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ACCIDENT CONTROL USING IOT

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ABSTRACT:

One of the common issues which people try to solve with vehicle purchasing. The increasing amount of vehicles creates mismanagement in controlling traffic leading to accidents. Accidents caused due to drunken drive, are increasing tremendously in this modern world. According to National Crime Records Bureau (NCRB), 1.5 percent of total 4.6 lakh road accidents were caused by driving under the influence of alcohol resulting in 6,295 injuries. In order to prevent accidents effectively the proposed system can be implemented. In this system, we monitor the level of alcohol consumption and heart beat rate. If the driver is identified with drunken drive, then the vehicle ignition system will stop which makes the drunken driver unable to move the vehicle resulting in accident prevention. And also, if there is any abnormal changes in heart beat rate, then the current status of the driver is send to their friends using IoT. Since practical implementation in Automobile is beyond the scope of this project, we are implementing the proposed system with a DC Motor. Node MCU acts as a controller in this system. Although accidents happen due to various factors other than traffic management, such as unstable weather, reckless driving, faulty vehicles or maybe road conditions. The most important part after an accident is to detect the accident and take immediate action upon detection. A real-time driver drowsiness detection system for driving safety. All this time we overlooked the fact that immediate aid to an accident scene can reduce the number of people getting traumatized, disabled or lose their precious lives due to lack of emergency facilities. So that we can help the injured right away, the chances of such unfortunate events can be reduced.

KEYWORDS:

MQ3 SENSOR, HEART RATE SENSOR, DC MOTOR , NODE MCU.

INTRODUCTION

The increasing amount of automobiles causing frequent hazardous traffic situations leading to life-threatening accidents. In most cases, poor emergency facilities increase the level of fatality. Our system provides an optimal solution to an accident scene. This system is able to detect any causality in every possible direction and confirms if the accident occurred or not. On the findings, the exact location in longitude and latitude form is detected. An accident avoidance system is an automobile safety system designed to reduce the severity of an accident. Also known as pre crash system, forward collision warning system or collision mitigating system, it uses sensors and camera to detect an imminent crash. Once the detection done.

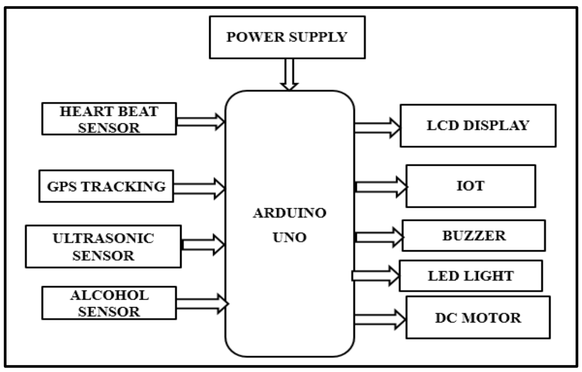
PROPOSED METHODS:

Heart beat sensor is placed at the handle-bar of the motorbike to monitor the heart beat rate. The results obtained by the sensors are analog values and it is processed by the controller with the help of wifi through internet. The results obtained from sensors are constantly updated to cloud using IoT. When the resultant values obtained from alcohol sensors attains the threshold limit, then the system prevents the chances of accident by stopping the vehicle ignition system and stores the alcohol consumption values to the database of the vehicle user. The heart beat rate of the driver is also continuously monitored with the help of appropriate heart beat rate detection sensor and the data are updated in the database. In case of any abnormal detections in heart beat rate of the driver, then the current status of the person are informed to their relatives through IoT. The ultrasonic sensor system continuously sends signals and monitor any car or other obstacles are in front of car. The distance up to which ultrasonic sensor can work may be up to 4 meter. When any obstacle or vehicle detected by ultrasonic sensor system it will send signal to the embedded board. After receiving this signal embedded board sends a signal to buzzer. This module also detects the alcohol at the time of user entering in vehicle. When user enter in car then alcohol sensor analyses alcohol concentration in breath of vehicle user and if alcohol is detected then system would not let start car ignition system. It has a built-in wifi module which is responsible for cloud updates when it is connected to the internet. The sensed values from sensors are continuously updated in the vehicle owner's cloud storage. At that time system sends alert and GPS location tracking to live location and update the relative and owner. The above details are communicated with updated in IoT also displayed in LCD.

ADVANTAGES:

- Reliable system
- Easy to operate by the user
- Save time and life

BLOCK DIAGRAM:

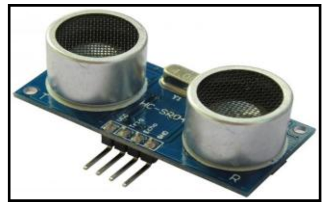


ARDUINO UNO:

The Arduino integrated development environment (IDE) is a cross platform application (for Windows, mac OS, Linux) that is written in the programming language Java. It is used to write and upload programs to Arduino board. Open-source prototyping platform based hardware and software. You can tell your board what to do by sending a set of instructions to the microcontroller on the board. To do so you use the Arduino programming language (based on Wiring), and the Arduino Software (IDE), based on Processing.

ULTRASONIC SENSOR:

The HC-SR04 ultrasonic sensor uses sonar to determine distance to an object. It offers excellent range accuracy and stable readings in an easy-to-use package. It operation is not affected by sunlight or black material like Sharp rangefinders are (although acoustically soft materials like cloth can be difficult to detect).

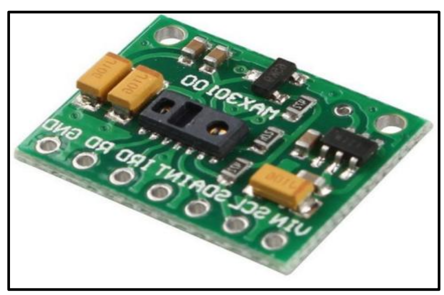


ALCOHOL SENSOR:

Low cost semiconductor sensor which can detect the presence of alcohol gases at concentrations from 0.05 mg/L to 10 mg/L. The sensitive material used for this sensor is SnO2. High sensitivity to alcohol, smoke, vapour and gasoline. Easily interfaced with Microcontrollers, Arduino Boards, Raspberry Pi etc.

HEART BEAT SENSOR:

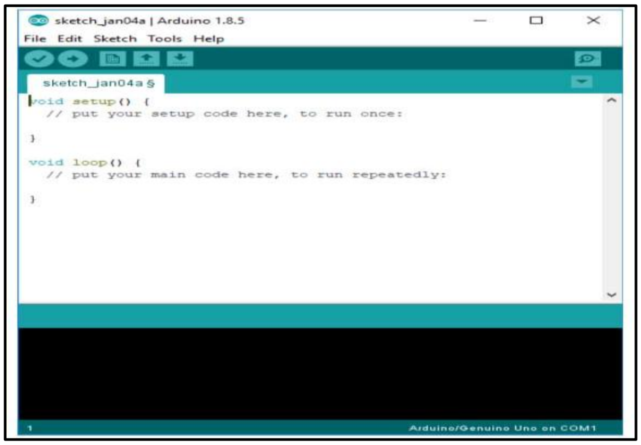
MAX30100 is an integrated pulse oximeter and heart-rate monitor sensor solution. Optical sensor that derives its readings from emitting two wavelengths of light from two LEDs – a red and an infrared one – then measuring the absorbance of pulsing blood through a photo detector.This particular LED colour combination is optimized for reading the data through the tip of one's finger. It has an I2C digital interface to communicate with a host microcontroller.



BUZZER:

A buzzer or beeper is an audio signalling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.

RESULTS:



DISCUSSION:

GSM and GPS modem for detecting an accident and messaging system, whereas some works had been done with new methods which do not require GSM and GPS modem. Focused on notification and they did it by producing a decision of 3-digit emergency call from an in-vehicle TCU to a local PSAP operator. the rapid development of communication and computation technologies. A growing number of vehicles are connected to the big data centre through internet of things. A speed, location and driven root are collected to central processing system using particular sensor and devices. Data authentication and integrity protection in automatic dependent surveillance-broadcast system has been implemented. In an existing system a new privacy-preserving signature scheme for inter-vehicle communication has been implemented using bloom filters. Data authentication and integrity protection in automatic dependent surveillance-broadcast system has been implemented. Currently there are only few technologies for accident detection. As it is done manually there is loss of life in golden hours. The accident victim is dependent on the mercy of others to rush him to hospital. Many a times an accident goes unnoticed for hours before help comes in. Due to all these factors there is a high rate of mortality of the accident victims. Few existing systems to avoid road accidents include antilock braking system, Electronic brake-force distribution, Supplemental restraint system airbags, Immobilizer, Parking sensors, Cruise control.

DISADVANTAGES:

- Efficiency is very less and cost of the existing system is high.
- External sources for destination location
- Delay
- Increasing the network congestion
- Flooding in route discovery initial phase

CONCLUSION:

In today's world, the accidents due to drunken drive and rash driving causes a great damage to the lives of common people. Even though, the government passes many bills and laws to minimize and control the accidents done under the influence of alcohol. But it is not effective. However, the proposed system could minimize and control the accidents made due to drunken and drive. This system continuously monitors the alcohol level consumed by the driver and when, it attains the maximum threshold value then the system stops the ignition system of the vehicle preventing the accidents. Moreover, it also monitors the heart beat rate of the driver frequently. The sensor readings are updated in the cloud from time to time through IoT. Even if the driver tries to escape after committing the accident, the readings in the cloud will act as a major evidence for the police to punish the culprit. In future, GPS and IoT can be added to this proposed system to send the geographical location of the drunken driver to the nearby police stations to take prior actions before any disaster happens to the lives of innocent people.

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