ISSN No: - 2456 – 2165

Automatic Identification of Accidents and to Improve Notification Using Emerging Technologies

CH Surya[1], P. Dass[2]
[1] Student, Department of ECE, Saveetha School of Engineering
[2]Assistant Professor, Department of ECE, Saveetha School of Engineering

Abstract—New communication technologies integrated into modern vehicles offer a better assistance to people injured in traffic accidents. Recent studies show how hybrid communication capabilities should be supported and improve overall rescue process. There are a variety of areas, where in a need exists for a system capable of identifying and characterize the severity of the accidents using KDD process. In this system considers the most relevant variables that can be characterize the severity of the accidents (variables such as vehicle speed, vehicle location, accelerometer condition) by using embedded systems. This system consists of several wireless network devices such as Global Positioning System (GPS) and Zig Bee. GPS determine the location of the vehicle. Proposed system contains single-board embedded system that is equipped with GPS and ZigBee, along with microcontroller that is installed in the OBU vehicle. Based on vehicle motion, report is generated and to be taken by emergency services. If small accident has occurred or if there is no serious danger to anyone's life, then there is the option for alert message can be terminated by the driver or any other near peoples by a switch in order to avoid sends the message to control and save the valuable time of the medical rescue team. To improve the overall rescue process, a fast and accurate estimation of the severity of the accident system offered perfect facts to emergency services as soon as possible and saves precious life of peoples.

Keywords—OBU; VANET; ZigBee; GPS

I. INTRODUCTION

Now a days road accidents causes major victims because of there is no proper guidance to injured peoples at a time. To overcome this issue, vehicular networks plays a major role for giving rescue resources to accident peoples. A vehicular network is also called as VANET, Which is subcategory of traditional MANET. Hence VANET is a term, which is an instinctively formed ad-hoc network over vehicles within a range of roadway. In VANETs is a mobile node of vehicle each vehicle is endowed with On-Board Unit, which is able to communicate for exchanging message between Vehicle-to-Vehicle (V2V) as well as Vehicle-to-Infrastructure (V2I). Message can be transmitted using various techniques as wireless and cellular networks infrastructure. However, VANETs are considered to be one of the most prominent technologies because it is improves its efficiency and safety for vehicle. If any accident occurs; it's automatically framing a networks and transmitting messages to within a range of vehicle for reducing the delay time of data transmission.

In an accident notification system using hybrid communication is the combination of both Vehicle-to-Vehicle communication and Vehicle-to-Infrastructure communication, which is providing short range communications as well as long-range communications using various wireless and cellular technologies. The main objectives of this system are reducing the delay time of data transmission and improve rescue resources to injured peoples. By using hybrid communication, warning messages can be transmitted to both vehicles and infrastructure of control database unit. In a particular range of vehicles receives the warning messages from accident zone and transmitting those messages to other nearby vehicles also as road side units (RSU). Finally RSU forward those data into control database server (CDS), which is receive the warning messages form accident vehicle and providing the rescue resources based on the severity of the peoples.

The summary of this paper is discussed below as follows: section II describes the related works of this paper, section III proceedings architecture of accident notification system, section IV discussed the flow chart of In-Vehicle system, section V follows the experimental results and finally section VI discussed the conclusion.

II. RELATED WORKS

A recent study of my literature survey shows that, Manuel Fogue et al [1]. Describes the new communication technologies are integrated into modern vehicle and offers the better assistance to peoples who injured in accidents based on estimating the severity of accidents by using KDD process. The

ISSN No: - 2456 – 2165

best programming services to intimate the Dissemination in all the direction of vehicles. In very severe situation it messages the maximum number of vehicle by the central server. to proposes this it contains the PAWDS and the VANET technology to perform in Inter-vehicular system. Srinivetha. R [5]. To proposed the novel intelligent way to match with the local maps with the mobile phones. It collects the different location of the three axis accelerometer sensor for the position of the vehicle and it can view from the smart phones. Roma Goregoankar [6]. Through the native optimization approaches,.

it manages the traffic by the VANET technology by the route planning from the source to destination. VBSC produces the path for the owners to contain the alternate route for the destination and also calculates the distance parameters by the V2V communication algorithms. Ashwini Burde [4]. For the better accurate location of the accident and the position of the vehicle it representing the GPS and GSM modem. Identifying the accident by the vibration sensor and it terminates the message to the control unit. Ashish Kushwaha et al [3]. Using the MEMS technology to help the sensors by identify easily the traffic accidents and to enhance a communication between the control server and the emergency services. The accelerometer sensor uses the large and the small scale range axis for performing the vehicle and GPS module used to find the accident zone. C.vidhya Lakshmi et al [7]. In recent technology the accidents are sending by the video to the emergency services via GSM module by using the 3g technology to perform the action of the accident. It also generates the message to the main server about the dangerous of the accident. A. Sri ram et al [2].

III. ARCHITECTURE OF ACCIDENT NOTIFICATION SYSTEM

As per our system architecture Fig. 1. Shows that, when a vehicle met an accident automatically generated warning messages based on On-Board Unit (OBU), which is placed inside the car. By using OBU, which is finds the location of vehicle and severity of accident and generated warning messages at last transmitting messages into other nearby vehicles is also called as V2V in vehicular networks at the same time forwarding that messages into Control Database Server (CDS) which is also called as V2I. If a person in a conscious state without occurring a serious injury or else if they feel don't want first aid treatment, they can be terminated warning messages before sending to other vehicles and CDS by using switch.

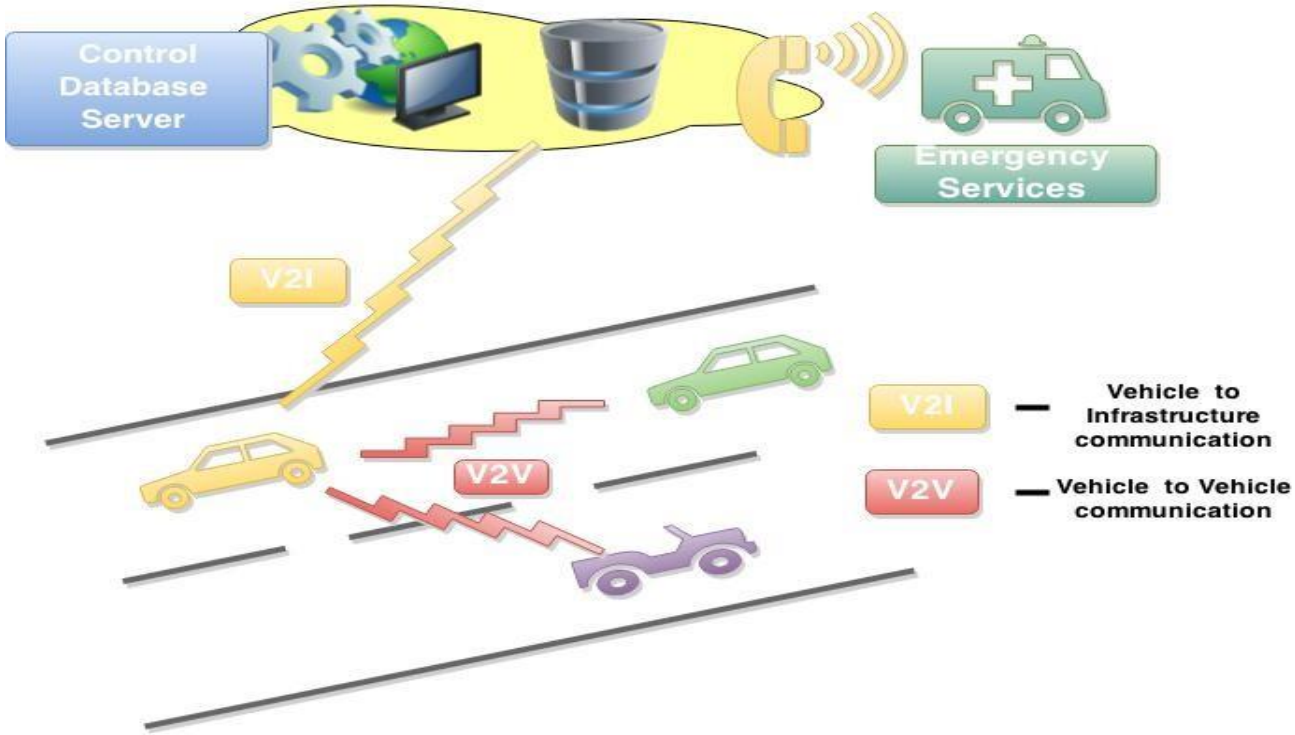

Fig. 1. System Architecture

ISSN No: - 2456 – 2165

The CDS is placed in a remote area, which is received the warning message from all other vehicle and also from Road Side Unit (RSU). When its receive a waning messages from other vehicles and RSU, automatically store the information into database and providing rescue services based on the severity of the accidents.

In this Fig. 2. Represent the communication between vehicles to CDS. In-Vehicle system consist of OBU, which is lies in-between the vehicles.

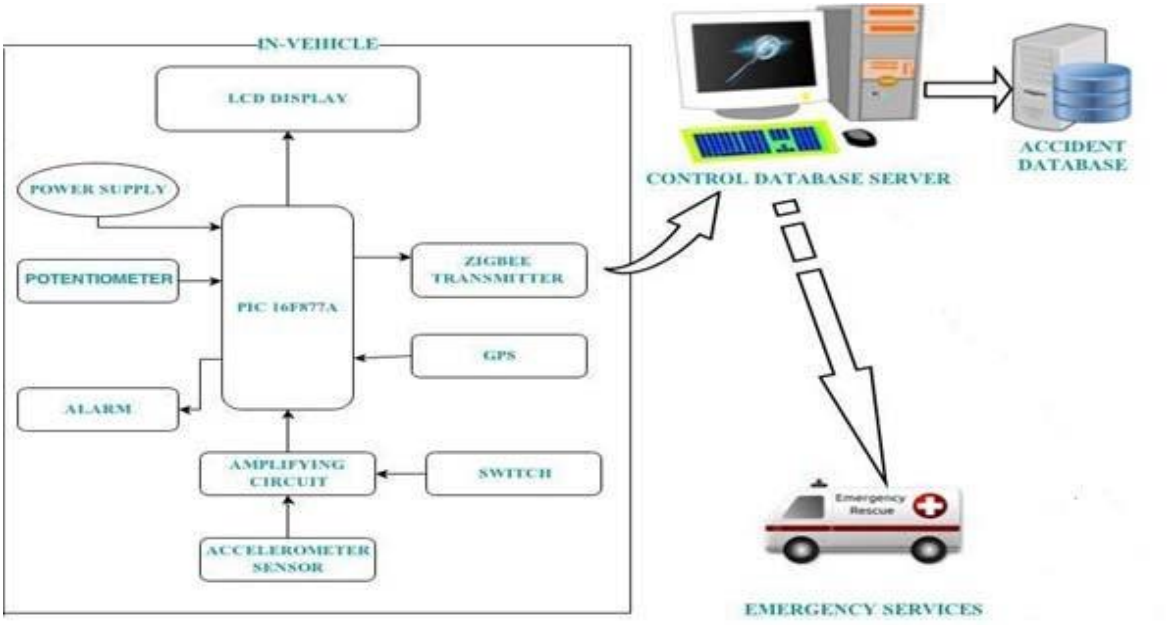

Fig. 2. Architecture of Accident Notification System

The architecture of accident notification system shows that in-vehicle monitoring, control server monitoring and information sharing to emergency services. If any critical event occurs suddenly accelerometer sensor monitoring the action based on motion of the car and intimate to microcontroller. Microcontroller processed the information of action based on GPS, potentiometer speed and sensor. If the person does not pretend any serious action, they can terminate the messages using switch in the OBU. Finally send those warning message to CDS through wireless ZigBee technology. Control Database Server receives the information from On-Board Unit and stores the appropriate message and passes that message into emergency services.

A. Control Database Server

The Control Database Server (CDS) is associated to the response center in charge of receiving notifications of accidents from the OBUs installed in vehicles. In particular, the Control Database Server is responsible for dealing with warning messages, retrieving information from ZigBee receiver and it's stored into database and informing to Emergency Services like ambulance, police stations.

B. Receiving Warning Messages

The first process for the CDS is to receiving warning messages from a collided vehicle and these must be a module waiting for retrieving messages from available different fields of vehicle.

C. Analyzing Severity of Accident

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