

IOT BASED SMART VEHICLE AND ACCIDENT PREVENTION SYSTEM

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Introduction:

It gives an idea about the accident prevention system and vehicle theft system. Nowadays accidents and vehicle theft cases of two-wheelers are increasing at an alarming rate. Speed is the cause of most number of traffic accidents. The number of two-wheelers on the road is more than four-wheelers and eight wheelers. It has been estimated by WHO (World Health Organization) that there is an increase in the number of deaths due to accidents by two wheelers than four-wheelers. Bike-theft is a major problem; several underlying problems have led to this increase in bike-theft. Traditional solution for accident detection uses the Global Positioning System (GPS) to get the location of the accident and a message is sent through a microcontroller or a mobile device. The survey conducted by Government of India during the year 2010, says that there were close to 5 lakh accidents happened, which resulted in more than 1.3 lakh deaths and inflicted injuries on 5.2 lakh persons. These numbers translate into one road accident every minute, and one road accident death every 4 minutes. Over speeding is the main cause when it comes to road accidents in the city. Statistics available with the traffic police shows that nearly 27% of the total accidents are taking place due to over speeding. Exceeding the lawful speed limit is the single biggest reason for road accidents. This led to the creation of accident prevention system where you can access the speed limit.

Every year nearly 36,000 vehicles worth Rs.115 crore are stolen in India. Only about 15,000 are traced, often in un road worthy condition, with many components missing. These are stolen because the thief is given the opportunity. As a result, The increasing advantages of accident prevention and vehicle theft system now are at highest position thus as a result it provides an estimated and immediate help to the individual. The application for the accident prevention system and vehicle theft system is useful for the security and enhancing the awareness of the accident prone and theft prone scenarios for the secured and well-being of the individual. One of such system which is of major importance is of providing an immediate notification to the individual and their related people about either of the scenarios and hence prevents them.

Objectives:

In recognition to the importance of safety and security of an individual , this project is tried to achieve the following objectives:

1. To build an excessive speed indication system and warning alert system via voice alert, remote accessing of speed by parents.
2. To provide an accident detection system and driver condition monitoring system using IOT Artificial Intelligence photos.
3. To provide location tracking using Google map plotting.
4. To provide information to parents and also helps in providing police complaint and sending messages to ambulance.
5. To prevent bike theft and provide vehicle stopping facility by owner.

Methodology:

The following gives the methodology provided for the above objectives as follows:

Methodology for Objective-1:

Calculating the speed and GPS network to collect vehicle data. If the rider exceeds the speed limit, it provides voice alert and if the rider neglects the alert then parents will have the access to stop the vehicle through smart phones.

Methodology for Objective-2:

Using accident detection sensor, camera present in smart phones will send and receive pictures.

Methodology for Objective-3:

The GPS modem will continuously give the data i.e., the latitude and longitude indicating the position of the vehicle.

Methodology for Objective-4:

Identifying the nearest hospitals and police stations is done by Map my India application and it sends the location details to parents through message or E-mail.

Methodology for Objective-5:

Data from the accelerometer is evaluated with several threshold values and position data to determine a problem which helps in recognizing the bike theft and hence the owner can prevent it.

Results and conclusion:

The results of the project are described as follows:

1. The IoT based application and the guardian based application is created.
2. The IoT based application includes the options for providing specific information such as the respective phone numbers,email id of the guardian.
3. The guardian receives the message notification regarding the start of the hardware system and the vehicle where the system is implemented in the vehicle.
4. The guardian based application has specific features for the accessibility of the vehicle such as location,photo and voice alert options, complaint options, nearest medical assistance and police station information.It also includes the facility of stopping the vehicle.
5. The guardian requests for the photo option which is sent to the respective email id provided in the IoT based application.

6. The guardian requests for the location which is obtained as a message notification in the form of latitudes and longitudes.
7. The complaint is sent by the guardian in case of vehicle theft.
8. The guardian receives the message regarding the occurrence of accidents and the nearest medical assistance and police station information can be obtained by providing the specific latitude and longitude information for the provision to former and latter facility.
9. The speed based application is accessed by the guardian where in the specific speed limit for the vehicle is set and if the vehicle exceeds the speed limit, the over speed message is obtained by the guardian.

Conclusion:

The project is useful in developing the accident prevention and vehicle theft prevention using the features of message, voice alert, location and photo options. It enhances the safety and security of the individual in provision to the above favorable features.

Scope for future work:

The project proposed certainly has some improvisations which can be implemented in future as some of the ideas proposed.

1. The hardware can be further more improvised using a alcohol sensor, where most of the accidents are occurring due to intoxication. This can be implemented by placing alcohol sensor as to detect the alcohol by giving certain limit value of the alcohol.
2. This project can also have eye blink sensor which prevents the individual who meets with an accident due to drowsiness. It can be overcome by placing eye blink sensor as required for the individual.
3. Can do graphical software development in order to track the vehicle.

