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VEHICLE TRACKING AND MONITORING SYSTEM TO ENHANCE THE SAFETY AND SECURITY DRIVING USING IOT

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ABSTRACT:

In this paper, vehicle monitoring and tracking systems are implemented using Blynk platform acting as a medium for data transfer and visualization. The system is developed to monitor various driver help parameters like eye blinking, alcohol consumption and vehicle parameters like engine temperature, the distance between the vehicles and tracking of the live location of the Vehicle. The Ultrasonic sensor is placed in the front part of the vehicle, if any two vehicles draw near to one another then an alert message is sent to the mail through Blynk application. The Temperature sensor is placed in the engine part. When the temperature raise's in the engine, caution is sent to the mail. Eye-blink sensor and alcohol sensor are utilized to check the condition of the driver, if the state of the driver is abnormal then a notification is sent to mail. The developed system takes care of vehicles and s driver's safety.

Keywords: IOT, Gas, Air pollution, with cloud resistance.

1. INTRODUCTION

Vehicle tracking systems are popular among people as a retrieval device and theft prevention. The main benefit of vehicle tracking systems is the security purposes by monitoring the vehicle's location which can be used as a protection approach for vehicles that are stolen by sending its position coordinates to the police center as an alert for the stolen. When a police center receives an alert for stolen vehicles, they can make an action to prevent this theft. Nowadays, it is used either as a replacement or addition for car alarms to protect it from theft or it can be used as a monitoring system to keep track the vehicle at the real time. So, many applications can be used for this purpose to block car's engine or doors as an action to protect the vehicle. Due to the advancement in technology vehicle tracking systems that can even identify and detect vehicle's illegal movements and then attentive the owner about these movements. This gives an advantage over the rest applications and other pieces of technology that can serve for the same purpose. Nowadays, vehicle tracking is one of the most important applications. For example, the maps given to vehicle drivers may play a large role in vehicle tracking and monitoring. The major difficulty is that vehicle owners may not be

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able to distinguish the vehicle in a place as a result of overlapping maps, which adversely affects the process of tracking and monitoring[1]. It requires some types of systems to identify and detect where objects were at some time or what distance traveled during a trip to a vehicle. This may be an additional point and help the police in preventing thefts and locating the vehicle by relying on reports from these approved systems and studying and analyzing them to detect stolen vehicles' locations. This system is a necessary device for tracking of vehicles any time the owner wants to observe or monitor it and today it is really trendy among people having costly cars, used as theft avoidance and recovery of the stolen car. The collected data can be observed on a digital maps by using internet and software[2]. There is tremendous demand for object tracking application for the business process. The real-time tracking information on valuable things and assets could solve many problems in the world. GPS is the Global Positioning System which provides the location, using off-line and on-line both in any atmospheric conditions. There are several types of GPS tracking system available in the market.

2. LITERATURE SURVEY

Manasi Patil et al., suggested a better traffic management system using Raspberry pi and RFID technology. The vehicle has a raspberry pi controller fixed in it which is interfaced with sensors like gas sensor, temperature sensor and shock sensor. These sensors are fixed at a predetermined value before accident. When an accident occurs, the value of one of the sensor changes and a message to a predefined number (of the ambulance) is sent through GSM. The GPS module which is also interfaced with the controller also sends the location of the vehicle. When the message is received by the ambulance, a clear route has to be provided to the ambulance. The ambulance has a controller ARM which is interfaced with the RFID tag sends electromagnetic waves. When an ambulance reaches the traffic signal the RFID reader which is placed on the joints detect the electromagnetic waves of the tag. If the traffic signal is red, then the readers goes through the database in fraction of seconds and turn the red light green. And automatically in such condition the RFID on opposite joints turn the opposite signal red. This provides a clear route to the ambulance. [1].V.Sagar Reddy et al., developed an accelerometer based System for driver safety. The system has the advantage of tracking or identifying vehicles location just by sending a SMS or email to the authorized person. The system is designed by using Raspberry Pi (ARM11) for fast access to accelerometer for event detection. Is there any event is occurs the message sent to the authorized person so they can take immediate action to save the lives and reduce the damages. Images captured by the camera on the vehicle are emailed to the concerned person (for example the owner of the vehicle) along with the type of accident and the time of the accident. [2].Sri Krishna Chaitanya Varma et al., proposed an

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Automatic Vehicle Accident Detection and Messaging System Using GPS and GSM Modems. AT89C52 microcontroller is used in the system. When the system is switched on, LED is ON indicating that power is supplied to the circuit. When the IR sensors that are used sense any obstacle, they send interrupt to microcontroller. The GPS receives the location of the vehicle that met with an accident and gives the information back. This information is sent to a mobile number as a message. This message is received using GSM modem present in the circuit. The message gives the information of longitude and latitude values. Using these values the position ofthe vehicle can be estimated [3].Apurva Mane et al., described the methods for vehicle collision detection and remote alarm device using Arduino.

3. RELATED STUDY

This system provides a mechanism to reduce disasters by monitoring eye blinking of the driver, which indicates drowsiness, obstacles located in the road and the drunken state of the driver. Accident and the location of the vehicle are detected. By this system primary care is received as the accident information is available Anusha et al[2] implemented a system using LPC2148 and the system has features like storing in the database. The work includes GPS, GSM modules. The framework also detects Alcohol consumption and Engine Temperature, All the values can be seen on the Web page.so safety is provided to the travellers in the vehicle. Imteaj et al[3] developed an Android-based application that detects an accidental situation and sends an alert message to the nearest police station and medical care center. This application is organized with an external pressure sensor to extract the outward force of the vehicle body. Hence, the application plays an important role in Post-accident services and could lessen the effect due to an accident Mayuresh et al[4] described a system that uses an open source platform and intended to monitor and trace the location of a vehicle, the framework also checks fuel consumption, engine temperature and vehicle speed, GPS/GPRS/GSM modules are used for communication. All the values are stored in the data base on the web server.

4. PROPOSED SYSTEM

The vehicle monitoring and tracking system have been developed in this paper. An ultrasonic sensor is placed in the front part of the vehicle, if any vehicle draws near then alert message is sent to the mail via Blynk application. To avoid the sparks in the vehicle temperature sensor is utilized and it is placed in the engine part of the vehicle if the temperature inside the car increases then Notification is sent to mail through Blynk. If alcohol consumption is in high range then caution will be sent. If the person feels drowsiness then it is detected by IR sensor and alarm will be in on state and an alert is sent to mail saying the driver is in the drowsy state. The values of all the sensors are collected by NodeMCU as it has inbuilt Wi-Fi module all the data is transferred to the cloud through Wi-Fi and analysis is done

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in Blynk app and notifications are sent according to the conditions.

Vehicle monitoring system with GPS helps in tracking vehicles. The tracking process alerts the driver and cautions him to drive carefully., Thus preventing the accidents [7]. In this research work, investigation to monitor driver condition, engine temperature, abnormalities in driver are recorded by the amalgamation of GPS, GPRS. The temperature sensor attached to the vehicle, monitors the variations in temperature there by indicating overheating of the engine motor. The Alcohol sensor checks the amount of Alcohol consumption, sleepiness /drowsiness of the driver. The method incorporated is given in Fig:2.The step by step procedure of operations is listed below.

Step-1: Installation of GPS Module in Vehicle

Step-2: Monitoring of moving Vehicle

Step-3:Check for various Parameters such as temperature of engine, drowsiness of driver and /or drunken.

Step-4: Obtain the Parametric display on display board

Step-5: Any Deviation, Stop Vehicle and /or Alarm by a buzzer.

Fig.4.1. Hardware kit image.

To interact with users, a website has been developed where a user with the hardware can create an account and monitor all the vehicle installed this system. User will get notification if any vehicle gets into accident through the website account, mobile application and mobile SMS with the exact GPS location of accident. Also any police station and hospital can open an account from the website and will get notification through website and mobile SMS about an accident with the accident location and direction towards the accident location using google map. It considers a network with N mobile unlicensed nodes that move in an environment according to some stochastic mobility models. It also assumes that entire spectrum is divided into number of M non-overlapping orthogonal channels having different bandwidth. The access to each licensed channel is regulated by fixed duration time slots. Slot timing is assumed to be broadcast by the primary system. Before transmitting its message, each transmitter node, which is a node with the message, first selects a path node and a frequency channel to copy the message. After the path and channel selection, the transmitter node negotiates and handshakes with its path node and declares the selected channel frequency to the path. The communication needed for this coordination is assumed to be accomplished by a fixed length frequency hopping sequence (FHS) that is composed of K distinct licensed channels. In each time slot, each node consecutively hops on FHS within a given order to transmit and receive a coordination

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packet. The aim of coordination packet that is generated by a node with message is to inform its path about the frequency channel decided for the message copying.

Fig.4.2. Output results.

Fig.4.3. Sleep mode activated time.

5. CONCLUSION

A novel method for assessing the quality of vehicle tracking system using IoT is presented in this paper. Vehicle tracking system is very essential in major cities and nowadays vehicle accidents are rapidly increasing, hence this module is developed for tracking the vehicle, vehicle temperature, alcohol consumption of driver, sleepiness or drowsiness. This work survey has improved the Quality of service and security. Internet of Things (IoT), the emerging technology has benefited in facing the challenges especially for vehicle tracking system in the real world environment.

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