveying protective cap and the other way around. When helmet is worn buzzer won't make sound indication. If helmet is not worn then buzzer makes sound indication.



Figure:7 Rx Bike Model

Alcohol sensor result:

Illicit utilization of liquor all through driving is 0.07 mg L as predictable with the specialists demonstration anyway for exhibit object, it's far modified to as far as possible 0.05 mg L. On the off chance that affectability of MQ3 is more than 0.05 mg L of liquor in breath then Arduino of Helmet unit will talk with vehicle unit and show Alcohol identified from that point start gadget get turned OFF.

When alcohol isn't always ate up there will no message dispatched to the prescribed

number the use of GSM, and it permits fingerprint to access When alcohol is consumed there'll message dispatched to the prescribed number using GSM, and it no longer lets in fingerprint to get entry to.

Fingerprint sensor Result:

The motorcycle might be ignited only when the authorized individual scans his/her finger at the fingerprint module. The fingerprints of the authorized man or woman(s) are stored within the fingerprint module. When any man or woman positioned his/her finger at the fingerprint module then the facts of the positioned finger is matched with the stored records within the module. If the fingerprint statistics is found within the module matching the condition, then Arduino ignites the bike in any other case motorcycle will no longer start. Figure three. Eight describes that, when there is intake of alcohol and when rider isn't wearing helmet fingerprint will no longer be accessed. Then it display as "No legitimate finger on the sensor". It additionally describes that, if the scanned fingerprint image doesn't matches with enrolled/captured photograph, then LCD shows as "No legitimate finger on the sensor". Then motorbike ignition will now not start.

When there is no consumption of alcohol and when rider worn helmet fingerprint can be accessed. If the scanned fingerprint photo matches with enrolled/captured photo, LCD shows as "welcome". Figure 3.nine describes that, when there is no intake of alcohol and while rider is carrying helmet fingerprint can be accessed. Then it show as "Welcome".

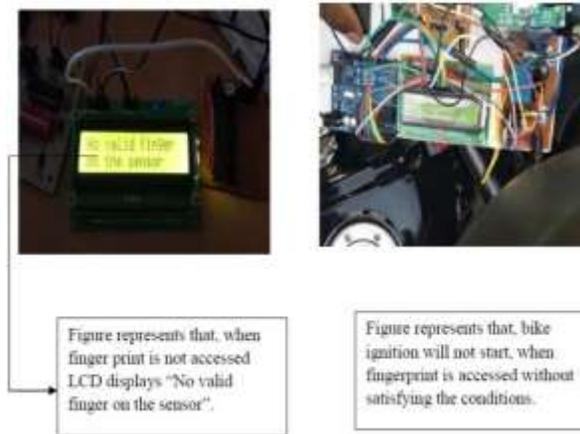


Figure: 8 Finger Print output

It also describes that, if the scanned fingerprint image fits with enrolled/captured photograph, then LCD displays as “Welcome”. And bike ignition will begin and while running each time the helmet is eliminated or the alcohol intake is detected at the helmet then the reputable signal will transmit to the ignition unit and the ignition will turn’s off the motorbike.

E. Conclusion:

The smart helmet device is designed to be a low price approach to file and screen the two wheelers accidents. It is a cheap and viable solution which is simple to carry out and in keeping with the Digital India imaginative and prescient of the government. The device also offers extra benefits which aren't present inside the other systems. Most of today's coincidence detection and prevention structures are constructed for four wheelers. The clever helmet has to show to be an existence saver for the several two-wheeler riders. And the arena with the useful useful resource of making sure that help reaches them after they meet with an twist of fate without any delay.

Also, different additional items might be made with the goal that you can scale-up the contraption and make it perfect for a wide range of vehicles at the street. An additional sensor can likewise be incorporated to find if the vehicle administrator is underneath the impact of liquor. Extra investigation can be completed on the touch of destiny insights to see shrouded happenstance propensities which were not, at this point obvious inside the primary look. The gadget can likewise be made to trademark as a remote on the off chance that the auto is taken and the region of the auto can likewise considered right away.

FUETURE SCOPE:

This model can be geared up with a camera set up to the helmet where whole video could be recorded and it is going to be stored within the statistics storage of the helmet, videos may be accessed wirelessly so that helmet will act like a Block box containing all information. Further advancements within the proposed machine will be made by means of integrating more safety functions which includes alcohol detection system, fall detection machine, keypad ignition gadget, over velocity alarm machine etc. so that it will ensure secure and fun ride.

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