BETTER AND FASTER EMERGENCY CARE DURING ACCIDENTS AND VEHICLE IMPACT

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Abstract: Traffic Accidents causes majority of deaths worldwide. The comprehensive disaster of the safety of road can be realized through witnessing the substantial quantity of injuries and deaths which are triggered by the road traffic accidents. In numerous circumstances the emergency services or caring members are not up-to-date in right time. This leads in late response time of the emergency service, which can prime to cause severe injury or a person's death. The resolution of this effort is to lessen the retort time of the emergency services in circumstances like accidents caused because of roads & traffic and additional tragedies such as theft & robberies, the medical emergencies and fire emergencies. Via using smartphone's onboard sensors to detect automobile accidents & account it to the closest emergency responder accessible & deliver real time positioning tracking for emergency victims and responders, this will extremely upsurge the probabilities of existence for the emergency victims, also aid save time & capitals of emergency services.

Introduction:

Road accidents are the prime cause of death across the globe. In which highest death rate in the world is faced by India. Explanations for the accident are high speed driving, drink and drive, missing sufficient sleep etc. With the help of the automation for accident detection, its assistances to identify the location of the accident & to locate the place of the accident. Aimed at an emergency vehicle like ambulance, every second counts. If there is any delay in the advent of ambulance, there might be a loss of life. Interruption of Ambulance is caused primarily because of the traffic signals. Consequently, time influence is a vital task.

Emergency reply time which is tremendously important once it includes occurrences relating the vehicle accidents. Investigation demonstrates that just 1 minute of reduction in accident response time that can upsurge probabilities of saving a life up to 6%. In order to decrease response time, execution of improved traffic skills would be essential, which will assist to scale back reply time and consequently decrease fatalities.

Here in this study, it is being done to construct and apply an automatic system that utilizes a phone to sense automobile accidents/incidents and then account it to the closest accessible responders that assist respond to this type of evolving difficulties and decrease fatalities as much as probable. The response time of an emergency service can be decreased by utilizing this detection system which will also help decrease fatalities due to automobile accidents. This structure will also deliver other emergency-services like Medical emergency, Police Station Department and Fire Brigade services.

Here an android phone is being utilized that sense incidents/accidents and account them to the near existing emergency-responders with the precise location of victims in emergency.

The system in the emergency- responder side will inform the responders about the occurrences that happen close to them and deliver them emergency victim's real time tracking that is the location on Google maps. Thus, will aid emergency-responders have a track on victims position also saving their lives as soon as possible.

The main objectives of this work are,

1. Quick transmission of message to preconfigured contacts to intimate the victims if accident takes place

2. To Decrease the Human Death Ratio due to Road Accident in India.

3. To make more versatile applications of defense& war fields by incorporating the technology.

4. To provide thoroughgoing aid even in unpopulated area.

Literature Survey:

The accident finding and alert system deliver emergency responders with critical information at the latest possible time. Dropping the time between when an accident occurred and when it is sensed can decrease mortality rates. All of the works have to be combined with the automobile to authenticate its reliability and functionality. Thus, this work will decrease the accident death ratio in significant volume even on the rural roads. At that point it has a great status in day-to-day life of people residing in India.

1. Accident Detection Using Accelerometer

Authors - Amrutha Madhusan, Lavanya Viswanathan, Vaishnavi Ravindran and Shanta Rangaswamy **Journal** - International Journal of Scientific & Engineering Research.

Here, the planned system in is in the form of an Android application which senses an accident using an accelerometer application built in the smartphone. But the phone must not be held by any person, but to be docked inside the vehicle. The working of this application is as follows: When the device is slanted above a certain threshold and is sensed by the accelerometer, the application gaps for fifteen (15) seconds.

Three kinds of input can be received here.

(1)   They can press "send" if an accident has occurred and if they are active.

(2)   If no button is pressed after 15 seconds, an accident is assumed to have occurred.

(3)   The user can press "cancel" if user is active and the device was tilted by mistake.

2. Vehicle Tracking

Authors - R. Praveen, Govardhan Reddy Kamatam and B.Rani, Sam **Journal** - IRJET (International Research Journal of Engineering and Technology).

Here, the Services of Google Location API is element of Google Play Services, delivers a much strong, high level of the framework which automatically selects an appropriate current-location provider and power administration. New features like activity detection are provided by the Location Services which are not offered by API framework. Designers must consider the Location services API if they are utilizing the framework API and similarly if they are making their applications location aware. The API of Google Maps in Android is a service which is part of the Google Play library services which also allows the admission to Google Maps server automatically, and also displaying the map, data downloading, and the map gesture response. Markers can be added, polygonal shape, and the essential map overlays, and to change the user's context of a precise map area.

3. Position Identifier and instant recovery of accident

Authors - Ulhas Patil, Avinash Ingole and Pranali More

Journal - International Research Journal of Engineering and Technology (IRJET).

As there are frequent ways or methods to track the position of a vehicle that has already endured with an accident. We are also aware of that there are conducts which can alert the authorized person about the accident that has occurred. When any accidents happen, it becomes very problematic to send help to the wounded as no notice of the accident has reached the hospitals, the family members of the victim or the police. Thus, follow-on in a huge loss of life. To prevent such circumstances, we can send an automatic SMS to the predefined numbers in the automated system. Bluetooth Expertise is used as a standard to start the Global Positioning Services by the sensors. It is a transitional between the sensors and the Global Positioning Services. MESA technology can also be used to activate Global Positioning Services along with Bluetooth technology to send the location coordinates to the predefined numbers.

4. Notification Phase

Authors - Hamid M. Ali and Zainab

S. Alwan

**Journal** - International Journal of Computer Science and Mobile Computing.

As we all are aware that Accident/incident recognition phase without a notification-phase is like doing nothing. When it confirms that an accident has occurred then a smartphone Global Positioning Service receiver is required to find the real time location of the incident and then utilizes the built-in 3G internet connection to send accident information such as: the GPS location, time of the accident and nearest hospital the victims being taken to. Also, smartphone Global Positioning Service receiver is required that finds the accurate accident location and then transmits this notification information to emergency-responders. To strengthen this phase, it is found to notify the contacts of the driver/passenger, such as family member, about the accident through sending SMS message that comprises the location where the accident is happened.

Methodology:

By utilizing a smartphone to recognize road accidents isn't a new topic. There are complicated procedures for techniques which uses GPS as well the same as accelerometer that sense vehicle collapse/accidents using phones.

Developing a system that uses Android smart-phones. Once the system detects an accident, the emergency contacts specified by the user will receive an SMS from the system, this SMS covers information regarding the accident and also an emergency services will be called automatically.

Also developing a system that makes uses the accelerometer, to sense incidents/accidents. Once the recognition of an accident /incident, an SMS to the emergency-contacts is sent and an emergency warning to the web server is made, web server has to be accessed by the emergency responders to find out about an accident.
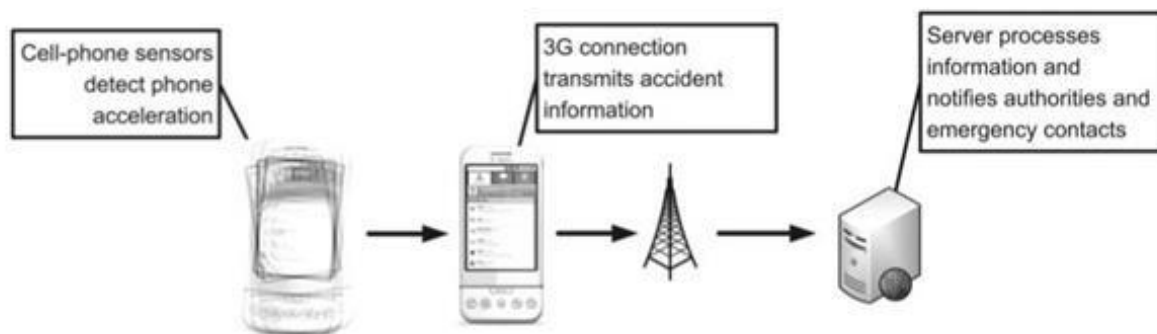
Android application is being developed which habits accelerometer-sensors to detect accidents/incidents. Once it detects the incident, the application will automatically transmit a communication to nearby the emergency-response service that are running. The matter is that this system is for the specific emergency reply services which is only applicable in India. Also, this system is likely to enlarge false positives since there is no filter in place to confirm if the incident sensed by the phone is a real accident or just false alarm due to collapsing phone, etc.

Here in these learning, we observed that numerous know how's and current system delivering all with wide-ranging analysis and helped us in rising this system. From evaluation we evidenced that these systems can perform a crucial role in protecting human lives during incidents.

Methods of machine learning displayed great success at irregularity detection.

Cluster of algorithms can be used to group the vehicles rendering to their speed and their location in specific segment of the road. The affected vehicles by an accident are put in one group by the algorithms, and other vehicles in the other groups or a group in case of accident. In our recreations, it has been detected that number of groups is enlarged by 1 (one) at the time of an accident and the number of vehicles in a new group enlarged in the subsequent seconds. Hence, it can be understood as an accident occurred and the subsequent cars or car nearby the accident are affected by the accident.

KNN Algorithm:

K-Nearest Neighbor algorithm is one of the simple yet best machine learning algorithm which is supervised learning based. This algorithm gathers all the available data and classifies new data point on basis of similarity.

This algorithm is widely used for classification and regression. Here for our project, we discuss about the clustering. KNN has a parameter k, which is nothing but the points that need to be considered for comparison purpose, here k is meant for the hospital location. We use KNN algorithm to detect the nearest hospital and the nearest police station for the current location of the accident. However, Detecting the nearest located hospital and police station through global positioning service coordinates and google maps.

The KNN working is explained below:

Step1: Choose the value for K of the neighbours, selecting nearby hospital locations.

**Step2:** Estimation of the Euclidean distance for **K distinct neighbours.**

Step3: Consider the K nearest neighbours on the basis of how the Euclidean distance is calculated.

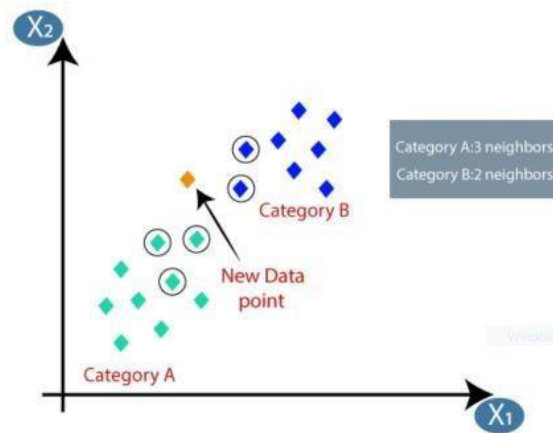**Step4:** Among these k neighbours, counting the number of the data points in each category.

Step5: Assigning the new data points to that category for which the number of the neighbour is maximum.
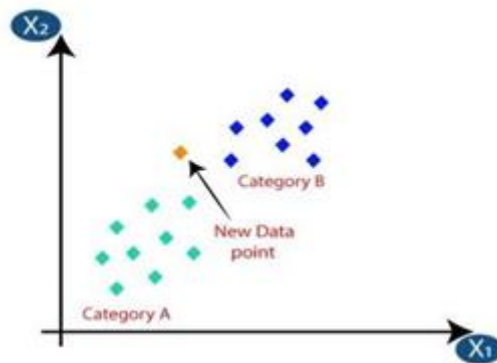
A.   Choosing the k neighbours

Euclidean Distance between A_1 and $B_2 = \sqrt{(X_2-X_1)^2+(Y_2-Y_1)^2}$
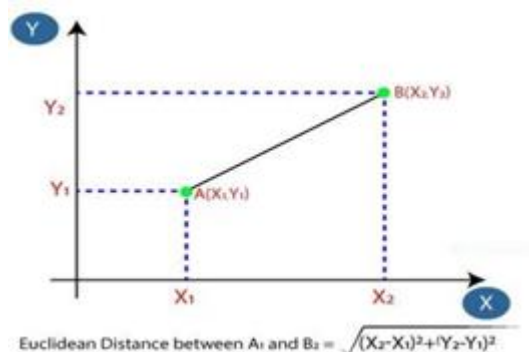
B.   Calculating the Euclidian Distance

C.   Thus, the nearest Neighbour

Conclusion:

In the study, we came to established the accident/incident recognition and the intelligent saving system which, with real period of current location tracing for both victim and responder the system will radically increase the existence rate of an accident/incident victim by delivering emergency aid on time by utilizing this accelerometer board sensor to identify accident and create emergency awareness and send these to close by emergency- responders and also sends an SMS to emergency-contacts been previously stored and layer the current-location coordinates on maps of the accident/incident. This system also delivers aid for the other disasters likely as medical-emergencies like positioning or finding the nearby hospital for an ambulance, fire brigades in fire catching issues and several other. Emergency responder can pin the victims position on a Google-maps location on real time.

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