

# ACCIDENT ALERT SYSTEM USING BLOCKCHAIN APPROACH

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## ABSTRACT

*Emergencies are unpredictable and rapid response is the key requirement in emergency management. Poor road infrastructure, failure to comply with speed limits, driver inattentiveness, growing drinking and driving habits is among the main factors contributing to deaths from road crashes. The motivation behind the project travolution is an attempt to make a block chain base system which is to bring a positive difference in the field of road safety and road discipline. Block chain is a new emerging technology that can bring a variety of benefits to enterprise car applications. The project tackles some major causes of road accidents such as breaking traffic signals, speed control in different areas, horn control in horn prohibited zones, no parking alerts and monitoring the heart rate of the driver. GSR sensor can be fitted inside vehicles to predict heart stroke of the driver. In our proposed system, Block chain acts as a digital ledger and it is used not only for sending data but also for parsing data in the NodeMCU. If the car entered into the above mentioned area our block chain technology hold the car function up to the signal area.*

**Keyword :** - Galvanic Skin Response, Speed controller, Node MCU, Block chain etc.,

## 1.INTRODUCTION

Preventing death and serious injury from road accidents is becoming an increasingly important goal for governments around the world. According to the World Health Organization (WHO), more than a million people are killed in road accidents, each year; all over the world. The motivation behind the project travolution is an attempt to make a Block chain base system which is to bring a positive difference in the field of road safety and road discipline.

### 1.1 OBJECTIVE

The main objective of the project is to tackles some major causes of road accidents such as breaking traffic signals, speed control in different areas, horn control in horn prohibited zones, no parking alerts and monitoring the health condition of driver. This system was done with Node MCU, is used to control the motor vehicles.

### 1.2 BENEFITS

- System can be used in any modes of transport.
- Decrease the accident rate.
- Move only with designed speeds.
- Used to monitor the health of the driver.

## 2. LITERATURE SURVEY

**2.1. Delay Aware Accident Detection and Response System Using Fog Computing-** Bilal Khalid Dar, Munam Ali Shah, SaifUl Islam, Castren Maple, ShafaqMussadiq And Suleman Khan- Volume 7, IEEE (2019).

Bilal Khalid Dar proposed a method for accident alert system enables efficient, localized processing of data which can be of particular use in time sensitive applications. It provides benefits of latency, geographical distribution and mobility support. This system overcomes challenges faced by cloud-based systems through utilizing fog computing. To demonstrate the work, android application has been developed as a proof of concept. This system also reduces the cost and minimizes and overall response time by minimizing intervention through automated emergency management.

**2.2. Speed Control System Design of Automatic Parking Based on Fuzzy-PID Control-**Zhenge Chen, Xihi Hu, Yan Li, Zhaoyuan hang, ICIA, July 2017.

A structure of motor-brake pedal is put forth to solve the problem of automatic parking system on traditional fuel vehicles using fuzzy control. At the same time, as the large fluctuation of conventional PID control and the parameters of PID cannot be changed in real time, fuzzy-PID control method is used to control the rotation angle of the pedal. Initially, the structure of the pedal is designed which is to replace the original control mechanism. Then fuzzy controller designed the vehicle model and control model are established. After simulation results, compare both fuzzy PID control and PID control it is proved that fuzzy PID has better control effect than that. Then the whole has been proved to be effective and stable by the real vehicle test.

**2.3. Automatic speed control of vehicle using video processing -** R.D. Thombare, P.M. Sawant, P.P. Sawant, P.A. Sawant, V.P. Naik, ISBN: 978-1-5386-1974-2, ICICCT 2018.

R.D. Thombare proposed a method to estimate the speeds of moving vehicles from video sequences are presented using image processing. The software pre-processes video images using gray scale. A sequence of real-time video traffic images was given as inputs. After getting inputs from the system, the original images are converted into double precision images, the edges are extracted and then quantified the resulting images to classify the objects and find the cars. Tracking has to be done in different frames after the detection.

**2.4. Control method simulation and application for autonomous vehicles-** Pan hao, Jiajia Chen, Yan Song, International journal of advanced robotic system, 2017.

Autonomous vehicles can be operated without the need for human intervention by perceiving their physical environment, this paper presents the control system architecture of autonomous vehicle called “Intelligent Pioneer”, and the path tracking and stability of motion to effectively navigating unknown environment. To formulate the path tracking problem in state space format, two degree of freedom dynamic model is developed. Traditional controllers have difficulty in guaranteeing performance and stability over a wide range of parameter changes and disturbances to control the instantaneous path error. A newly developed adaptive-PID controller will be used. By using this flexible approach, the vehicle control system will be increased.

## 3. EXISTING SYSTEM

This system is used, after the detection of accident. When the accident occurs, it passes the alert information by sending the messages to the registered contacts and used to store the information in cloud using fog computing through GSM module. Using GPS, tracking of vehicles is to be done. The existing system use the information about the distance between the two vehicles provided by the ultrasonic system and does not need to explicitly know the speed and also it does not control the speed limit of the vehicle.

### 3.1 DISADVANTAGES

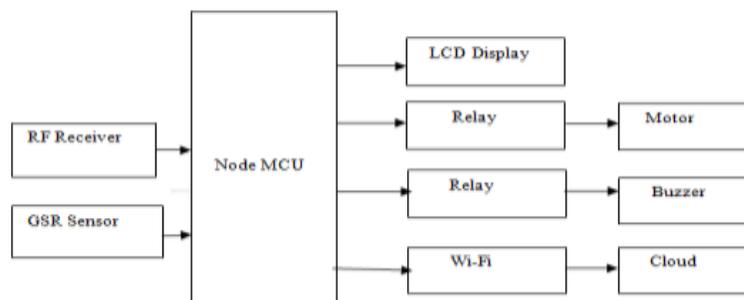
The limitations are encompassed in the area of performance, methodology and other time constraints.

- It has low reliability performance.
- It can't have the capable of controlling the speed of the vehicle.

### 4. PROPOSED SYSTEM

The proposed method is to attempt a block chain base system which is to bring a positive difference in the field of road safety and road discipline. Vehicle control unit is used to control the speed of the vehicle in different areas such as flyovers, bridges, highways, schools, cities and internal areas. It is also used to control horn in unwanted area zones such as hospitals, public libraries, courts, schools etc, and it does not allow the driver to stop their vehicle in no parking area by keeping the vehicle motor in a running condition. GSR sensor is used to check the heart function of the driver. Block chain acts as a digital ledger and it is used not only for sending data but also for parsing data in the NodeMCU. If the car entered into the above mentioned area our block chain technology hold the car function up to the signal. At the same time its send the information to the RTO via cloud.

### 5. BLOCK DIAGRAM



#### 5.1 DESCRIPTION

The architecture diagram explains the proposed work to be done in the proposed system. It consists of components that can be assembled easily and integrated to obtain the best result. The Node MCU is connected to the vehicle and it consists of RF receiver, which receives the signal from the RF transmitter and GSR sensor, which is connected to the steering of the vehicle. All the information collected from the microcontroller is stored in the cloud using ESP Wi-Fi module and if the microcontroller detects if the person is not following any rules, it initiates the buzzer. In order to prevent the vehicle from stopped in illegal area. The motor engine is used. The motor engine and buzzer is connected to Node MCU using relay in order to control the voltage between low voltage Node MCU and high voltage motor and buzzer. Then LCD display will give an alert, if any threshold value is crossed.

**SIGNAL BOARD**



**6. MODULE DESCRIPTION**

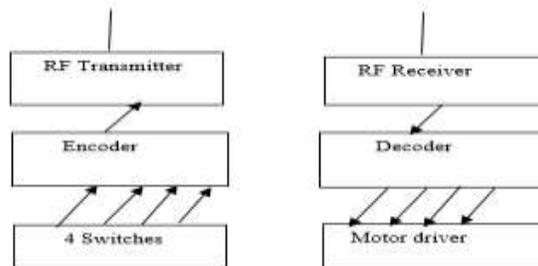
**6.1 VEHICLE DESIGN**

In the vehicle design, it includes RF Transmitter, RF Receiver, motor, relay, buzzer, Node MCU and GSR sensor are connected. Initially, simulation process was done to check the successful working of hardware. The hardware requirements are simulated through proteus 8 professional software and arduino coding was done successfully. After the completion of simulation, the overall vehicle design was designed.

**6.2 RF ANALYSER**

Radio frequency (RF) is a rate of oscillation in the range of around 3 kHz to 300 GHz, which corresponds to the frequency of radio waves, and the alternating currents which carry radio signals. RF usually refers to electrical rather than mechanical oscillations. Radio frequency signal generators are particularly useful items of test equipments widely used in RF design and test applications. There will be two parts in complete model, i.e. transmitter and receiver. The transmitter will send the signal which will be received by the receiver and the task instructed by the transmitter will be executed.

**RF ANALYSER BLOCK DIAGRAM**



### 6.2.1 RF TRANSMITTER

To process the entire control unit of the system and it is placed within the speed limit areas. It is used to transfer information about the speed zone of the vehicle and corresponding information about the system to the receiver which is interfaced with microcontroller. It includes four buttons, Buzzer, Green S/I, No Parking, 20KM speed.

### 6.2.2 RF RECEIVER

RF receiver is placed inside the vehicle. Current speed will be calculated and it also sends the information to micro controller. Message given to the driver through LCD display is to reduce the speed. The information, which is received from Node MCU is allowed to transfer the corresponding information to cloud using ESP Wi-Fi module through THINKSPEAK website. Storing information in cloud is done through block chain, which is used to securing information.

### 6.3 DRIVER HEALTH MONITORING

In driver health monitoring system, the GSR (Galvanic Skin Response) sensor placed at the top of the steering, which locates in the car. The main purpose of GSR is to check the heart functionalities of the driver. Initially, it detects by using GSR sensor by secreting sweat gland. By secreting sweat gland, this system predicts the driver's health condition whether the stroke occur or not. If stroke occurs, the notification will show in LCD display and it will pass electrodes to driver, to hold the driver's health condition in a normal stage for specific time. Within the specified time, the driver should take necessary actions to prevent from accidents.

## 7. CONCLUSION

In this paper, the system been successfully identified an idea for accident prediction and detection which also saves life after the accident through the automate system for sending essential information to cloud using block chain approach and takes effective measures. Microcontroller is the heart of the system which helps in transferring the message to different devices in the system, which also predict the accident and continuously monitoring the heart rate of the driver, which helps to avoid accident.

## 8. SCOPE AND FUTURE WORK

Radio frequency which helps in the communication of information has increased its value for the use of the same in future. With the advancement of technology, the radio frequency a gesture control robot is one of the finest projects which can be worked upon. Moreover, we will concentrate to ensure high accuracy of accident detection and prevention.

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