Method for Recognizing Location Context

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Abstract: Smart phones have become widely used as vehicle information devices. As a result, several advantages have appeared. First, a smart phone can log driving data such as location, vehicle status information, and so on. The logs do not depend on the car, but on the smart phone user. Second, a smart phone can gather driving-related information via the Internet. We believe that the advantages enable us to recognize several contexts. Therefore, we proposed a system that supports the user in changing provided services based on the context. We have discussed context recognition in order to create the system. One of the discussion outcomes is that the location context holds a very important role in guessing which function is required by a driver. However, it is difficult to recognize the location context using only latitude-longitude logs. In this paper, we propose a method for recognizing location context. The method is separated into three steps. First, values are recorded in a travel history such as a meshed map. The values represent driving experience points in a travelling area. Second, the method searches the travel history for a given driving area. Then, the value of the searched area is compared with a specified threshold. As a result, the location context is recognized. We implemented a prototype system and evaluated the proposed method. The results of the evaluation confirm the effectiveness of both the proposed method and expected future work.

Key Words: GPS, GSM, Mobile App, Location Context.

1. INTRODUCTION:

Smart phones have become widely used as vehicle information devices. Therefore, driving logs depend on the smart phone user instead of the vehicle. Conventional vehicle information devices are fixed to a vehicle, whereas a smart phone can be carried with the user. The difference in dependence is very important, because driving logs differ based on this dependence. For a system designed to provide services based on a conventional driving log, the services will not be effective. However, a system designed to provide services based on a smart phone driving log will be able to provide effective services. In addition, a smart phone can gather driving-related information via the Internet without additional costs, since a normal smart phone can be used as the vehicle information device. Conventional vehicle information devices require additional costs. We believe that one of the advantages of the smart phone is that it is able to recognize several user's contexts. Therefore, we proposed a system that allows the user to change provided services based on the context. The proposed system first guesses a user-required function based on the driving context. Then the user is supported for selecting the function.

The context shows the degree of driving experience with a specific location. For example, if a driver uses a familiar road, he/she probably does not need the map function. On the other hand, if a driver travels on a road for the first time, he/she probably does need the map function. In addition, if a driver is on an unfamiliar road, he/she most likely needs the map while the vehicle is moving, and may not need the map while the vehicle is stopped. Therefore, we classier the location context into three types: familiar roads, unfamiliar roads, and first-time roads. However, it is difficult to recognize the location context simply by using latitude/longitude logs. For example, a familiar road is probably located near a neighboring unfamiliar road. The next problem is that the beginning of the record logs occurs after the user buys the smart phone.

Therefore, it is difficult to recognize the driver actual experience from the raw data logs. In addition, smart phone memory is smaller than that of a PC. The travel history increases day by day, so if the sampling rate is fine, the travel

history becomes very much large. In this study, we propose a location context recognition method. The method is separated into three steps. First, values are recorded in a travel history, such as a meshed map. The values indicate the number of driving experience points in a travelling area. Second, the travel history of the travelling area is searched. Finally, the method compares the value of the searched area with previously specified thresholds. As a result, the location context is recognized. It is expected that this method can distinguish the location context of the roads located next to unknown neighboring roads. The rest of this paper is prepared as follows. In Section II, we present related works .In Section III, we describe the details of the location context recognizing method. Then, in Section IV, we present our implemented prototype system and evaluate the results of the proposed method.

2. PROPOSED METHOD:

In this section we proposed a method for recognizing Location context. We first define the location context .We briefly present an overview of recognizing location context.

In this paper we proposed a method for recognizing Location Context. A proposed system that supports the user in changing provided services based on the context.

The location context holds a very important role in guessing which function required by driver. For e.g. Music, Map, Help.

However, if a vehicle information device can guess which function is required by the user and provide it, tasks and times are reduced. In addition, it protects against interruptions in driving posture and reduces sight line deviation times. We have discussed context recognition in order to create the system. One of the discussion outcomes is that location context fills a very important role in correctly guessing which function is required by a user at any given time .Location context shows the degree of driving experience with a specific location. Another role of location context is tracking the position of vehicle for e.g. stop condition, running condition etc. This role is useful at the time of Accident of vehicle.

3. COMPARITIVE STUDY:

A: GSM and GPS Based Vehicle Location and Tracking System.

A vehicle tracking system combines the installation of an electronic machine in a car, or fleet of vehicles, with purpose-designed computer software to enable the vendor or a third party to path the vehicle location, collecting data in the process. Modern vehicle tracking system normally use Global position System (GPS) technology for locate the car, but other types of routine vehicle location tools can also be used. Car information can be view on electronic maps via the Internet or specialized software. In the key they are easy to steal, and the typical motorist has very little knowledge of what it is all about. To avoid this type of steal we are available to execute a system it provides more security to the vehicle. Existing System: In the before structure safety lock and panic is implement in a car.

B: Using Smart phones to Detect Car Accidents and Provide Situational Awareness to Emergency Responders.

Accident recognition systems assist reduce victims stemming from car accidents by decreasing the response time of emergency responders. Smart phone and their involved sensors (such as GPS receiver and accelerometers) are promising platforms for construct such system. This manuscript provide three contributions to the study of using smart phone-based accident recognition system. Initial, we explain solution to key issue linked with detecting traffic accidents, such as prevent fake positives by utilize cell phone context information and polling onboard sensors to detect large accelerations. Second, we present the architecture of our prototype smart phone-based accident detection system and empirically analyze its capability to oppose fake positives as well as its capabilities for mistake rebuilding.

C: Car track and lock System Based on GSM and GPS

Currently almost of the public having an own vehicle, robbery is happen on parking and from time to time driving uncertainty spaces. The safe of vehicles is extremely essential for municipal vehicle. Motor vehicle tracking and locking system install in the vehicle, to track the place and locking engine motor. The position of the motor vehicle recognized using universal position system (GPS) and Global system mobile communication (GSM). These system frequently observe a moving motor vehicle and details the status on demand. When the theft identified, the

responsible individual launch SMS to the microcontroller, then microcontroller issue the control signals to stop the engine motor. Authorized anyone wants to send the key to checker to start again the vehicle and open the door. This is more secured, reliable and low cost.

D: GPS – GSM Based Tracking System.

This proposed work is an attempt to design a tracking unit that uses the global position system to determine the accurate position of a object, person or other asset to which it is attached and with GSM modem this information can be send out to remote user. It can provide tele-monitoring system for inter-cities moving vehicle such as taxi and buses. This scheme contains single-board embedded system that is equipped with GPS and GSM modems beside with ARM processor that is install in the vehicle. During object motion, its location can be report by SMS communication. A software wrap up is developing to read, process, analyze and store the incoming SMS messages. The use of GSM and GPS technology allow the organism to track object and provides the most up-to-date information regarding continuing trips. If a password like SMS is sent by the owner, it automatically stops the vehicle or we can use it for dissimilar extra job, it can give authentic instant management.

E: Design and Development of GPS-GSM Based track System with Google Map Based monitor.

 GPS is one of the technologies that are used in a vast number of applications at the moment. Individual of the applications is tracking your vehicle and keeps regular monitoring on that. This tracking system can tell you the location and route travelled by vehicle, and that information can be experiential from any other isolated position. It also includes the web application that provides you exact location of aim. This system enables us to track aim in some weather conditions. This system uses GPS and GSM technologies. The document consist of the hardware element which comprise of GPS, GSM, At mega microcontroller MAX 232, 16x2 LCD and software element is used for interfacing all the necessary module and a web application is also developed at the client side. Most significant purpose is to propose a system that can be simply installed and to provide platform for further enhancement.

F: Location recognition and Vehicle tracking using VANET (VETRAC).

An automotive navigation system [2],[12] is radio frequency based wireless-mobile direction-finding system designed to guide vehicles in its location using digital map[4] display. By the road/path database, system can give various directions to other locations to reach destination. Vehicle tracking system are electronic strategy installed in vehicles to enable vehicle owners or third parties to track the location of a vehicle. Most modern vehicle tracking systems now use GPS [7] modules to allow for easy and accurate location of the vehicle. A lot of systems also merge a interactions component such as cellular or satellite transmitters to communicate the vehicle position to a isolated user. Motor vehicle information can be viewed on electronic maps using the Internet or specialized software.

G: Accident Detection Using Android Smart Phone.

In India, the World Health Organization (WHO) has revealed in its initial always Global position Report on path safety that more public die in path accidents in India than anywhere else in the earth, include the more crowded China. call road fatalities an "epidemic" that will become the world's fifth main destroyer by 2030, the details said while loaded nation had been able to lesser their casualty duty, these were sharply on the increase in the third earth. It said 90% of death on the world's transportation occurs in low and middle-income countries (21.5 and 19.5 per lakh of people, respectively) though they have just 48% of all register vehicles. The information for India is chilling. At least 13 private die every hour in path accident in the state, the latest report of the public wrong statement Bureau reveals. However, road security experts say the real numbers could be high while several of these upset belongings are not still report. "There is no estimate of how many upset in path accidents die a many hours or days before the mistake," point out Rohit Baluja, part of the UN Road protection Collaboration and order of universal path security in place of Asia.

H: Intelligent Vehicle Control for Driver Behavior using Wireless in Transportation System.

Driving behavior models give details and calculate the behavior of drivers. Open model are mostly personal and based on self-report scales (Ranney 1994). They powerfully stress the driver's cognitive situation and have incorporated main behavioral modify concept such as drive, or risk review. However motivational models such as risk costs (Wilde, 1982), risk threshold (Naatanen et al., 1976) or risk prevention (Fuller, 1984) remain very subjective concept. For example, risk is often connected with supposed probability of harm or negative experience and its severity. The size of perceived threat is often alert at the possibility of the risk. The possibility of harmful event is rarely the same for each and varies per circumstances. The likely use of a baseline measures to compare risk perceptions is debatable. Accepting one's public compassion to risk requires knowledge of other factor such as public

behaviors, family history, and ecological exposures that decide that possibility (Weinstein, 1999). Although the driver is the key actor in the driving action, driving is not a nearby activity. It takes position in a wider location in which the driver constantly interacts with its direct environment and the car.

I: Crash Notification System for Portable Device.

Road accident is one of the mainly regular causes of death between citizens. Immediate transfer information is unnecessary for behind the expansion of many Early Crash Notification repair for Portable machine application: accident detection, vehicle navigation etc. It is widely accepted that providing rapid support to dead of path accident is of utmost import, especially in strict accidents, in which the victims are not intelligent to name for help [2]. Thanks to advance in wireless technology, intelligent system is arising to help develop security and efficiency services for path transport. For these reasons, an intelligent emergency call system or data message (e.g.: sms) system utilizing sensors to automatically detect a crash, and uses a wireless network to mail critical information (e.g., place of the accident, car recognition and number of passengers) to emergency services in a rapid manner would save lives [3].

J: Accident Detection and Alert Systems for Immediate Emergency Services.

In the study conducted, many papers on accident recognition algorithms have been studied in detail and analyze to understand the previous development in the field of accident recognition, the similar way in which such a structure can be developed to provide similar functionalities and also to propose a new system which can combine the advantages of these algorithms. The study is depicted in a tabular system with apposite parameter relating the utility of the algorithms. Unusual accident recognition focuses on increase the security, unusual accident recognition, disaster assistance and path hazard advice distribution [1]. Internet of things for smart city address an urban Internet of Things (IoT) system that is specific to an application domain. Urban IoT, supports the Smart capital vision, providing most advanced phone call technology and services to the people [2].

Paper Parameter	Paper [1]	Paper [2]	Paper [3]	Paper [4]	Paper [5]	Paper [6]	Paper [7]	Paper [8]	Paper [9]	Paper [10]
Paper Name	GSM and GPS Based Vehicle Location and Tracking System	Using Smart-phones to Detect Car Accidents and Provide Situa - tional Awareness to Emergency Responders	Vehicle Tracking and Locking System Based on GSM and GPS	GPS-GSM Based Tracking System	Design and Development of GPS– GSM Based Tracking System with Google map Based Monitoring.	Location Identification and Vehicle Tracking using VANET (VETRAC)	Accident Detection Using Android Smart Phone.	Intelligent Vehicle Control for Driver Behavior using Wireless in Transportation System	Crash Notification System for Portable Devices	Accident Detection and Alert Systems for Immediate Emergency Services
Author	Prof.Baburao Kodavati, prof.V.K.Raju, prof.S.Srinivasa Rao	Prof.Chris Thompson, prof.Jules White, prof.Brian Dougherty	Dr.N. Suthanthira Vanitha. Dr.R. Thangam. Prof.R. Ramani ,	Prof.Abid khan, Prof.Ravi Mishra,	Prof.Pankaj Verma, prof.J.S Bhatia.	Prof.Arunkumar Thangavelul , prof.K.Bhuvaneswari, prof.K. Kumar	Prof.P.Kaladevi1,prof.T. Kokila,prof. S.Narmath	Prof.Jayapriya.P ,Prof. Prabha-karan.S, prof.Ashok T.	Prof.Sneha R. Sontakke; Dr.A.D. Gawande	Prof.Spurti Shinde, prof. Shweta Joshi, prof. Nikita Shah
Domain Name	GPS,RF Receiver & Transmitter.	GPS	Vehicle tracking, Microcontroller.	Embedded ARM, NMEA Protocol.	GPS, GSM, Tracking System	GPS	GPS	GPS, GSM	GPS,GSM	IoT, GPS
Algorithm	Switching Base Algorithm.	Automatically Detecting Car Accidents Algorithm.	Vehicle Tracking Algorithm.	Vehicle Tracking Algorithm.	Tracking system Algorithm.	VETRAC Algorithm	1.Accident Detection Algorithm	-	1. E-call system Algorithm.	1. Accident Detection Algorithm.
Implementation Platform	Automatic vehicle location Technology.	Smartphone	Smartphone	Smartphone	Smartphone	Smartphone	Android Smartphone	Embedded system	1. Handheld devices. 2. After market devices.	Smartphone
Techniques	1. Switching system. 2. Base station System.	1. Smartphone based accident detection systems.	Distributed Access Control	Distributed Access Control	GPS and GSM techniques.	1. Database server. 2. Navigation server system.	GPS, Sensor, Bluetooth	1.RFID Reader and sensor. 2.GPS and GSM techniques.	E-call system.	VANET.
Issues	1.Vehicle Tracking System	1. How Smartphone based accident detection can reduce overall traffic congestion.	1.Microcontroller issue the control signals to stop the Engine motor.	1.Microcontroller issue the control signals to stop the Engine motor.	1.web application	1.To provide a safe and intell- igent solution of identifying Optimal paths to the vehicle driver.	1. Hybrid measures for drowsiness detection.		1.detecting Traffic accidents.	1.safety 2.automatic accident detection 3.emergency assistance

Applications	1. Stolen vehicle recovery. 2. Field service management. 3.It is used for food delivery	1.Preventing False Positives 2.Detecting Accident Without Electronic Control Unit Interaction	1. Track bus driver activity. 2. Location information.	1. Real time traffic surveillance2. used as a valuable tool for real time traveler.	1. Parents to look after their children. 2.To track animals in jungles 3. Delivery services	1.theft Prevention. 2. Retrieval of lost vehicles. 3.providing traffic oriented Services on lanes.	1.To detect driver distraction	1. Safety application. 2. Prevent vehicle theft.	1. Location based real time accident monitoring. 2. Road and location assistance to driver.	1.safety 2.automatic accident detection 3.emergency assistance
Conclusion	Vehicle tracking System is becoming increasingly important in large cities and it is more secured than other in it.	This paper shows how smart phones in a wireless mobile sensor network can capture the streams of data provided by their accelerometers, compasses.	In this paper, we have proposed a novel method of Vehicle tracking and locking systems used to track the Theft vehicle by using GPS and GSM technology.	Tracking system is becoming increasingly important in large Cities and it is more secured than other systems.	This project can be further enhanced by the use of camera and by developing a mobile based application to get the real time view of the vehicle instead	VETRAC system is a navigation system for large campus Like University, Airport, Railway Stations, Organization.	This accident detection and alert system provide emergency respon-ders with crucial information at the earliest Possible time.	The progress in technology about intellig-ent transpo-rtation is non-stop process. In this system is fully prevent accident in real time	Using a mobile phone, we can demonstrate some innovative applications that are integrated inside an auto-mobile.	we propose the idea of combining the accident detection and alert system with urban IoT for Smart Cities.

4. CONCLUSION AND FUTURE SCOPE:

In this section we proposed a method for recognizing Location context. We first define the location context .We briefly present an overview of recognizing location context.

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However, if a vehicle information device can guess which function is required by the user and provide it, tasks and times are reduced. In addition, it protects against interruptions in driving posture and reduces sight line deviation times. We have discussed context recognition in order to create the system. One of the discussion outcomes is that location context fills a very important role in correctly guessing which function is required by a user at any given time. Location context shows the degree of driving experience with a specific location. Another role of location context is tracking the position of vehicle for e.g. stop condition, running condition etc. This role is useful at the time of Accident of vehicle.

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