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The Increasing Efficency of Intelligent Transport System With Respect To Road Fatalities

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ABSTRACT
New communication technologies integrated into modern vehicles offer an opportunity for better assistance to people injured in traffic accidents. Recent studies show how communication capabilities should be supported by artificial intelligence systems capable of automating many of the decisions to be taken by emergency services, thereby adapting the rescue resources to the severity of the accident and reducing assistance time. To improve the overall rescue process, a fast and accurate estimation of the severity of the accident represent a key point to help emergency services better estimate the required resources. In this project we have proposed a novel intelligent system which is able to automatically detect road accidents, notify them through vehicular networks, and estimate their severity. Our system considers the most relevant variables that can characterize the severity of the accidents (variables such as the vehicle speed, the type of vehicles involved, the impact speed and the status of the airbag) Corporation facilities, showing that our system can notably reduce the time needed to alert and deploy emergency services after an accident takes place.

I. INTRODUCTION

Intelligent transport systems have attracted extensive attentions recently as a promising technology for communication from vehicles. During the last decades, the total number of vehicles in our roads has experienced a remarkable growth, making traffic density higher and increasing the driver's attention requirements. The immediate effect of this situation is the dramatic increase of traffic accidents on the road, representing a serious problem in most countries, especially in India.

To reduce the number of road fatalities, vehicular networks will play an increasing role in the *Intelligent Transportation Systems* (ITS) area. Most ITS applications, such as road safety, fleet management, and navigation, will rely on data exchanged between the vehicle and the roadside infrastructure (V2I),.The integration of sensoring capabilities on-board of vehicles, along with peer-to-peer mobile communication among vehicles, forecast significant improvements in terms before arriving to the zero accident objective on the long term, a fast and efficient rescue operation during the hour following a traffic accident significantly increases the probability of survival of the injured, and reduces the injury severity.

Hence, to maximize the benefits of using communication systems between vehicles, the infrastructure should be supported by intelligent systems capable of estimating the severity of accidents, and automatically deploying the actions required, thereby reducing the time needed to assist injured passengers. Many of the manual decisions taken nowadays by emergency services are based on incomplete or inaccurate data, which may be replaced by automatic systems that adapt to the specific characteristics of each accident.

In proposed system the sensors installed on-board collects information available when a traffic accident occurs, the data collected are structured in a packet, and forwarded to a remote control unit through vehicle to infrastructure communication. Based on this information, our system directly estimates the accident severity by comparing the obtained data with information coming from previous accidents stored in a database. This information is of utmost importance, for example to determine the most suitable set of resources in a rescue operation.

A preliminary assessment of the severity of the accident will help emergency services to adapt the human and material resources to the conditions of the accident, with the consequent assistance quality improvement. We take advantage of the use of vehicular networks to collect precise information about road accidents that is then used to estimate the severity of the collision. Our proposal does not focus on directly reducing the number of accidents, but on improving post collision assistance.

II. LITERATURE REVIEW:

ROBUST PCA-BASED ABNORMAL TRAFFIC FLOW PATTERN ISOLATION AND LOOP DETECTOR FAULT DETECTION

One key function of intelligent transportation systems is to automatically detect abnormal traffic phenomena and to help further investigations of the cause of the abnormality. This paper describes a robust principal components analysis (RPCA)-based abnormal traffic flow pattern isolation and loop detector fault detection method. The results show that RPCA is a useful tool to distinguish regular traffic flow from abnormal traffic flow patterns caused by accidents and loop detector faults. This approach gives an effective traffic flow data pre-processing method to reduce the human effort in finding potential loop detector faults. The method can also be used to further investigate the causes of abnormality

A SENSITIVITY-ANALYSIS-BASED APPROACH FOR THE CALIBRATION OF TRAFFIC SIMULATION MODELS

A multistep sensitivity analysis (SA) approach for model calibration is proposed and applied to a complex traffic simulation model with more than 100 parameters. Throughout this paper, it is argued that the application of SA is crucial for true comprehension and the correct use of traffic simulation models, but it is also acknowledged that the main obstacle toward an extensive use of the most sophisticated techniques is the high number of model runs usually required. The tested possibility of performing a multistep SA, where, at each step, model parameters are grouped on the basis of possible common features and a final SA on the parameters pertaining to the most influential groups is then performed. The proposed methodology was applied to an urban motorway case study simulated using MITSIM Lab, a complex microscopic traffic simulator.

RECIEVER CONSENSUS: ON-TIME WARNING DELIVERY FOR VEHICULAR Ad-Hoc NETWORKS

To improve safety, a warning message in VANETs should be delivered both reliably and urgently. Existing solutions either tend to compromise propagation delay or do not reach high reliability due to *broadcast storm* problem caused by excessive retransmissions. This paper proposes Receiver Consensus, which exploits geographical information to help nodes autonomously achieve agreement on forwarding strategies. Each forwarding candidate ranks itself and its neighbours (who affirmatively or potentially received the message already) by distance to the centroid of neighbours in need of message, to assign different priority in forwarding among neighboring nodes and remarkably suppress unnecessary retransmission, while enabling best nodes to transmit the packet without waiting. The effectiveness and efficiency of this method are validated through extensive simulations under 802.11p settings

PERFORMANCE EVALUATION OF VeMAC SUPPORTING SAFETY APPLICATION IN VEHICULAR NETWORKS

Vehicular ad hoc networking (VANET) is an emerging paradigm that is expected to increase the public safety standards and enhance the safety level of drivers/passengers and pedestrians on roads through a variety of applications. This paper recently proposed VeMAC, a medium access control protocol that supports a reliable one-hop broadcast service necessary for high priority safety applications in VANETs. This paper explains how the VeMAC protocol can deliver both periodic and event-driven safety messages in vehicular networks and presents a detailed delivery delay analysis, including queuing and service delays, for both types of safety messages

SECURING VEHICULAR AD HOC NETWORKS

Vehicular networks are very likely to be deployed in the coming years and thus become the most relevant form of mobile ad hoc networks. In this paper, it noted the security of these networks. Securing vehicular Ad Hoc network provide a detailed threat analysis and devise an appropriate security architecture. This paper also describes some major design decisions still to be made, which in some cases have more than mere technical implications. Securing vehicular Ad Hoc network provide a set of security protocols, which shows that they protect privacy and also analyze their robustness and efficiency.

EXISTING SYSTEM

The Department of Transportation (DOT) of US developed some projects similar to ours with the goal of improving traffic safety through the use of vehicular communication, based on testing the effectiveness and safety benefits of the wireless connected vehicle technology in real-world, multimodal driving conditions. Some preliminary results regarding the distance travelled by warning messages, number of relaying vehicles and communication times in a real experiment in the streets of Los Angeles (USA) in 2011 can be found. However, these experiments only includeV2V communications and the notification of dangerous situations between

vehicles; whereas our system mainly concentrates on improving the decision making process that follows the occurrence of an accident.

DISADVANTAGES

In the existing system, the device communicates through wireless channels, when accident happens in a very remote area the device may find difficulty in communicating with the road side unit.

PROPOSED SYSTEM

In proposed system the sensors installed on-board collects information available when a traffic accident occurs, the data collected are structured in a packet, and forwarded to a remote control unit through vehicle to infrastructure communication. Based on this information, our system directly estimates the accident severity by comparing the obtained data with information coming from previous accidents stored in a database. This information is of utmost importance, for example to determine the most suitable set of resources in a rescue operation.

ADVANTAGES

Direct communication between the vehicles involved in the accident
Automatic sending of a data file containing important information about the accident to the control unit.
Preliminary accident assessment
Alert the required rescue resources to optimize the accident assistance of safety in the near future.

SYSTEM IMPLEMENTATION

System implementation is the final phase i.e., putting the utility into action. Implementation is the state in the project where theoretical design turned into working system. The most crucial stage is achieving a new successful system and giving confidence in new system that it will work efficiently and effectively. The system is implemented only after thorough checking is done and if it is found working in according to the specifications**.**

It involves careful planning, investigation of the current system and constraints on implementation, design of methods to achieve. Two checking is done and if it is found working according to the specification, major task of preparing the implementation are educating, training the users.

The implementation process begins with preparing a plan for the implementation of the system. According to this plan, the activities are to be carried out, discussions made regarding the equipment and resources and the additional equipment has to be acquired to implement the new system. The most important in implementation stage is, gaining the users confidence that the new system will work and be effective. The system can be implemented only after through testing is done. This method also offers the greatest security since the existing system can take over if the errors are found or inability to handle certain type of transactions while using the new system.

VEHICLE REGISTRATION

Vehicle registration will record all the details of the vehicles and keep the details in the server page. So, the android application can fetch information from the registration page and perform the operation.

GPS READING

GPS reading module helps us to get the current location. Geo-coder which will help to get the longitude and latitude details, with the help of this Geo-coder we can easily detect the place anywhere in the earth. So, this module helps us to know the details of the current location of the vehicle.

EMBEDDED DEVICE MONITORING

Embedded device monitoring module consists of sensors like vibration sensor and tilt sensor which helps to identify when any accident occurs and this information is passed to the android application. The vibration sensor will help to detect the vibration causing to the vehicle and over vibration is caused due to hitting by other vehicle. Likewise tilt sensor also help to identify accidents.

SEVERITY ESTIMATION

When a new accident notification is received, this module will determine how serious the collision was and the severity of the passenger's injuries.

III. CONCLUSION

The new communication technologies integrated into the automotive sector offer an opportunity for better assistance to people injured in traffic accidents, reducing the response time of emergency services, and increasing the information they have about the incident just before starting the rescue process. To this end, we designed and implemented a prototype for automatic accident notification and assistance based on V2I communications. However, the effectiveness of this technology can be improved with the support of intelligent systems which can automate the decision making process associated with an accident. A preliminary assessment of the severity of an accident is needed to adapt resources accordingly. This estimation can be done by using historical data from previous accidents using a Knowledge Discovery in Databases process.

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