A Synopsis on

IOT Based Accident Detection System

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by

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Introduction

An accident detection and notify system for requesting help from the emergency services and alerting the family for any kind of accident happened to the vehicle and send the status of geographical location, position and condition of the vehicle using GSM, GPS and various sensors. Also clicking the images of vehicles/people who cause damage or other vehicles which crash lightly to cause a minor accident and send them to the owners using E-mail.

Objectives

With the improvement in the quality of roads there is been a significant growth in the road accident rate is well. Also the survival rate following an accident is extremely low, due to emergency services are not available on time.
This system assists in detecting an accident and tracking its location, and also send the pictures of the surrounding for a smooth rescue.

Literature Review

- **An IOT Based Vehicle Accident Detection And classification System Using Sensor Fusion**.

  The system explained in this paper works frequently whether there is an accident and reports the incident to predefined emergency services and family in case of accident system classifies the accidents into 4 classes collision rollover, fall offs, and no accidents so that the best rescue options can be undertaken. 5 Training variables namely, change in altitude, pitch, roll, speed ALA are used as input variables to train and test the system.

  The proposed ADC system uses smartphone sensors and sensordrone's sensor's to measure the value's of model variables. As far as accuracy of the proposed ADC system is concerned three different GMM, NB and DT based classification models are evaluated and compared to determine most accurate ADC model.

- **An Automatic Car Accident Detection method Based Co-operative vechicle Infrastructure system**

  In this project, The main principle of Accident detection is application program with YOLO-CA model deployed on Edge server, which is devloped based on CAD-CVIS and Deep learning Algorithm. Then Edge server receives and processes the real time image captured by road-side camara.

  Finally, The Road-side communication unit will broadcast the accident Emengercy message to the relevant vechicle and Rescue agencies by DSRC 5G Network.

- **Automatic Accident Detection**

  This paper describe e-NOTIFY system, which allows fast detection of Traffic Accidents Improving the Assistance to injured passangers by reducing the Response time of emengercy services through the efficient communication of relevant information about the accident using Combination of "V2V" "V21" Communications.

  The propose system requires installing the OBUS in the vechicles, incharge Detecting the accidents and notifying them to an External CU, which will estimate the severity of the accident and inform the appropriate emergercy service about the incident. The architecture replaces the current mechanism for notification of accident based on the witness who may provide incorrect or incomplete information after long time.

- **A comprehensive study on IOT Based Accident Detection Systems for smart Vehicles.**

  This paper focuses not only on accident detection but also on its prevention, the project uses various sensorsuch as shock sensors, accelerometer, pressure sensor etcs and various machine learning technique neural network, SUM, Representation learning etc for accident detection.

  Various strategies for accident detection were also addressed which include detection of drunk drowsy driver, regulating vehicle speed maintaining safe distance from obstacles etc.Once the accident is detected the information is communicated to emergency services to provide timely aid.

Problem Statement

To develop a vehicle accident/damage detection and notifier system for notifying the emergency services and alerting the family for sending immediate help at the accident site using GPS, GSM and various sensors.

Implementation Plan/ Purpose Methodology

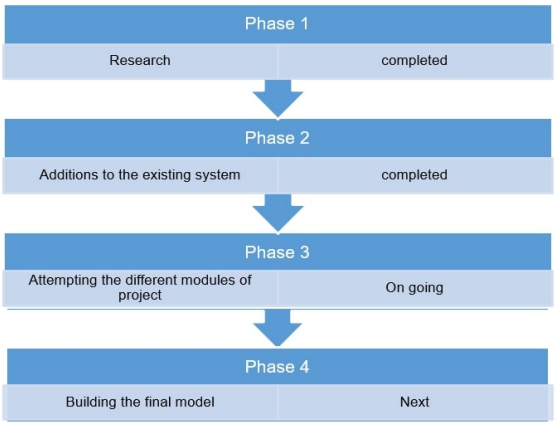

Figure 1: Implementation Plan

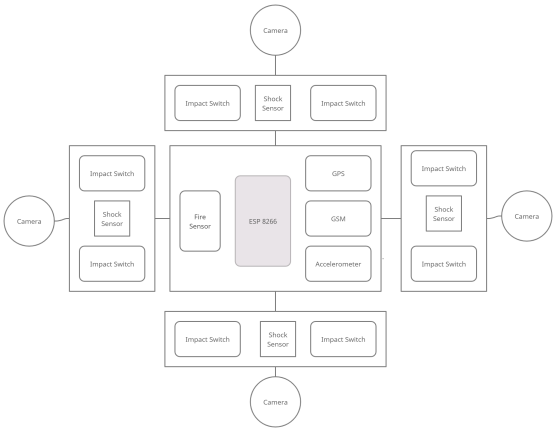

Figure 2: Block Diagram

- This system uses ESP8266 as the main controller board GPS, GSM modules are connected to this ESP8266 for Location tracking and sending alert sms.
- Accelerometer is connected to the ESP for monitoring the position of the vehicle Fire sensor is also used.
- Impact sensors are used for detecting minor accidents and these impact sensors triggers the Cameras to take pictures of the surrounding of the vehicle and e-mail them to the user in-order to catch the collision moment.
- Vibration sensors and impact sensors are used for detecting the scratches made on the vehicle, these sensors also trigger the cameras

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