ACCIDENT PREVENTION, DETECTION AND ALERT SYSTEM FOR AUTOMOBILES

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Abstract - *Nowadays the use of vehicle is increasing day by day. Which turns result into increase in the vehicle accident with increase vehicle count. The major cause of accident can be obstacles in the road, driving speed, driving judgement, mind diversion while driving, drink and drive etc. This paper emphasizes idea about the accident provision and detection system that occurs due to the uncertain scenario and inattentive and absent-minded behaviour of driver. This paper introduces provision taking and alert system which alerts or warns the person who is driving the vehicle and if the driver is not in a position to control the car then the accident occurs.*

Once the accident occurs this system will send the information about the incident and situation to the registered mobile number and also send the information to the nearby hospitals and police stations about the situation. This system can be used for all type of automobiles includes cars and bikes with slight updation and modification while system development.

1. INTRODUCTION :-

To make the ease in the local transportation and also because of the employment the use of vehicle is increased which leads of increased accidents. This can be occurred due to various reasons.

Individuals are losing their lives less because of the accident but more because of not getting the help on time. In such situations this research paper gives the idea about the system which will help to decrease the accident count by taking provision and giving warnings to the driver about the distance between the vehicle and front obstacles and in case if accident occurs because accidents are uncertain if it occurs then the system will be capable of sending the information about accident to the registered mobile number and it also sends the information to the nearby hospital and police stations. So that the individuals can get the help as early as possible from nearby emergency services (Medical help and Police help).

The main goal of the system is to control the accident by alerting the person who is driving the car with the help of pre-recorded voice alert. So that driver can control the situation before it is going out of control. This objective will help to prevent the vehicle from accident. And if in case accident takes place then also this system will help the individuals to recover from the situation. When the accident occurs this system is capable of sending the information about accident to the registered mobile numbers and also to the hospitals and Police help stations for the medical and rescue help.

To provide the prevention from accident the system uses ultra-sonic sensors. This sensors enable the system to get the information about distance between the obstacle(vehicle ahead) and on the basis of that system then alert to the driver whether vehicle is too close to the obstacle or not.

To provide the detection of accident the system uses vibration sensor. Which detects the force and send the information system where then system informs about incident to registered mobile number and to nearby medical centre and police stations with the location of the accident.

2. LITERATURE SURVEY :-

- In the previous days to prevent from such accidents the vehicle were enable with the air bag and even nowadays vehicle uses air bag security aspect and also uses the security of tyre pressure monitoring system for some extend .
- The other existing systems are there which identifies the accident and enable the airbag to blow and calls and sends location to the exiting sorted numbers like medical and police stations numbers.
- The main goal and the idea of this research papers is preventing the vehicle from accident and also detecting the accident and sending the information about the accident with location not only to registered numbers but also search for the nearby medical centres and police stations and sending the information about same to their contact numbers as well it will search for nearby emergency centre detail dynamically.

- In the other existing systems they have spoken more about the prevention, detection and alert for cars but less about the prevention, detection and alert for bikes.
- This system will be capable of provision and detection alert for bikes as well, system will alert the driver by blinking the Red LED light at indicator which will notifiable for driver and further driver can control the bike by looking at the indicator's Red Light. Also system works for the accident detection which will be same as of other automobile's accident detection.
- This system will work in the three step process where there will be two alert and one detect mechanism step. Where two alert mechanism steps comes under the prevention and remaining one step will come under detection.

3. ARDUINO :-

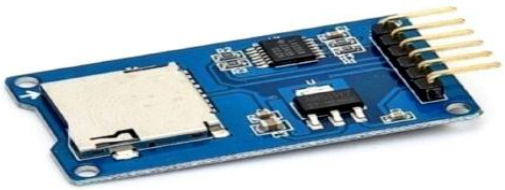
The Arduino Mega 2560 microcontroller board is based on ATmega2560. It is a heart of the system which is responsible for all the processing of coming request from from the sensors and other modules. It receives the signal from the vibration (Strain gauge) sensor which will act as a accident detection system. And will start the execution flow and uses the sd card module to store the data coming in response from the gps module. And for the further operations will access the sd card module.

4. GSM AND GPS MODULE :-

For the better communication between the gsm and gps and for the communication between contact numbers the combined SIM808 module will be preferable. Here the GPS module will be active from the arduino and it will give the current location as an responsive which will be the latitude and longitude of the current location. For the network connectivity purpose to find out the current location the GSM module will integrate in the operation. Once the data is received by the board it will store it in the SD card module.

5. SD CARD MODULE :-

Micro SD card module will be preferable for storing and retrieval of data (Dynamically access contact detail stored in JSON file). SD card module acts as a mini database which helps to store pre-recorded voice massage for call and dynamically accessed location and contact detail.



6. ULTRASONIC SENSOR :-

Ultra-sonic sensor identifies front object and measures the distance using ultrasonic sound waves, it triggers the sound waves out and listens to the eco wave reflected from object. Through which it calculates the distance between the objects and return the pulse to the board then arduino listen the signal from the sensor and triggers the alert alarm on the basis of signal value. Range(3cm-400cm).

7. CONCLUSION :-

Proposed system will be capable of providing provision against accident with the help of ultra-sonic sensor and also capable of providing detection and alert of accident occurred using vibration sensor where vibration sensor detect the force and send signals to the arduino . Arduino is main processing unit of the system which transfers the message to the different devices in the system. Once the accident detected the arduino will trigger the appropriate action depends on the conditions stated.

REFERENCES:-

- "Accident Detection and Alert System" by T Kalyani, S Monika, B Naresh, Mahendra Vucha International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-8 Issue-4S2 March, 2019.
- Vehicle Accident Detection and Reporting System Using GPS and GSMBy Aboli Ravindra Wakure, Apurva Rajendra Patkar, Manisha Vitthal Dagale, Priyanka Pradeepkumar Solanki. International Journal of Engineering Research and Development e-ISSN: 2278-067X, p-ISSN: 2278-800X, www.ijerd.com Volume 10, Issue 4 (April 2014),
- https://doc.qt.io/archives/qtextended4.4/atcommands.html
- https://developers.google.com/maps/documentation/javascript/places?utm_source=google&utm_medium=cpc&utm_campaign=FY18-Q2-global-demandgen-paidsearchonnetworkhouseads-cs-maps_contactsal_saf&utm_content=text-ad-none-none-DEV_c-CRE_433453794918-ADGP_Hybrid+%7C+AW+SEM+%7C+SKWS+~+Nearby+Search+BMM-KWID_43700042848688327-aud-596763661393:kwd-582432942915-userloc_9062223&utm_term=KW_%2Bnearby%20%2Bsearch-ST_%2Bnearby+%2Bsearch&gclid=EAIaIQobChMIqYbmj4qT6QIVyHwrCh3i0wuYEAAYASAAEgLrmfD_BwE#place_search_requests
- https://www.arduino.cc/en/Tutorial/ReadWrite
- https://developers.google.com/maps/documentation/geocoding/intro#geocoding
- https://www.bayalarmmedical.com/medical-alert-system/in-car/
- https://m2msupport.net/m2msupport/sim-phonebook-at-commands/
- https://forum.arduino.cc/index.php?topic=346519.0