Volume 11, Special Issue I, May 2020
ISSN No. 0976-5697
International Journal of Advanced Research in Computer Science
CONFERENCE PAPER
Available Online at www.ijarcs.info

INTELLIGENT ACCIDENT MANAGEMENT SYSTEM

Rotini Raja
School of Computing and Information Technology,
REVA University,Bangalore

Sai Lakshmi P
School of Computing and Information Technology,
REVA University,Bangalore

Priyanaka N
School of Computing and Information Technology,
REVA University,Bangalore

Rashmi S
School of Computing and Information Technology,REVA University,
Bangalore

Supreeth S
School of Computing and Information Technology,
REVA University,Bangalore

Abstract—India is a densely populated country where traffic is a major issue in our country. We can see traffic accidents are increased day by day and becoming more pathetic nowadays. Even though the government are running so many campaigns to raise awareness in public but still we can't able to reduce the death rate due to road accident are not decreased at all. Main cause of the accident is a high speed, rash driving and mental pressure Some of the papers deals with how to track accidents before it could happen and alert the driver to maintain some speeds limit so that person can avoid an accident by taking early precaution to avoid the accident but this paper focuses on how to rescue person life by immediately admitted to a nearby hospital after meeting with an accident. the paper deals with analysing an image uploaded by the end-users once the image is uploaded into the module. once it is uploaded it should satisfy many criteria if these criteria are satisfied only then it continues the process otherwise it terminates the process .criteria to be satisfied to continue the execution one it is a recently uploaded image or it should not be downloaded image, second it is real or fake, third it should be major injury if it is a minor injury then it will terminate the process .these all things happen in the second module i.e. image processing. once the image processing is done it will track the exact location where the accident has met through GPSs send the exact address and ping to the ambulance to arrive at that exact location.

Keywords—roadaccident ,image uploading, image processing,GPSs

I. INTRODUCTION

As we are leaving in a advance generation and being a busy
life and we rush to work.To reach the work place are any urgent needs every individual travel their own transport.Due to this there are more chance of accident to occur.Sudden accident may lead to death.because of these many families also suffer.There are many system to alert to prevent them controlling accidents to not to happen and no system to alert when accident happened .So there is a need to design system
that will help the victim who's suffering from accident. IN these project we built a website which can alert to ambulance driver.It is the outsider who finds the person with met with an accident and clicks a picture of the accident and upload it on to this website.Further process is done within the website where in it detects that image is true or fake.if yes the process continues further and intimation will be done to nearby ambulance else it just terminates itself when found fake.

Currently there is no technology for accident detection.As it is done normally there is a dependent on the mercy of others to such him to hospital.many a times an accident goes unnoticied for hours before help comesin.Due to all these factors thereis a high rate of morality of the accident victims.

In addition to this there is delay in the ambulance reaching the hospital due to the traffic cougestion between accident reaction and hospital which increases the channels of the death of victim.While is the main mode of any type of transporation to reach the work process or any urgent needs every individual travel with this own transport.this affects the environment and increase the accident rates as well.As the major concern of project once image uploaded into the website and all process is done the next is to track the location of the person and send the address and ping to ambulance driver to come immediately as soon as possible. This module is also designed in such a way that send actual accident location and also send emergency message to their family member and friends etc.accident detection is doneby GPS techonology.the main need of our module to safe human life.
To overcome the drawback of existing system we will

implement the new system in which the death rate are minimized. In our module we are using image processing to analyse wheather image is true or fake on that basic our module track exact location of the person met with an accident and our module only ping to the ambulance and send address to amnulance driver to come that exact location .

III. LITERATURE SURVEY

In[1],In this literature survey, The author has been title with an article "Context Management For Response To Traffic Accidents In Smart Environment".In this paper deals with the increasing population in our country.The usage of the vehicles is also increasing by the public.So too much of traffic is happening across the well –Known cities in our country. As per the world health organization a million people lose their life due to accidents in throughout the world.So we implementing accident tracking by using GPS module andGSM modem, the GPS module is fixed to the motorcycle when accident is taking place mean while the immediate message is transferred to corresponding health cares. By doing this we can controls the maximum accidents that happens in the society.The benefits of this paper,the vehicle accident detection system can be used in school bus and nearest hospitals can be located,when vehicle undergone an accident can be identify by using Tracking Technology.The immediate medication will be provided to the accident victims in the remote areas. And the draw back of this paper, if any damage of the sensor can't be detected so in that case no messages can be transfer to the medical healthcare centres.

In[2],In this literature survey, The author has been title with an article "The Intelligent Optimization Of GM(1,1) Power Model And Its Application In The Forecast Of Traffic Accidents". This paper deals with the Intelligent Optimization Of GM(1,1),based on the characteristics of s-type and single traffic accidents and optimization GM(1,1) power model is put forward to improve prediction accuracy of traffic accidents. This helps to optimist the parameter 'alpha' using PSO algorithm and optimization formula of back ground value in GM(1,1),based on integral mean value theorem ,the power model GM(1,1) can be used in prediction of road traffic accident and obtain higher accuracy comparing with grey verhulst model.The benefits of this paper,optimal power model(1,1) in prediction of road traffic accidents which obtain high accuracy comparison. And drawback of this paper is modeling of this type system is complex.

In[3], In this literature survey, The author has been title with an article "Intelligent Transport System An Important Aspect Of Emergency Management In Smart Cities". In this paper deals with an order to manage traffic in smart cities-intelligent transport system (ITS) play an important role .the problem of unorganized traffic can be tackled through the use of information and communication technologies (ICT). In this paper we reduce the waiting time for vehicles on the signal, This results in significant amount of reduction in waiting time as it controls the traffic problems efficiently ,reducing the number of casualties caused by road accidents, the proposed solution can solve real world traffic problems to reduce the waiting time for signals.The benefits of this paper, Waiting time for the emergency vehicle on signals is reduced. Increasing number of road traffic casualities can be overcome by efficiently planning. ITS reduces delays ,traffic congestions, energy consumption and pollution emission.Thedrawback of this paper,Road infrastructure cannot cope with increased number of vehicles on the road.

In[4],In this literature survey,The author has been title with an article "Vehicle Accident Prevent cum Location Monitoring System".Majority of the road accident occurs during night driving due to the drowsness state of a vechile driver.this paper deals with the reduction of an accident to a large extend by monitoring eye blinking of thr driver.Automatic pr-cautionary system is activated based on the above alarming condition.Accident and the location at which it occurred is shared to nearby police ststion that helps initating medical help.Hardware platform consisitung of alcohol sensor MQ,micro-controller ,Li-Fi system,GSM module ,ECU of car is used to develop the intelligent system for vehicles. To realize the system all traffic police ststion need to install the dedicated electronic units.installation of eye blinking sensor,alcohol sensor and car ECU units is to be made compulosory.

In[5],In this literature survey ,The author has been title with an "Accident Detection and Alert System". The main cause for accidents is high speed, drunk and drive, diverting minds, ones stress and due to electronic gadgets.This paper deals with accident detection system that occurs due to carelessness of the person who is driving the vehicle. So an accident alerting sysytemwhich alerts the person who is driving the vehicle.If the person is not in the position to control the vehicle then the accident occurs.Once the accident occurs to the vehicle this system will send information to registered mobile number ardunio which helps in transefering the message to different device in the system.vibration sensor is activated is transferred to the registered number through GSM module. GSP is also used to track the location.

In[6],In this literature survey,The author has been title with an"Intelligent Accident-Detection and Ambulance Rescue System".Currently there is no techonology for accident detection and also due to delay in reaching of the ambulance to the accident location deaths rate are increased .to overcome the drawbacksof this existing system a new system is implemented in which there is an automatic detection of accident through sensor provided in the vehicle and the location of accident will be sent to the main server .GPS and GSM module in the concernedvehicle will send the location of the accident to the main server.Along with this there would be control of traffic light signals in path of ambulance using RF

communication .This will minimisw the time of ambulance to reach the hospital.

In[7],In this literature survey,The author has been title with an "Dealy-Aware Accident Detection and Response System Using Fog Computing".nowdays modern vehicle are embedded eith sophisticated technology provides us notification and identification of road ncident so that driver can be alert prior this features are mostly available only in luxury cars and lessopened contries.make it budget free using some of the concepts of IOT to detect and collect road reports incident.cloud computing to store and manage information.An android application is developed by utilizing smart phone sensors to detect. To track location using GPS and to contact to their family members and friends. The main advantage is decrease the cost compared to ABU-based solution. Fog based ERDMS has low latency. The limitations of this paper is proposed schema in stimulated environment. It cannot satisfies the real time scenario. Integrate traffic signals for the ambulance decrease overall rescue time.

In[8],in this literature survey author has been titled with "Intelligent Transportation System for Accident Prevention and Detection". This papers provides detection and prevention of two Weller vehicle prevention part is smart helmet and non-alcoholic breathe while driving. Detection part by microcontrollers controls function of relay and ignition. Microcontroller controls the function of relays and continuously records all there parameter of automobile and reports through GSM module.the draw back if the helmets are not worn ,relays are not turned on and all my devices are turned off because every thing as a link if one part of this system is not working everything is turned off. This is limited only to the two whellers.

In[9],in this literature survey author has been titled with "Road Traffic Accident Information System[RTAIS]".this paper deals with traffic accident management system for the effective and convenient process of accident, accurately sketch digital accident ,and complete evidence, effective improve of quality service of government, minimizing cost. This system is first traffic accident information to provide detail information which helps in investigate crime scene andmore efficient too. Early they used to draw with hands for showing diagram but now it has been digitalisied.entire traffic accident database is used for analyzing, swift information. Further drones are also opened with smart city drone application. In future there is a possibility of fully automatic flight control, photo taking,labeling,while accident investigation .this system enhances investigation all types of accident with more AI technology.

In[10],in this literature survey author has been titled with"A Methodology of Timimg Co-Evolutionary Path Optimization for Accident Emergency Rescue Considering Future Environmental Uncertainty".this paper deals with optimizing emergency rescue more efficiently. Rescue vehicle path optimization,timimg co-evolunary path optimization(TCEPO) is proposed to optimize rescue path.as traffic environment keeps changing it should be modified timely based on predicted routing environment(PRED)and recent data.in order improve the optimality problem they have use ripple spreading algorthim(RSA).the main advantage raising an efficient reliability of emergency rescue can save more life.ripple spreading algorithm is used to solve the path planning of emergency rescue and effectiveness of the proposed method is verified through simulation. The proposed TCEPO combined with future environment has "precognion" and "co-evolution" feature, and the optimal path or near optimal path can be obtained within less time.TCEPO is compared with other classic planning methods and other complex environment.

In[11],in this literature survey author has been titled with "Feature Recognition of Urban Road Traffic Accidents Based On GA-XGBoost in the Context Of Big Data".this paper deals with big data to understand charetersticsof road accident mainly for urban road accident XGBoost model is used to classify major, minor and general accident.GA-XGBoost feature recognition model based on genetic algorithm(GA) verified by applying bidg data of traffic accident.it can accurately identify features of traffic accident they are compared with GA-RF,GA-GBDT and GA-lightGBM model .And these model regonition model is more accurate and performance is better..the result showGA-XGBoost model can effectively identify the charetersticsof urban traffic accident and it also include seven charetersticsidentified by model. fundamental reducing traffic accident .limitation of this paper is GA-XGBoost model can onlu handle numerical features,for pratical application data preprocessing is needed to convert non-numerical features to numerical features and needed to do more case study to be done.

In[12],in this literature survey author has been titled with "Preventing Road Accidents by Analysing speed,Driving Pattern and Drowiness Using Deep Learning".The main reason for accidents is due to driver's errors their driving style it is clear that although the vehicles increase on road but by analyzing speed and pattern accident can be prevented.Main objective is to analyse the speed ,pattern and drowsinessof the driver.Drivers who drive in the night and sleeping problems and also drivers who takes many turns in a very short time may also cause accident. So to analyze these factors this project came up with the framework that can calculate the speed and pattern od the drivers driving and drowsiness.This framework is cheaper as it doesn't require any extra device for calculating speed and the driver for calculating speed and pattern a camera is used for checking drowsiness.RNN algorthim is used for prediction and for classification neine Bayes is used.

In[13],in this literature survey author has been titled with"Intelligent Accident Detection and Alert System for Emergency Medical Assistance".this paper is design to alert nearby medical center about accident to provide immediate medical aid.accelerometer in vehicle sense the

tilt of vehicle and heartbeat sensor of user body if it find any abnormal it will take decision and send location and message to their family to the nearby medical centre through android application.it confirms the seriousness of the accident and then alert the nearest medical center and provide emergency medical aid to the victim.accelerometer and heartbeat sensor are uded to determine accident has occurred are not these modules are communicating through Bluetooth.the smart phone with android app will send exact location and inform to their family.buzzer is also provide to alert the system.project aim to provide low cost solution and betterment of mankind.

IV. PROPOSED SYSTEM

Whenever a person finds nearby person met with an accident victim. he/she captures a picture the picture and upload that image into our module.There are three modules in our system design to carry out the whole process .The implementation as follows:

Module 1: Image uploaded by the end user.

In this module focus on image uploaded by the end user as a input to the system design.XAMPP is an open software developed by apache friends. XAMPP software package contains apache server PHP .it is local server works in own laptop. MYSQL collects all the database of image uploaded by the end user and geolocation sent by them and the image should be in JPG, JPEG. PNG format only these format images are acceptable by our module and size should not be and less than 2mb.if it is less size it accepts in module 1 but it wont be properly analysed in module 2 and won't get the proper output what we have expected.

Algorithm:

Step1: start the XAMPP server on your laptop and start apache and MySql done this setup in backend process.

Step2: end user types local host in browser and it display the webpage .

Step3: in that webpage there are three options send location,choose location,upload.

Step4: send location when user click that button get the immediate location of user choose file where u will have camera enable option to capture an image of an accident victim.click on upload option to get upload on the module

Step5: when the end user send location it will store in database of geolocation and image uploaded by user will store in image database.

Module 2: Image analyzing

In this module focus on image analyzed by the given input by end user uploaded through the module.the main core of our project is analyzing an image.Wheather the image is downloaded image or recently uploaded image.image is real or fake.victim has major, minor and general injuries. If it is minor injury it will terminate the process and if it is fake also it will terminate the process.algorthim used in image analyzing is convolutionalNeural Network(CNN).

CNN one of the main category to do images recognition,image classification,obejects,detection,recognition faces etc.CNN image classification takes an input image process it and classify it under certain categories.input image is done as array of pixels and it depends an image resolution based on image resolution it sees height*weight*dimension.After this image of convolutional layer.perform convolution layer on the image is done.and in some cases if filter doesnot fit perfectely the input image then we go with 2 option:

1. Pad the picture with zeros.
2. Drop the part of the image where the filter did not fit.This is called valid padding which only keeps the valid part of image.

Module 3: sending location and pinging to 108.

In this module focus on to fetch the image stored in database which was analysed in module 2.and fetch the location from the database .once the exact location is detected through GPS technology and send exact location, ping to 108 and send text message to their family and friends.Ambulance driver will take that victim to nearby medical centre.

Algorithm:

Step1: establish a connection between database.

Step2: first check condition whether image is recent one if it is true it will direst where image are stored in database directing path location.

Step3: It will retrieve the recently uploaded image through image id from the database.and it will store the time and image name.

Step4:it will retrieve data from google map and retrieve the data from the database as geolocation stored in data base matches the latitude and longitude sent by user and then track the location immediately ping to 108 and send that location to ambulance driver and message to their family and friends.

Module 4: Directing ambulance driver to reach the accident spot.

In this module using the location trackedinthe previous module taking module 3 as an input proceeding module 4 guide driver or notification to the driver the location of the address so that driver will reach the spot without any delay. The driver reaches the accident spot and take the accident victim to the nearby hospital. Like this we can save a persons life.

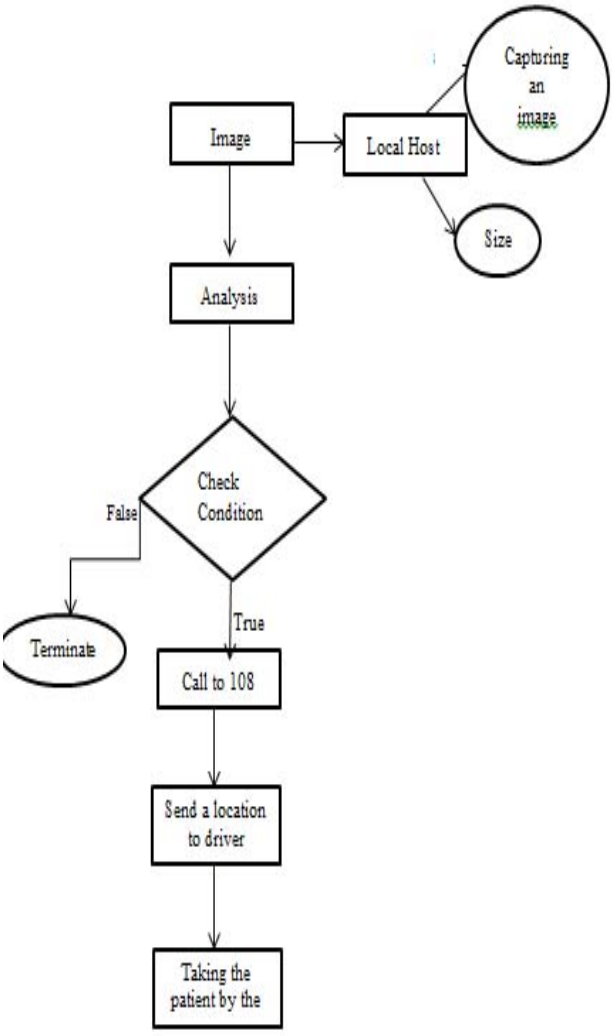

Fig. 1. FLOW CHART of the proposed work

VI. RESULTS AND DISCUSSION

Fig 2

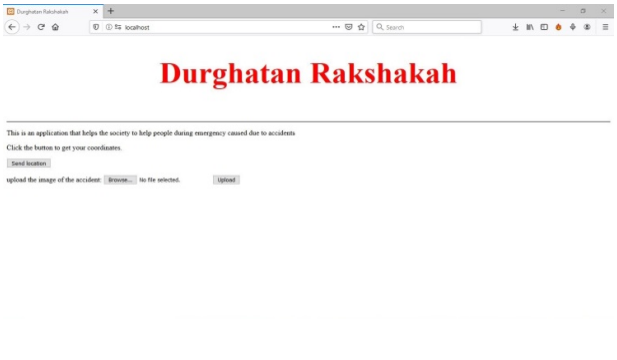

Fig 3.

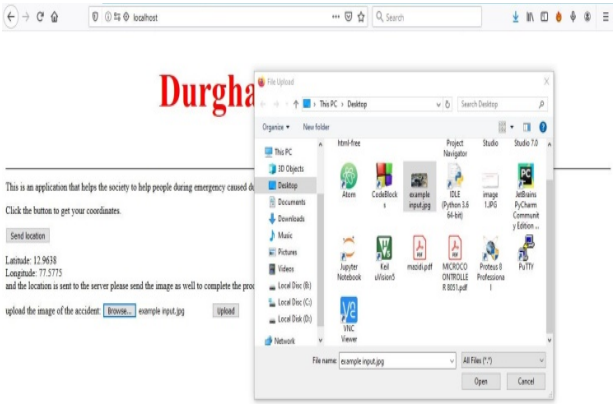

Fig. 4.

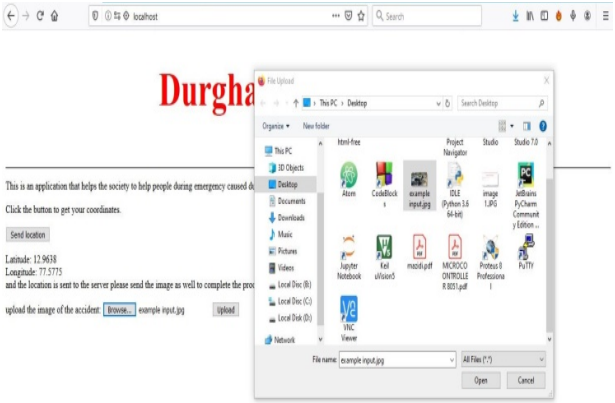

Fig. 5

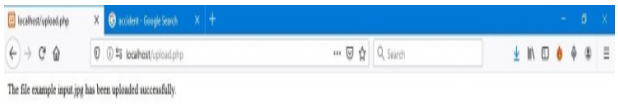

Fig. 6

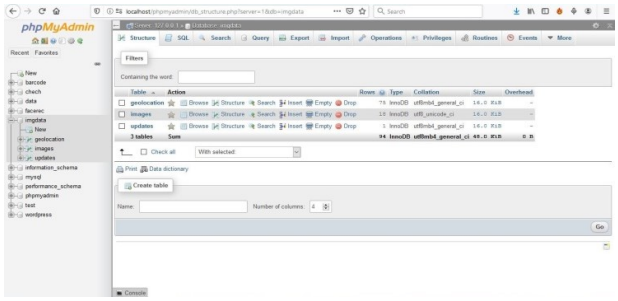

Fig. 7

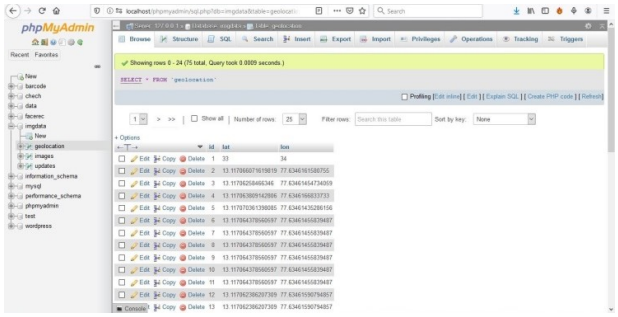

Fig. 8

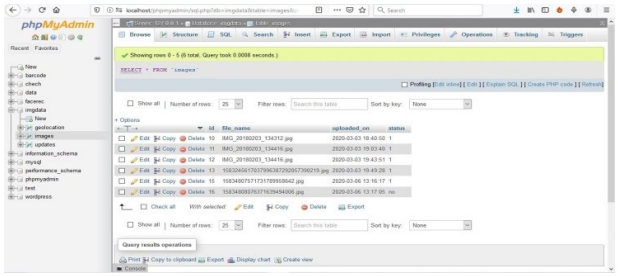

Fig. 9

In the above figures shows how the image is uploaded, images are analysed and information about location and address is ping to the ambulance driver. "Fig 2" shows the input it should be an image in jpeg format any other format is not acceptable and rejected. "Fig 3" and "Fig 4"shows the front end how it actually display when user to trying to upload an image into the module there are three buttons provided there one is send location: where they can send location of the person second button choose file where u can choose a file location and third button upload button where user can jist a click on upload button. "Fig. 5." shows whether user uploaded image is uploaded into the module. "Fig. 6." show an acknowledgement image is uploaded successfully. "Fig. 7."shows backend where it is a databases of geolocation, images and uploads. "Fig. 8." shows databases of geolocation and we have to search the user sent location and then send that location to ambulance driver."Fig. 9." shows database of images but we extract only the recently added in list.

VII. CONCLUSION

Speed is one of the most significant cause of an accident.The system confirms the seriousness of the accident and then alert the nearest medical assist center to provide emergency medical aid to accident victim. Avoiding death rates to save life's this project helps us to maximum extent. The main advantage is that on spot the ambulance driver come to know that the image sent is fake or real by image processing module. As der is pros and cons for everything if there is no proper network on the accident spot ,our system won't work. Finally there is a need to spread awareness about road safety in order to reduce the road accidents and fatalities. Thus the proposed system can serve the humanity by a great deal as human life is valuable.

Limitations of our paper we are still doing a case study on real time world. If the user encounter with the poor network while uploading image again that is one our drawback.he/she do not aware of webpage then this module wont comes into existence .he/she opt an another medium just to call simple 108.

VIII. REFERENCES

[1], Smirnov Alexander,Levashova Tatiana,Shilova Nikolay,Kashevnik Alexey," "Context Management For Response TO Traffic Accidents In Smart Environment."2015.

[2], Qlanwuyong,DANG Yaoguo,Mu SEN,LI Xuemei,"The Intelligent Optimization of GM(1,1)Power Model and its Application in the Forecast of Traffic Accident".2016.

[3], Fehda Malik,Munam Ali Shah,Hasan Ali Khattak, "INTELLIGENT Transport Management in Smart Cities"QLAN,IEEE ,2018.

[4], Abhirup Das,Abhisheck Ray,Abhisheck Ghosh,Swarasree Bhattacharyya,"Vehicle Accident Prevent cum Location Monitoring System ",2017.

[5], T kalyani, S Monika,B Naresh,Mahendra Vucha ,"Accident Detection and Alert System",2019.

[6], BhandariPrachi ,DalviKasturi ,Chopade Priyanka,"Intelligent Accident-Detection And Ambulance-Rescue System",2014.

[7], Bilal Khalid Dar, MunamAli Shah, Saif Ul Islam,Castren Maple,Shafaq Mussadiq,"Delay-Aware Accident Detection and Response System Using Fog Computing",2019.

[8], Dr.D.Selvathi, P.Pavithra, T.Preethi,"Intelligent Transportation System for Accident Prevention And Detection",2017.

[9], Wen-Kai-Tai, Hao-cheng-yu-chiang, Chin-yueh chein, Kevinlai, "RTAIS:Road Traffic Accident Information System",2018.

[10], Huiying wein, Jiabinwu, Yuchenduan, Weiweiqi,"A Methodology of Timing Co-Evolutionary Path Optimization for Accident Emergency Rescue Considering Future Environmental Uncertainty",2019.

[11], Yiqu, Zhengkuilin, Hongleili, Xiaonanzhang,"Feature Recognition Of Urban Road Traffic Accidents Based on GA-XGBoost in the Context of Big Data".2019

[12], Noorishta Hashmi, Dr.M.Akheela Khanum,"Preventing Road Accidents BY Analysing Speed,Driving Pattern andDrowsinessUsing Deep Learning",2019.

[13], Nicky Kattukkaran, Arun George,Mithun Haridas,"Intelligent Accident Detection and Alert System for Emergency Medical Assistance",2017.