ISSN (Online) 2278-1021
ISSN (Print) 2319 5940

IJARCCE

International Journal of Advanced Research in Computer and Communication Engineering
ISO 3297:2007 Certified
Vol. 7, Issue 6, June 2018

A Review on Arm7 Based Accident Detection Using GSM, GPS and MEMs

Prof. Anap S.D.[1], Prof. Gaikar M.R.[2], Prof. Rane D.B.[3]

Assistant Professor, Electronics Engineering, P.R.E.C, Loni, India [1]
Assistant Professor, Electronics Engineering, P.R.E.C, Loni, India [2]
Assistant Professor, Electronics Engineering, P.R.E.C, Loni, India [3]

Abstract: Traffic accidents are one amongst the leading causes of fatalities in most of the countries. a vital indicator of survival rates when AN accident is that the time between the accident and once emergency medical personnel are sent to the scene. Additional the quantity of vehicles, additional is chance of accidents. The govt. has undertaken variety of initiatives and lots of awareness programs however accident rate remains high. This project is concerning creating cars additional intelligent and interactive which can advise or resist user beneath unacceptable conditions. This technique provides vital data of real time things to the closest station house and hospital to bring the machine to the spot to rescue the passengers or owner himself. Driver fatigue ensuing from sleep deprivation or sleep disorders is a vital considers the increasing variety of accidents on today's roads. The most elements of the system encompass variety of sensors like optocoupler, alcohol, ultrasonic, MEMS, GSM and a software package interface with GPS and Google Maps Apis for location. This installed framework demands for crisis administrations at whatever point the vehicle met with mishap, and system avoids unneeded emergency requests just in case of safe condition of passengers at that state of affairs.

Keywords: ARM7,GSM,GPS,MEMS etc**.**

I. INTRODUCTION

Automation of business is regularly on rise. Two principal elements of today's industrial automation square measure programmable controllers and robots. So as to assist the tedious work and to serve the man, nowadays there is a general tendency to develop associate degree intelligent operation. Road accidents square measure human tragedy. They involve high human suffering and financial price in terms of un timely deaths injuries and loss of potential financial gain. Bharat has undertaken several initiatives and is implementing numerous road safety programs.

During the year 2010, there were close to 0.5 million road accidents in India, which resulted in more than 0.13 million deaths and inflicted injuries on 0.52 million person these numbers convert into one street mishap consistently and one street mischance passing's like clockwork sadly the greater part the casualties are in the monetarily dynamic age gathering of 25-65 years. Road traffic accidents are amenable to remedial action. Many a countries have checked the menace of road accidents by adopting a multipronged approach to road safety that encompasses broad vary of measures love, traffic management, style and quality of road infrastructure, application of intelligent transport systems, safer vehicles, enforcement, effective and quick accident response and care etc. The govt. Alone cannot tackle road safety issues. There is a necessity for active involvement of all stake-holders to push policy reform and implementation of road safety measures. Tending to street wellbeing in an extremely thorough way underscores the need to include numerous agencies or sectors like health, transport and police.

Traffic accidents are one among the leading causes of fatalities. A vital indicator of survival rates once associate accident is that the time between the accident and once emergency medical personnel are sent to the accident location. By eliminating the time between once Associate in nursing accident happens and once the primary responders' area unit sent to the scene decreases mortality rates, we are able to save lives. One way to deal with dispensing with the postponement between mishap occurrence and first communicator dispatch is to use in-vehicle automatic accident detection and notification systems that sense once a traffic accident is probably going to occur and right away apprise emergency occurred. These in-vehicle systems, however, are not accessible all told cars and square measure unaffordable to retrofit in older vehicles. Here such a system is represented the most application of that is early accident detection.

ISSN (Online) 2278-1021
ISSN (Print) 2319 5940

IJARCCE

International Journal of Advanced Research in Computer and Communication Engineering
ISO 3297:2007 Certified
Vol. 7, Issue 6, June 2018

II. ROAD ACCIDENT STATISTICS AT GLANCE

The frequency of traffic collisions in Asian country is that the highest within the world. A National Crime Records Bureau (NCRB) report discovered that each year, more than 1,35,000 traffic collision-related deaths occur in Asian country. Nearly 12,75,000 per sons are black-and-blue in road accidents. Most of the accidents are occurring thanks to lack of skilled drivers and positive driving culture.

The main objectives of this work area unit,

1. To scale back the decease magnitude relation thanks to road accident.
2. To intimate the condition of the victim WHO met with accident.
3. If accident takes place, quick indication by message to emergency care centers to intimate the condition of victims.
4. To supply most help even in unpeopled space.

III. MOTIVATION

When a traffic accident takes place, aiding abraded passengers as presently as attainable is crucial to reduce the negative effects on their health. Mortality from traffic accidents are often classified into 3 phases:

Stage-1: It involves casualties within the initial jiffy or seconds when Associate in Nursing accident (about ten of all deaths).

Stage-2: It's the primary hour when the accident, the thus known as golden hour, has the very best mortality (75% of all deaths) and is that the section throughout that the very best death rate are often avoided by correct initial health care.

Stage-3: Happens days or weeks when the traumatic incident, has V-day of mortality, and takes toil and a high quantity of resources to cut back mortality. As are often discovered, the part wherever additional edges are often achieved by reducing rescue time interval is that the other. A quick and economical operation throughout the hour when a traffic accident considerably will increase the likelihood of survival of the disjointed and reduces the injury severity .For a clear reduction in rescue time, 2 major steps should be taken:

1) Quick associated correct accident detection and coverage to an applicable public safety respondent purpose (PSAP) and

2) Quick and economical evacuation of occupants at bay within a vehicle

IV.LITERATURE SURVEY

Manuel Fogue, Piedad Garrido, Francisco J. Martinez, Juan-Carlose Cano, Carlose T. Calafate, Pietro Manzoni [1] Proposed system needs every vehicle to be blessed with AN aboard unit (OBU) accountable for sleuthing and coverage accident things to an external management unit (CU) that estimates its severity, allocating the required resources for the operation. The event of a model supported ready-to-wear devices and its validation at the Applus+ IDIADA Automotive analysis Corporation facilities show that our system may notably cut back the time required to alert and deploy the emergency services once an accident takes place. [1]

Zhang Wen, Jiang Meng [2] discussed a kind of style of car location system supported ARM. The design and dealing theory of this technique is introduced in details, and introduces the vehicle location system that uses the ARM silicon chip LPC2129 as a bearing unit to combinative with GPS LR9548 and GSM TC35 modules. Explores location resolution, map-matching and knowledge compress that related to the positioning, shows a program multidimensional language and predicts the trend of the vehicle location system within the future. [2]

N. Watthanawisuth, T. Lomas, A. Tuantranont [3] Designs wireless recording machine exploitation MEMS measuring instrument and GPS chase system is developed for accidental observance. The framework comprises of helpful components of partner degree estimating instrument, microcontroller unit, GPS gadget and GSM module. Within the event of accident, this wireless device can send mobile short massage indicating the position of car by GPS system to friend, emergency medical service (EMS) and nearest hospital. The edge algorithmic program and speed of bike square measure wont to confirm fall or accident in period of time. The system is compact and straightforward to put in below rider seat. The system has been tested in planet applications exploitation bicycles. The check results show that it will discover linear fall, nonlinear fall and traditional ride with high accuracy. [3]

ISSN (Online) 2278-1021
ISSN (Print) 2319 5940

IJARCCE

International Journal of Advanced Research in Computer and Communication Engineering
ISO 3297:2007 Certified
Vol. 7, Issue 6, June 2018

V. Dhana Raj, G. Vasu, S. Kanaka Durga [4] describes ARM7 primarily based system, the core hardware has modules appreciate RFID Reader, GPS, and GSM wireless transmission can try to compensate the new transport connected problems. Applications appreciate accident alert, traffic rule violation management and special zone area unit explained during this paper. This technique expeditiously utilizes communication link between RF Modems over a wireless channel to produce the knowledge relating to vehicle observation, vehicle authentication. The enforced system could be a lot of convenient to mechanically causation data to higher than such applications. [4]

T. Krishna Kishore, T.Sasi Vardhan, N. Lakshmi Narayana [5] presents the principles of an occasional operational-cost however versatile Internet-based information acquisition system. The most core of the system is AN embedded hardware running a scaled down version of Linux: a preferred alternative of OS for embedded applications. The embedded device communicates through General Packet Radio Service (GPRS), that makes it accessible from any place within the world through an online server engineered into the embedded device. Additionally, GPRS provides a biface real time information transfer permitting interaction. The projected system eliminates the requirement for server package and maintenance. A unique approach is introduced to attenuate the operational prices whereas in operation with an outsized quantity of knowledge. The system is in congestible to be suitable for various embedded applications by attaching many periods of time modules through acceptable interfaces. [5]

Salas K Jose, X. Anitha Mary, Namitha Mathew [6] designed such a system that the most application of early accident detection. It will mechanically find traffic accidents exploitation measuring devices associate degreed like a shot apprize a central emergency dispatch server once an accident, using GPS coordinates. Together with the information it will send the amount of the vehicle too. The arm controller, accelerometer, GSM connections, and GPS will be accustomed offer situational awareness responders. [6]

A. Sriram and P. Ramya [7] presented Accident will be notified mechanically victimization sensors additionally the health condition of the passengers also send as video via GSM to the closest station house and hospital to bring the car to the spot to rescue the passengers. The Microcontroller is employed for pool proof testing various sensors like optocoupler inaudible sensors, and sub-systems like and a code interface with GPS and Google Maps Apis for location is planned. Thence this project aims to style associate embedded system for vehicle detection by modifying and desegregation the present modules. Associate measuring instrument may be employed in a automobile alarm application so dangerous driving may be detected. It may be used as a crash or change detector of the vehicle throughout and when a crash. [7]

IV. PROPOSED SECURITY PROTOCOL

Various sensors like optocoupler inaudible sensors and sub-systems like and a code interface with GPS and Google Maps Apis for location are planned. Then this project aims to style associate embedded system for vehicle detection by modifying and desegregation the present modules. Associate measuring instrument may be employed in automobile alarm application so dangerous driving may be detected. It may be used as a crash or change detector of the vehicle throughout and when a crash with signals from associate degree accelerometer, a severe accident will be recognized.

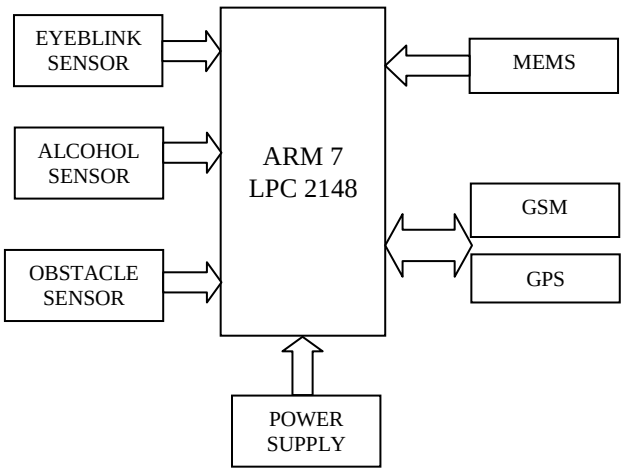

Fig1: Block Diagram of ARM7 Based Accident detection using GSM, GPS and MEMS.

ISSN (Online) 2278-1021
ISSN (Print) 2319 5940

IJARCCE

International Journal of Advanced Research in Computer and Communication Engineering
ISO 3297:2007 Certified
Vol. 7, Issue 6, June 2018

Alcohol device monitors the amount of the the vehicle and provides alert info within the type of alarm throughout the vital things. And additionally send SMS to the licensed person through the GSM. Associate degree inaudible device is employed to observe the static obstacle before of car and alarm indicates the obstacle is detected. This could avoid accidents thanks to collision of vehicles with any static obstacles. MEMS could be a method technology accustomed produces little integrated devices or systems that mix mechanical and electrical elements. They are fictitious victimization microcircuit (IC) execution techniques and might point size from some micrometers to millimeters.
These gadgets (or frameworks) have the ability to detect, administration and incite on the little scale, and generate effects on the macro scale. The ARM7TDMI is a complicated version of microcontroller and forms the center of the system. The aim of this method is to style and integrate a replacement system that is integrated with GPS GSM to produce following feature:

a) Location information,
b) Real time chase mistreatment SMS,
c) Track these gadgets (or frameworks) have the ability to detect, administration and incite on the little scale, and generate effects on the macro scale. The ARM7TDMI is a complicated version of microcontroller and forms the center of the system. The purpose of this method is to style and integrate a replacement system that is integrated with GPS GSM to produce following feature:
a) Location information,
b) Real time chase mistreatment SMS,
c) Track driver activity,
d) Communication is instant thus we are able to receive running report quickly.
It is completely integrated so once its enforced altogether a vehicle, then it is straightforward to trace vehicles any time.

V. PROGRAM FLOW

The Fig. two represents the program flow of Accident Detection System for Indication of Victim Status. Start in this method shows system initialized on power ON. Once the system is detected to be abnormal, it is confirmed that any device is activated. If alcohol device output is high, the buzzers (alarm) are going to be turned ON; the GPS can search location and send SMS with latitude and line of longitude co-ordinates to approved member. The inaudible device sense the obstacle if it has found, the buzzer are going to be turned ON. Whereas driving if driver feels sleepy headed, the optocoupler output goes high then the buzzer are going to be turned ON and therefore the GPS can search location and send SMS with latitude and line of longitude coordinates to approved personnel. If major accident happens then the buzzer are going to be turned ON and therefore the message are going to be sent mechanically to the rescue team when the placement is detected by GPS.

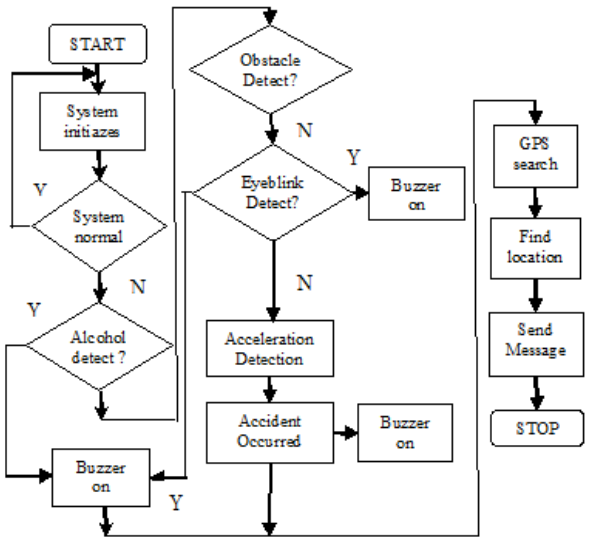

Fig 2: Program Flow of ARM7 based accident detection using GSM,GPS and MEMS

ISSN (Online) 2278-1021
ISSN (Print) 2319 5940

IJARCCE

International Journal of Advanced Research in Computer and Communication Engineering
ISO 3297:2007 Certified
Vol. 7, Issue 6, June 2018

VI. CONCLUSION

This paper is associate intelligent accident alert system that not solely notifies accidental alert however conjointly provides the precise location wherever the accident has taken place. The whole works ought to be integrated with the auto to validate its practicality and dependability. Therefore this work can scale back the accident death quantitative relation in extended quantity even in rural roads. Then it's a good importance in day to day lifetime of the folks within the country like Bharat. Therefore this work can give very important info concerning the accidents even in uninhabited area. So, the emergence care center may well be able to serve to the victims with higher potency and that they could attempt to have necessary aid kits that ought to be brought at the side of them to the accident spot.

REFRENCES

[1] Manuel Fogue, Piedad Garrido, Francisco J. Martinez, Juan-Carlose Cano, Carlose T. Calafate, Pietro Manzoni "Automatic Accident Detection", IEEE Vehicular Technology Magazine, Volume 7, Issue 3, Sept 2012.
[2] Zhang Wen, Jiang Meng "Design Of Vehicle Positioning System Based On ARM" Proceedings Of The IEEE International Conference on Business Management and Electronic Information (BMEI), 395-397, May 2011.
[3] N. Watthanawisuth, T. Lomas, A. Tuantranont "Wireless Black box using MEMS Accelerometer and GPS Tracking For Accident Monitoring of Vehicles" Proceedings Of The IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI), 847-850, Jan 2012.
[4] V. Dhana Raj, G. Vasu, S. Kanaka Durga "ARM-7 Based Semi Autonomous Vehicle" International Journal of Research in Computer and Communication technology, IJRCCT, ISSN 2278-5841,Volume 1, Issue 4, September 2012.
[5] T. Krishna Kishore, T. Sasi Vardhan, N. Lakshmi Narayana "Vehicle Tracking using A Reliable Embedded Data Acquisition System with GPS and GSM" International Journal of Computer Science and Network Security, 10(2) , 286-291, February 2010.
[6] Salas K Jose, X. Anitha Mary, Namitha Mathew "ARM 7 Based Accident Alert and Vehicle Tracking System" International Journal of Innovative Technology and Exploring Engineering, ISSN: 2278-3075, Volume-2, Issue-4, March 2013.
[7] A. Sriram and P. Ramya "Automatic Accident Notification System using GPS & GSM with 3G Technology for Video Monitoring" International Journal of Emerging Trends in Electrical and Electronics, Volume 1, Issue 2, March-2013.
[8] RajKamal, "Embedded System Architecture Programming and Design" (2nd edition) ,Tata McGraw Hill.