| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 7.122|

||Volume 9, Issue 6, June 2020||

Development of eCall System in Motorbikes

Channamma[1], Dr. K. B. Ramesh[2]

Student, Dept. of E&IE, R V College of Engineering, Bengaluru, Karnataka, India[1]

Associate Professor, Dept. of E&IE, R V College of Engineering, Bengaluru, Karnataka,India[2]

ABSTRACT: Road deaths are among the most prevalent causes of death worldwide. The rate of accidents is so high, especially on two-wheelers. The biggest concern of injuries is that the driver can not call for emergency services, or there is no one around him to do the same thing. At the time of an accident calling for emergency services, the difference between the rider's life and death or the person who witnessed an accident makes. Thus in motorcycles the eCall device will save a life on the roads. With this eCall device when an incident happens before the driver is able to talk, he can click the eCall button manually and talk to the answering point of the public service and he can explain to himself the situation and ask for help. If the individual is unable to ask for help, the device will identify the accident and will automatically call for emergency services along with sending the current location coordinates via GPS to the person concerned along with the details of the rider and vehicle gathered by the vehicle's sensor system. Therefore, the purpose of ecall program was to increase the level of protection in society. This review paper gives a brief overview of literature on the development of motorcycle ecall devices.

KEYWORDS: eCall (emergency call), Global positioning system (GPS), Intelligent Transport System (ITS)

I.INTRODUCTION

There's a huge rise in noise, traffic and even an accident due to the use of automobiles like cars, motorcycles, lorry, etc. So, everybody's life is at risk [3]. According to statistics obtained from the Bengaluru traffic police, in car accidents in the city 511 people were killed, followed by 477 people in a lorry and 458 people in motorbike accidents. There were approximately 26 000 deaths in the European Union during 2014, and approximately 33 000 in the United States[12]. The death rate due to traffic accidents continues to rise to 1.35 million in 2016, which has become the 8th leading cause of death for people of all ages[1], according to the most recent data. As a result ITS (Intelligent Transportation System) is being developed worldwide to control this road traffic accident.

Vehicle communication is one of the most important technologies in the automotive industry, providing information on status messages including on-road vehicle status, hazard of traffic, etc. In addition, the growing use of personal electronic devices with integrated sensor and communication technologies leads to improving safety-related standards on roads[12]. Rapid growth in wireless technology has affected the production of smart systems that provide road transport security and efficient services[2].The motorcycle eCall program is one of the safe and efficient systems aimed at saving lives on the road by calling emergency services without delay when needed. If needed, getting to the emergency services makes a difference between life and death.

In the case of a car accident, if a person experienced an accident in a remote area, country or at night, he would not be able to call for an ambulance or someone around him to do so that time will save lives by calling emergency services. Thus these eCall systems were intended to save lives by providing the services needed. The main aim of this eCall device is to autonomously identify incidents and call for emergency services to save lives by providing the responders with the requisite information through technology, thus dramatically reducing their response time.

II.LITERATURE SURVEY

In [1], the paper explains about the cepstral analysis used to automatically initiate an emergency call when an accident occurs, which indirectly improves the two-wheeler driving safety on the road. This paper also describes the technical challenges associated with designing algorithms that activate an eCall when necessary. The principal benefit of the proposed algorithm is that they concentrated directly on the dynamics of the data. And this proposed solution is tested against the real driving data of ten different driving scenarios and checked.

In [2], the paper describes how to build an eCall device that can make an emergency call to an answering point for the public service when needed along with some vehicle details using microcontroller, Global Mobile Communication Device (GSM), GPS techniques. This prototype was planned and built with great success.The experimental results show that the built prototype is in a position to detect the accident and successfully send the location along with being able to make an emergency call.

In [3], the accident was classified in three separate groups, namely extreme, average, subsidiary, in this paper authors have. The sensors here are embedded in the gloves of the biker which track the health of the rider. Embedded in rider's gloves are biometric sensors and pulse rate sensors and the gyroscope sensor, and location sensor are integrated in the

| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 7.122|

||Volume 9, Issue 6, June 2020||

vehicle vibration module. Information about this sensor is sent to the microcontroller which can be further processed. GPS system used to submit the position where the incident happened to allow people in an emergency.

In [4], this the authors explored how to detect autonomous passengers and concentrated on providing additional data for an eCall retrofit program. And it also concentrated on offering a cost-effective solution. The passenger counting has also discussed whether gas sensors and Time of Flight (TOF) cameras are used.

In [5], within this paper discusses the eCall system architecture and the eCall system theoretical model. Here they built an In Vehicle System (IVS) hardware system using the NXP I MX6 processor and Linux operating system. This platform developed by IVS was tested and verified in real driving scenarios.

In [6], this paper discusses the next generation ecall system and the emergency services activated by sensors. In this article, the authors explained how to combine the data from various sensors to identify the accident and the location of the accident, and it helps the individual concerned to manually initiate or automatically activate an emergency call.

In [7], the paper discusses the mutual stress identification system as it is implemented in the eCall system so that secrets disseminated to other vehicles can be constantly monitored for the stress of drivers. This is evaluated in the real world to verify the reliability of the proposed network, which consists of six drivers in two separate cities.

In [8],this paper he briefly answered the following questions: what is the status of emergency call services in-vehicle? What standards are adopted? Will the architecture of NG-911/112 help such services? This paper looks at the development of the eCall program in motorcycles. And he concluded that the main building block of the next generation eCall system depends on architecture NG-911/112.

In [9],this paper the author developed an Android-based Motorcycle Safety Warning System. The main objective is to focus on precautions relating to motorcycle safety. Sensors are placed on motorcycles to provide the micro-controller with data. It is then processed and transmitted via Bluetooth link to the smartphones. Because of now, most people own smartphones, it's easy to see the information status or condition records of the motorcycle on the cell phone, so riders can do proper maintenance work on their motorcycles.

In [10], this paper discusses how to provide emergency care to the nearest medical center to warn them of an incident. The proposed prototype consists of an accelerometer that tracks the movement of the vehicle continuously, and it has a heart rate sensor that tracks the operation of the driver and sends this information through Bluetooth to the smartphone. In any emergency, text messages will be sent to local medical facilities or hospitals via the android application.

III.METHODOLOGY

When in-vehicle sensors detect a serious crash, eCall is activated automatically. When turned off, the device dials telephone contact with the emergency center and submitting information such as the time of the accident, the exact location and the direction of travel (most relevant on motorways and in tunnels). An eCall may also be manually triggered by a witness. Triggering based solely on the motorcycle 's impact is not enough because it doesn't automatically mean the driver felt the same impact. For example, the emergency call will faultily cause a motorcycle simply falling over. In addition, the effects on the PTW and its driver will differ in the event of an incident, again requiring no rescue. Therefore, there is still a need to determine which accident configuration will cause an eCall to prevent false alarms to the Answering Points of Public Safety.

IV.CONCLUSION

The conclusion of this paper is that so much research has been done to develop the eCall system in motorcycles and some automotive companies have also been working to improve safety standards in motorcycles. So we can see a very powerful eCall system there and protection should be a part of all vehicle systems in the future. And even the government must assume some form of obligation to enforce such systems. And no more deaths or injuries will occur due to road accidents.

REFERENCES

[1] S. Gelmini, G. Panzani and S. Savaresi, "Analysis and development of an automatic eCall for motorcycles: a one-class cepstrum approach," 2019 IEEE Intelligent Transportation Systems Conference (ITSC), Auckland, New Zealand, 2019, pp. 3025-3030.

[2] M. A. Mushthalib, H. Mansor and Z. Z. Abidin, "Development of eCall for Malaysia's Automotive Industries," 2019 7th International Conference on Mechatronics Engineering (ICOM), Putrajaya, Malaysia, 2019, pp. 1-5.

[3] K. Sindhu, P. R. Subhashini, "Sandesh Categorized Accident Alerting System Using Bike Gloves," 2019 International Conference on Vision Towards Emerging Trends in Communication and Networking (ViTECoN), Vellore, India, 2019, pp. 1-4.

[4] Bonyár, A. Géczy, G. Harsanyi and P. Hanák, "Passenger Detection and Counting Inside Vehicles For eCall- a Review on Current Possibilities," 2018 IEEE 24th International Symposium for Design and Technology in Electronic Packaging (SIITME), Iasi, 2018, pp. 221-225.

| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 7.122|

||Volume 9, Issue 6, June 2020||

[5] Y. Li, M. Nader and J. Q. Liu, "In-Vehicle System Design for the European Union Emergency Call," 2018 IEEE International Conference on Electro/Information Technology Sinha and (EIT), Rochester, MI, 2018, pp. 0908-0912.

[6] E. Sdongos, A. Bolovinou, M. Tsogas, A. Amditis, B. Guerra and M. Manso, "Next generation automated emergency calls - Specifying next generation ecall & sensor-enabled emergency services," 2017 14th IEEE Annual Consumer Communications & Networking Conference (CCNC), Las Vegas, NV, 2017, pp. 1-6.

[7] M. Urbano, M. Alam, J. Ferreira, J. Fonseca and P. Simíões, "Cooperative driver stress sensing integration with eCall system for improved road safety," IEEE EUROCON 2017 -17th International Conference on Smart Technologies, Ohrid, 2017, pp. 883-888.

[8] R. Oorni and A. Goulart, "In-Vehicle Emergency Call Services: eCall and Beyond," in IEEE Communications Magazine, vol. 55, no. 1, pp. 159-165, January 2017.

[9] M. A. M. Hussin and N. Zaini, "Android-Based motorcycle safety notification system," 2017 IEEE Conference on Systems, Process and Control (ICSPC), Malacca, 2017, pp. 88-93.

[10] N. Kattukkaran, A. George and T. P. M. Haridas, "Intelligent accident detection and alert system for emergency medical assistance," 2017 International Conference on Computer Communication and Informatics (ICCCI), Coimbatore, 2017, pp. 1-6.