Implementation of Lock the Accused and Over Speed Monitoring with Emergency Support to the Victim using Lot

B.B.Aarthi[#1], M.Anitha[*2], R.Gokulapriya[*3], J.Deepa[*4] Dr.S.Hemalatha[*5]

[1,2,3]*Final Year, CSE, Panimalar Institute Of Technology, Chennai*
[4,5]*Professor, Department of CSE, Panimalar Institute of Technology. Chennai*

Abstract— In this paper , Speed of the considerable number of Vehicles are checked. On the off chance that any vehicle goes past the allowed vehicle then cautioning is offered twice to the driver, if speed is proceeded with then versatile camera appended with the vehicle is started and photograph is taken. At that point photograph and vehicle subtle elements are overhauled to the server and fine sum is subtracted naturally. Vibration Sensor is connected with the Vehicle is utilized to distinguish the mischance occasion. On the off chance that arrangement happens then naturally Vibration is started and ringer is activated. On the off chance that both the drivers of the vehicles kill the ringer then it is considered as "Expected". In the event that one vehicle kills the bell and there is no reaction from another then both the vehicles are made to off state, police is started to the first vehicle and Ambulance is started to the second vehicle. In both the vehicles Camera and GPS is started and area data is followed totally to personality the Hit &Run driver. Life support is given to the second vehicle.

Keywords— Sensing, Hit and Run, Vehicle Speed, GPS, Life Support.

1. Introduction

The smart phone-based vehicular applications become more and more popular and facilitate more intelligent driving experiences including vehicle localization enhancing driving safety ,driving behaviour analysis and building intelligent transportation systems. Among these applications, the vehicle speed is an essential input. The speed of a vehicle can be obtained from GPS .Speed of all the Vehicles are monitored. If any vehicle goes beyond the permitted vehicle then warning is given twice to the driver,

if speed is continued then mobile camera attached with the vehicle is initiated and photo is taken. Then photo and vehicle details are updated to the server and fine amount is subtracted automatically. Vibration Sensor is attached with the Vehicle is used to detect the accident event. If collusion occurs then automatically Vibration is initiated & buzzer is triggered. If both the drivers of the vehicles turn off the buzzer then it is considered as "Normal". If one vehicle turns off the buzzer and there is no response from another then both the vehicles are made to off state, police is initiated to the 1st vehicle and Ambulance is initiated to the 2nd vehicle. In both the vehicles Camera & GPS is initiated and location info is tracked completely to identity the Hit &Run driver. Life support is provided to the 2nd vehicle. The accident rate increases day by day. To prevent that, we introduce this technique. The K Nearest Neighbouring algorithm is used here to detect the nearest neighbouring vehicles and prevent form collision. The GPS embedded in the smart phone is attached to the vehicle to track the victim. The GPS gives the location information to the server about the vehicle that helps to find the details about the driver. The camera is also attached to take a photo of the driver and it is send to the server for further identification. The vibration range is also provided to detect the force when both the vehicle get crashed. If the vibration range is very low and if both the drivers turn off the buzzer then the server detect that there is no danger. If the vibration range crosses the limit then the server detects that the accident took place. The hit and run driver can also be identified by using the GPS and camera attached with the vehicle. The fine amount will be subtracted automatically from their account.

2. Literature Review

Table 1: Articles with its advantages and disadvantages

S.NO	TITLE	AUTHOR NAME	PUBLICATION JOURNAL/DATE	DISADVANTAGE	ADVANTAGE
1	Robust Vehicle Localization in Urban Environments Using Probabilistic Maps	Jesse Levinson, Sebastian Thrun	IEEE, 2010	We previously that GPS, IMU, and LIDAR data can be used to generate a high-resolution infrared remittance ground map that can be subsequently used for localization	we present a new method of map-based driving that extends previous work by considering maps as probability distributions over environment properties rather than as fixed representations of the environment at a snapshot in time.

2	Sensing Vehicle Dynamics for Determining Driver Phone Use	Yan Wang, Jie Yang, H. Liu, Yingying Chen, Marco Gruteser, Richard P. Martin	ACM, JUNE 2013	It is difficult to determine whether a user is actually in driving or a passenger in the vehicle	This paper utilizes smartphone sensing of vehicle dynamics to determine driver phone use, which can facilitate many traffic safety applications.
3	Classification of driving characteristics using smartphone sensor data	C. Antoniou, V. Papathanasopoulou, V. Gikas, C. Danezis, H. Perakis	HEART 2014	Obtaining detailed traffic information on individual vehicles required expensive and hard-to-operate, specialized equipment that had to be installed on the vehicle of study	Classification of driving behaviors allows a finer perception of real traffic, as it helps distinguish and interpret the way that drivers react to different traffic states and situations.
4	Driving Style Recognition Using a Smartphone as a Sensor Platform	Derick A. Johnson, Mohan M. Trivedi	IEEE, 2011	Potentially aggressive driving behavior is currently a leading cause of traffic fatalities	To increase awareness and promote driver safety, we are proposing a novel system that uses DTW and smartphone based sensor-fusion, to detect, recognize and record these actions without external processing.
5	Vehicle Class Composition Identification Based Mean Speed Estimation AlgorithmUsing Single Magnetic Sensor	DENG Xiaoyong, HU Zhongwe, ZHANG Peng, GUO Jifu	JTSEIT, October 2010	The existing researches focus on dual-detectors, that is to say, placing sensor node pair separated by some distance on one lane.	The OTSU method was used to classify vehicles into small vehicles and large vehicles.

3. Methodology

3.1 Android Application

Mobile Client is an Android application which created and installed in the User's Android Mobile Phone. So this paper can perform the specific activities. The Application First Page Consist of the User registration Process. In that page get the information from the user, like name, phone number, email id, vehicle number, account details and all the information is gathered from this page. And store that information to server that is database. For getting the information, they drag and drop the components such as labels, text field, password text field and buttons. Then write code for each component. And create action listener for all the buttons to do some actions. After registering using user information, there are two labels one for username and another for password. Use two text field username and password from the user. Then two button is there, one for sign in and another for cancel. And write code for all activities done for this paper.

Once designed the page, write the codes for each. Once this paper creates the full mobile application, it will generate as Android Platform Kit (APK) file in particular drive. This APK file will be installed in the User's Mobile Phone an Application. Using this application, perform specified task using this application through user's
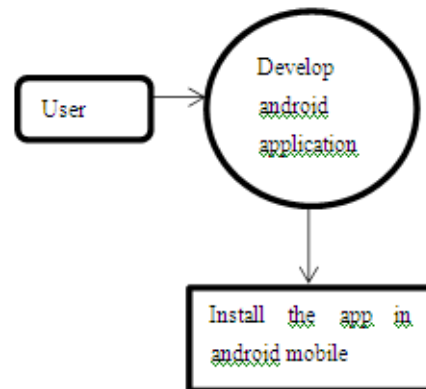

Fig.1: Application Development Block Diagram

3.2 Embedded Hardware Construction

In this module fabricates embedded kit to show the demo of the car movements in the road. To show demo , many kits are needed such as three zigbee , two gps , two viberation sensor and two motors are used. Three zigbees

are used to communicate with each other .one is fixed with vehicle 1 , second with vehicle 2 and another with server. Using these communicate among them. Using vibration sensors, detect the accident occur between two vehicles. All these activities are monitored by server. Accident occurs between vehicles. The buzzer is triggered for specified time. If both the drivers can able to turn off the buzzer then it is considered as normal. If one driver can able to turn off the buzzer and others cannot means. Emergency support is provided to the victim. From the server system will monitor car kit movement. In case of accident happened that any hit between two cars it generates alert as Buzzer.
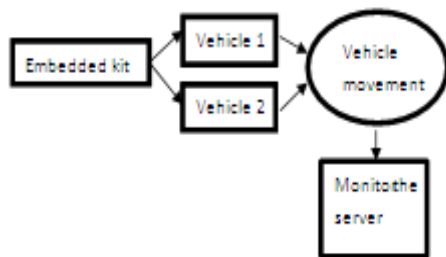
Fig.2: hardware construction block diagram

3.3 Vibration & Location Sharing

In the car kit vibration Sensor id fixed. If there is any hitting happened means vibration sensor detects and it sends Command to the server. Then it raises a buzzer and also Location details are captured and saved into the server. If the command is h then it is consider as hit that is accident occurs between the vehicles. Based on the specified operation the server performs those operations through our mobile phone. That is , in both the vehicles buzzers are triggered , if both the buzzer turn off then there no need any emergency support and it is considered as normal . else if one driver can able to turn off the buzzer then this driver is safe and no response from the other side means , this driver and vehicle got huge injury .So the police is initiated to the first vehicle that is in which the buzzer is turned off. Then Emergency support is provided to the second vehicle since this driver got huge injury. The driver's and vehicle's details are forwarded to the server that ir police and ambulance. And the location information of the vehicles also forwarded to the server. GPS is used to track the location of the vehicles. The drivers information is already stored in the database.

3.4 Hit& Run Behaviour Analysis

In this module it will checks that who is hitting and who is running. Here it will check that which car driver is met huge injury and which car has met minimum injury. Huge injury is met by the driver means car doesn't able to move and buzzer also rose. Then after some time the buzzer is

turn off .then the driver's and the location information is forward to the server. So the intimation will send to police. So no accused can escape from hit and run case.
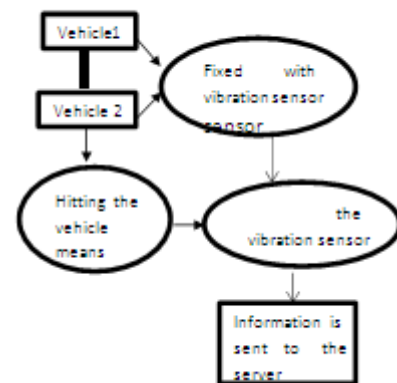

Fig.3: Hit& run behaviour analysis block diagram

3.4 Hit and Run Behaviour Analysis

In this module it will checks that who is hitting and who is running. Here it will check that which car driver is met huge injury and which car has met minimum injury. Huge injury is met by the driver means car doesn't able to move and buzzer also rose. Then after some time the buzzer is turn off then the driver's and the location information is forward to the server. So the intimation will sent to police. So no accused can escape from hit and run case.
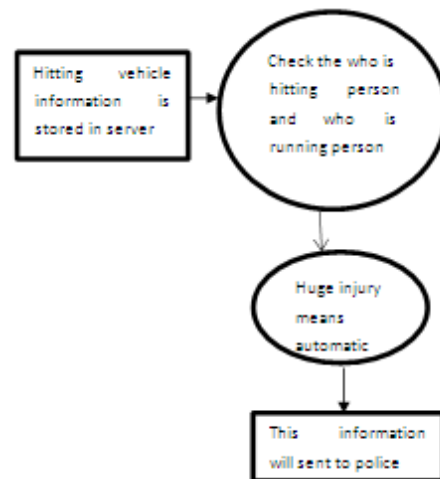
Fig.4: Sharing of vehicle details block diagram

3.5 Emergency Support for Needy People

If the driver got huge injury means, the driver cannot able to move. The driver must need emergency support and inform to their relatives. In case Emergency, the intimation will sent to the Ambulance for giving the treatment to the

injured drivers. The details of the driver and the location information are forwarded to the server. Using this information ambulance and relatives can easily get the drivers and emergency support is provided.
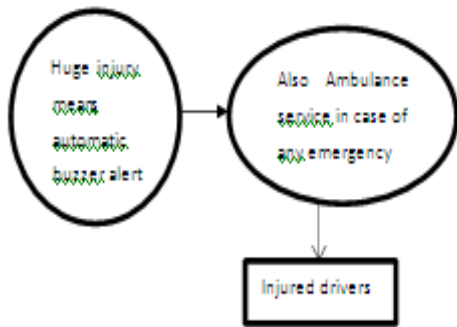

Fig.5: Emergency Support Block Diagram

4. Module Implementation

After executing the registration module, the login page will be opened. The below screenshot shows the login page
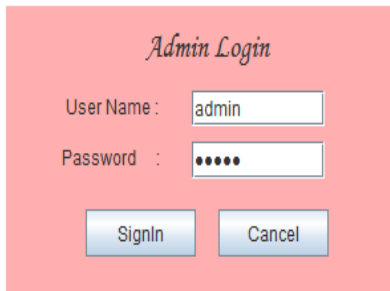

Fig.6: Login Page

Once login the page, the user has to register the below screen shot shows the registration page.
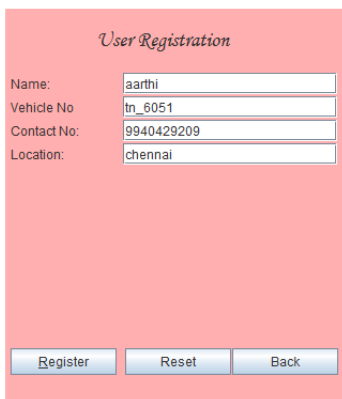

Fig.7: Registration Page

After entering all the details in the registration page and then click register button after clicking search with vehicle number, The below screen shows the vehicles details in the database.
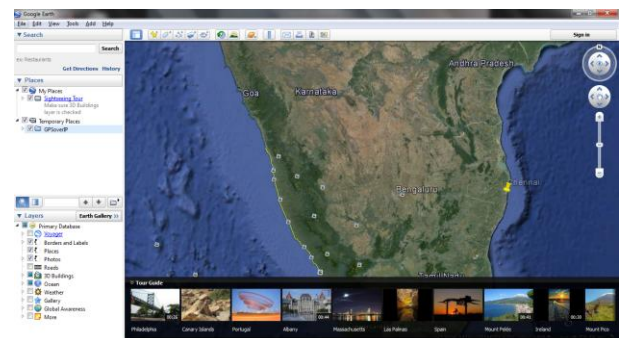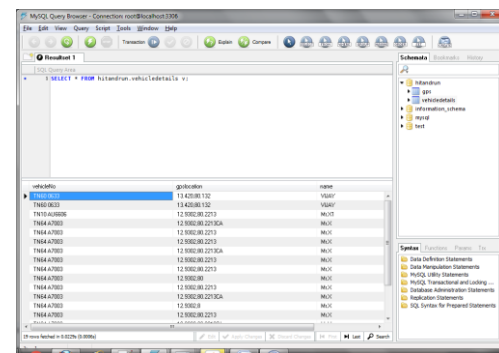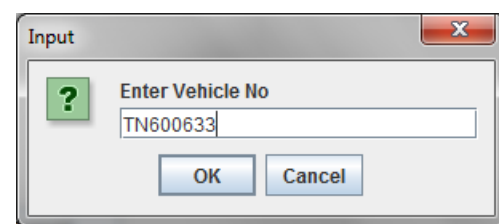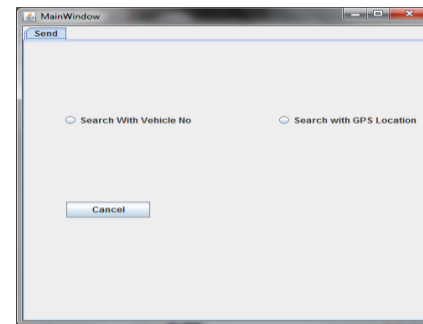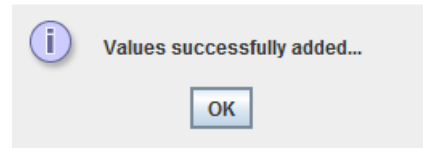

Fig.8: Execution diagrams

5. Result

In this paper monitor the speed of all the vehicles. If any vehicle goes beyond the permitted speed the warning is given twice to the driver, if speed is continued then the fine

amount is subtracted automatically. But in other papers, it only monitors the speed not giving the warning or fine amount cannot be reduced. In other papers monitor the speed using the accelerometer readings and cannot give the warning to the driver. In this paper detect and prevent from hit and run case. If accident occurs the notification is forwarded to the respective servers such as police relative and hospital server. In this paper provides emergency support to the victim but other papers didn't give.

6. Conclusion

In this paper, address misbehaviour activities of the drivers and prevent from the accidents. In that employ smartphone sensors to monitor over speed and provide emergency support to the victim. If any vehicles beyond the permitted vehicle speed, then the fine amount is subtracted automatically. In that, using vibration sensor, detect the accident occurs between two vehicles and lock the accused. If accident occurs, in both the vehicles buzzer is triggered. Lock the accused and emergency support is provided to the victim. GPS is attached with every vehicles to keep track the vehicle's location. All the activities are done automatically.

References

[1] J. Levinson and S. Thrun, "Robust vehicle localization in urban environments using probabilistic maps," in Proc. IEEE Int. Conf. Robot. Autom., 2010, pp. 4372– 4378.

[2] Y. Wang, J. Yang, H. Liu, Y. Chen, M. Gruteser, and R. P. Martin,"Sensing vehicle dynamics for determining driver phone use," in Proc. ACM 11th A. I.C. Mobile Syst., Appl. Serv., 2013, pp.41–54.

[3] C. Antoniou1, V. Papathanasopoulou, V. Gikas, C. Danezis and H. Perakis "Classification of driving characteristics using smartphone sensor data" issued in hEART 2014.

[4] D. Johnson and M. Trivedi, "Driving style recognition using a smartphone as a sensor platform," in Proc. IEEE Int. Conf. Intell.Transportation Syst., 2011, pp. 1609–1615.

[5] DENG Xiaoyong1, HU Zhongwei, ZHANG Peng, GUO Jifu "Vehicle Class Composition Identification Based Mean Speed Estimation AlgorithmUsing Single Magnetic Sensor" , issued in JTSEIT, October 2010 .

[6] Hamid M. Ali1, Zainab and S. Alwan," Car Accident Detection and Notification System Using Smartphone", issued in IJCSMC,April 2015.

[7] Baik Hoh, Marco Gruteser, Ryan Herring, Jeff Ban*a*, Dan Work, JuanCarlos Herrera, AlexandreBayen, MuraliAnnavaram andQuinn Jacobson "Virtual Trip Lines for Distributed Privacy-Preserving TrafficMonitoring",issued in ACM, JUNE 2008.

[8] Wonang Jang,Daeseong JongandDohoon Lee," Methodology to improve driving habits by optimizing the in-vehicle data extracted from OBDII using genetic algorithm", IEEE , issued on 18-20 jan 2016, pp 2375-9356.

[9] Rahul B. Pendor,and P. P.Tasgaonkar, "An IoT framework for intelligent vehicle monitoring system", IEEE ConferencePublications , 2016 , pp 1694 – 1696.

[10] Bin Zeng, Bin Zeng, "Study of vehicle monitoring application with wireless sensor networks", IET Conference Publications **,** 2015, pp. 1-4.

[11] Jose Natanael,Oliveira Fernandes"A Real-Time Embedded System forMonitoring of Cargo Vehicles,Using Controller Area Network(CAN)", IEEE Latin America Transactions**,**2016, Volume: 14, Issue: 3,pp. 1086 – 1092.

[12] VivekTyagi , ShivkumarKalyanaraman and RaghuramKrishnapuram, "Vehicular Traffic Density State Estimation Based on Cumulative Road Acoustics", IEEE Transactions on Intelligent Transportation Systems ,Year: 2012, Volume: 13, Issue: 3 ,Pages: 1156 – 1166.

[13] VolkanCevher,Rama Chellappaand James H. McClellan,"Vehicle Speed Estimation Using Acoustic Wave Patterns", IEEE Transactions on SignalProcessing,Year: 2009,Volume: 57, Issue: 1,Pages: 30 –47.

[14] T. N. Schoepflin and D. J. Dailey, "Dynamic camera calibration of roadside traffic management cameras for vehicle speedestimation," IEEE Trans. Intell. Transportation Syst., vol. 4, no. 2,pp. 90– 98, Jun. 2003.

[15] Mr.S.Iyyappan ,Mr.V.Nandagopal ,"Automatic Accident Detection and Ambulance Rescue with IntelligentTraffic Light System" , International Conferenceon Innovations in Information,Embedded and CommunicationSystems(ICIIECS),Year: 2015,Pages: 1– 5.