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Wireless System Using GPS Tracking for Accidental Monitoring of Vehicles

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ABSTRACT

Transportation has great importance in our daily life and it's development has made many of our chores much easy. IoT based vehicle accident detection system using GPS, sensor and WIFI has gained attention. When accident occurs, this system sends the location values latitude and longitude to the server and vehicle automatically will stop. From these values location of accident can be determined.

Keywords: Controller, GPS tracking, Wireless System, Accident Monitoring, IoT.

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I. INTRODUCTION

The Internet of Things (IoT) is the interconnection of uniquely identifiable embedded computing devices within the existing Internet infrastructure. Typically, IoT offers advanced connectivity of devices, systems, and services that goes beyond machine-to-machine communications (M2M) and covers a variety of protocols, domains, and applications. The interconnection of these embedded devices (including smart objects), is implemented in nearly all fields of automation enabling advanced applications like a Smart Grid. The term things in the IoT refers to a wide variety of devices such as heart monitoring implants, biochip transponders on farm animals, electric clams in coastal waters, automobiles with built-in sensors, or field operation devices that assist fire-fighters in search and rescue. Current market examples include thermostat systems and washer/dryers that utilize Wi-Fi for remote monitoring.

Transportation has great importance in our daily life and it's development has made many of our chores much easy. IoT based vehicle accident detection system using GPS, sensor and WIFI has gained attention. When accident occurs, this system sends the location values latitude and longitude to the server and vehicle automatically will stop. From these values location of accident can be determined.

Problem Statement:

The rapid growth of technology and infrastructure has made our lives easier. The advent of technology has also increased the traffic hazards and the road accidents take place frequently which causes huge loss of life and property because of the poor emergency facilities. The accident detection project will provide an optimum solution to this drawback.

II. LITERATURE SURVEY

System Driver Drowsiness Monitoring and Controlling System which can detect fatigue of the driver and issue a timely warning. Since a large number of road accidents occur due to the driver drowsiness. Hence this system will be helpful in preventing many accidents, and consequently save money and reduce personal suffering. Here we use Arduino controller to coordinate the details from vibration sensor and the distance of the object from ultrasonic sensor. Heart beat sensor measures the heart rate and send it to Arduino. GPS is used to share location to service center simultaneously about the driver. All these details were collectively compared with normal data stored in controller. If miss match occurs it sends a signal via IOT. And the vehicle will be automatically stopped. Data are displayed using LCD. [1] At present time, drowsy driving has become one of the major issues of the traffic collision. According to statistics, a large number of road accidents occur due to drowsy driving which results in severe injuries and deaths. For this reason, various studies were done in designing systems that can examine the driver fatigue and alert him beforehand, thus preventing him to fall asleep behind the wheel and cause an accident. However, such techniques are usually intrusive as electrodes are required to be placed on the head and body. Furthermore, there are few existing researches in which subjective measurements are used as the input for the system, but, such methods can distract the driver and lead to an ambiguous result. In this paper, we proposed a system that is absolutely non-intrusive and real-time. Our proposed system used the eye closure ratio as input parameter to detect the drowsiness of the driver. If the eye closure ratio deteriorates from the standard ratio, the driver is alerted with the help of a buzzer. For our system, a Pi camera is used to capture the images of the driver's eye and the entire system is incorporated using Raspberry pi. [2]

The objective of this paper is to set in place a fully automated system design that will minimize the time gap between the occurrence of an accident and deployment of medical response. This can be done by combining accident detection and Emergency Medical Services systems. The proposed design makes use of an accelerometer and a piezoelectric sensor to trigger the microcontroller, which retrieves the user's location through the GPS. Communication between the IOT device and the database is done using a GSM/GPRS module. An Android app is designed to collect the relevant health information of the user, emergency contact information, and hospital details during initial registration. [3]

The sudden traffic slowdown especially in fast scrolling roads and highways characterized by a scarce visibility is one of the major causes of accidents among motorized vehicles. Typically, fixed traffic sensors installed on roads that interact with drivers' mobile App through the 4G network can mitigate such a problem, but unfortunately not all roads and highways are equipped with such devices. In this paper, we discuss a possible alternative solution for addressing such an issue considering mobile traffic sensors directly installed in private and/or public transportation and volunteer vehicles. In particular, we discuss an IOT Cloud system for traffic monitoring and alert notification based on Open GTS and Mongo DB. Our IOT Cloud system, besides for private drivers, it is very useful for drivers of critical rescue vehicles such as ambulances. [4]

Driver drowsiness is a major factor in most driving accidents. In this paper we present a robust and intelligent scheme for driver drowsiness detection employing the fusion of eye closure and yawning detection methods. In this approach, the driver's facial appearance is captured via a camera installed in the car. In the first step, the face region is detected and tracked in the captured video sequence utilizing computer vision techniques. Next, the eye and mouth areas are extracted from the face; and they are studied to find signs of driver fatigue. [5]

III. BLOCK DIAGRAM



Fig 1. Block Diagram

Algorithm Flow:

Step1: Initially, the ultrasonic sensor is kept in one direction ie, indicating that the vehicle is safe.

Step2: The kit is powered up by the energy from engines located in the vehicles.

Step3: When an accident occurred, the values of the sensor changes. These changes are consider to be an input and the process starts.

Step4:The GPS locates the exact position of the vehicle in accordance with the latitude and longitude .

Step5:These values are initially read in0's and 1's by the circuit and then converted to normal value.

Step7:Here we use wireless network that sends the sensors and location values to the server.

IV. CONCLUSION

The proposed system uses the IoT for vehicle accident detection and vehicle tracking using GPS Modem. In this project we have designed IoT based vehicle accident detection and tracking system using GPS Modem. Hence IoT can revolutionize the way the system interact and respond for the variety of applications especially in case of traffic control.

V. FUTURE SCOPE

This system can be interfaced with vehicle airbag system that prevents vehicle occupants from striking interior objects such as the steering wheel or window. This can also be developed by interconnecting a camera to the controller module that takes the photograph of the accident spot that makes the tracking easier.

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