Smart Ambulance with Traffic Management

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***Abstract*: The growth of industrialization and urbanization has result in associate huge increase within the population invariably leading to rise within the variety of vehicles on road. The ensuing traffic congestion and traffic jams are the most important hurdles for emergency vehicles like ambulance carrying important patients as these emergency vehicles aren't able to reach their destination in time, ensuing into a loss of human life. To solve this drawback to some extent we've got apparently come back up with Smart ambulance using IR sensors for ambulance. The proposed system clears the tie up by turning all the red lights to green on the trail of the ambulance, hence helping in clearing the traffic and providing means towards its destination. The system consists of associate android application which registers the ambulance on its network. In case of emergency scenario, if the car halts on its means, the**
application sends associate emergency command to the traffic signal server and additionally the direction wherever it needs to move with this position with the assistance of world Positioning System (GPS). The closest signal is known Based upon this position of the ambulance. And that particular signal is formed green until the ambulance passes by and later it regains its original flow of management. During this way it acts sort of a lifesaver project because it saves time throughout emergency by dominant the traffic lights.[4]

***Keywords*: Software-Defined Networking, Internet of Things, Quality-of-Service, Routing.**

1. INTRODUCTION

The pace at that the globe is developing is extremely high these days. Re-formations in technology each day is evolving and improving efficiency in tending sector is one amongst the foremost difficult and difficult jobs conjointly with the appearance of Industrialization and Urbanization, because the population increases day by day the quantity of vehicles conjointly will increase on the roads. This ends up in high traffic jams in massive cities. Traffic congestion causes several somebody on countries transportation. One of the wide affected services because of traffic jams is that of an ambulance. Many another times, ambulance contains emergency or essential patients that have to be taken to the hospital in minimum amount of time providing correct treatment to the patient so probabilities of extant will increase in critical condition. A Patient could lose his life if there's delay in reaching of ambulance to the hospital. In line with the surveys ninety fifth of the guts attacks cases will be treated, if the ambulance will reach the hospital at current time while not stuck into the traffic. For this, it's required that the vehicles on the road to form approach for the ambulance. However typically, the ambulance gets stuck within the traffic that successively wastes a great deal of your time looking ahead to the traffic to get clear. We are able to overcome these limitations by the rising technology like IOT i.e. internet of Things. Varied package implementations and hardware devices will be connected with the assistance of wireless networking tools or wired tools. In IOT the parts are connected and controlled by the web. Therefore the impact of IOT in today's era is important because it helps to represent the article digitally and makes itself one thing larger than the object by itself. [1]

2. LITERATURE SURVEY

1. Paper Name: Recommendations of the DG eCall for the introduction of the pan-European eCall

Authors: eCall Driving Group

Description: With fatalities on the road across the EU of more than 40.000 people every year, the European Commission recognizes that the current measures towards reducing the fatality number is not enough. In the White Paper on European transport police from 2001, the European Commission proposed that the European Union should set itself the target of halving the number of road fatalities by 2010. One of the initiatives from the European Commission is the establishment of the eSafety Forum, which is a joint industry/public initiative for improving road safety by using new Information and Communications Technologies. The overall objective is to join forces and to build up a European strategy to accelerate the research and development, deployment and use of Intelligent Integrated Safety Systems including Advanced Driver Assistance Systems (ADAS) for increasing road safety in Europe. Algorithm is among the simplest of all machine learning algorithms.[4]

2. Paper Name: Towards Vehicular Sensor Networks with Android Smartphones for Road Surface Monitoring.

Authors: Girts Strazdins, Artis Mednis, Georgijs Kanonirs, Reinholds Zviedris and Leo Selavo

Description: Android is one of the most popular smartphone platforms at the moment, and the popularity is even rising. Additionally, it is one of the most open and flexible platforms providing software developers easy access to phone hardware and rich software

API. We envision Android-based smartphones as a powerful and widely used participatory sensing platform in near future. In this paper we examine Android smartphones in the context of road surface quality monitoring. We evaluated a set of pothole detection algorithms on Android phones with a sensing application while driving a car in urban environment. The results provide first insight into hardware differences between various smartphone models and suggestions for further investigation and optimization of the algorithm, sensor choices and signal processing.[4]

3. Paper Name: Providing Accident Detection in Vehicular Networks Through OBD-II Devices and Android-based Smartphones.

Authors: Jorge Zaldivar, Carlos T. Calafate, Juan Carlos Cano, Pietro Manzoni

Description: By combining smartphones with existing vehicles through an appropriate interface we are able to move closer to the smart vehicle paradigm, offering the user new functionalities and services when driving. In this paper we propose an Android based application that monitors the vehicle through an On Board Diagnostics (OBD-II) interface, being able to detect accidents. Our proposed application estimates the G force experienced by the passengers in case of a frontal collision, which is used together with airbag triggers to detect accidents. The application reacts to positive detection by sending details about the accident through either e-mail or SMS to predefined destinations, immediately followed by an automatic phone call to the emergency services. Experimental results using a real vehicle show that the application is able to react to accident events in less than 3 seconds, a very low time, validating the Feasibility of smartphone based solutions for improving safety on the road. [4]

3. EXISTING SYSTEM

In FPGA based architecture is proposed for multimedia traffic classification. The classifier is based on K-Nearest-Neighbour algorithm and packet level features. Their classifier achieves high accuracy for large training data sets, explicit range match is explored and memory accesses are parallelized to improve the performance of their architecture. They use the number of memory accesses instead of throughput as a performance metric.[5]

3.1 Disadvantages of Existing System:

- No post-place-and-route results are reported for their implementation on FPGA.
- Their approach is restricted to classifiers with a small number of applications and susceptible to noise in the training data.[5]

4. PROPOSED SYSTEM

Now a days there's a high traffic at a specific time because of that the traffic signals ought to maintain properly to scale back accidents however at constant time throughout some emergency things car might blocked within the signal it results in major cause. To avoid this, supported all statistics, stoplight ought to be controlled. For that strategy, the proposed system is built in real time. This application is very useful for the world's day to day life to save someone's life. IOT plays the role between car and therefore the traffic signals. This project is based on the IOT to save the human life at critical situation. This project is to ascertain the communication between the stoplights and therefore the car in order that the traffic signal will answer the arrival of the car and respond according to that. When the traffic signals ar changes its states in line with the position of the car it will ready to create a free approach for the car. Thus this project can act as a life saver.[10]

4.1 Advantages of Proposed System:

1. Ambulance service will no longer be affected by traffic jams.
2. Over a wide range applicability.
3. One time investment cost.
4. Life of people can be saved.

5. SYSTEM ARCHITECTURE

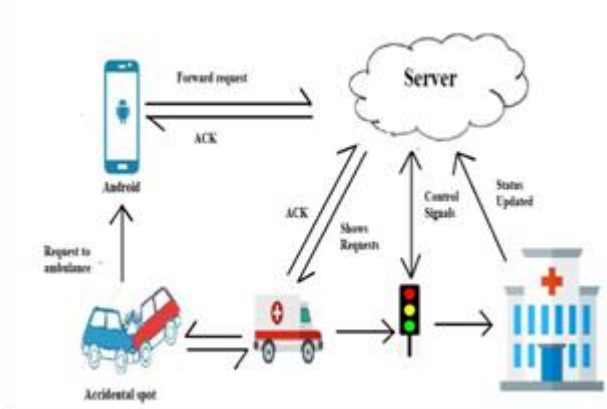

Fig.1 System Architecture

When accident happens the user of the application will request to the ambulance. The requests are forwarded to the server and it shows requests to the ambulance driver. The nearest ambulance driver will accept the request if he is available. When the ambulance driver reaches the accidental place it will search for the nearest hospital. The application will search for the shortest path to reach the hospital as soon as possible. When driver Moves towards the hospital the signals from that way are controlled. The signal on the way of ambulance gets green and when ambulance passes the signals get reverted. This way the service will be provided.

6. ALGORITHM

KNN:-

In pattern recognition, the k-Nearest Neighbors algorithm (or KNN for short) is a non-parametric method used for classification and regression. In both cases, the input consists of the k closest training examples in the feature space. The output depends on whether KNN is In KNN classification, the output is a class membership. An object is classified by a majority vote of its neighbors, with the object being assigned to the class most common among its k nearest neighbors (k is a positive integer, typically small). If k = 1, then the object is simply assigned to the class of that single nearest neighbor.

- In k-NN regression, the output is the property value for the object. This value is the average of the values of its k nearest neighbors.

K-NN is a type of instance-based learning, or lazy learning, where the function is only approximated locally and all computation is deferred until classification. [9]

7. Result

Sr.No	Existing System	Proposed System
1	It will not find the shortest path to reach the destination	It will find the shortest path to reach the destination
2	It will take more time to reach the destination	It will not take more time to reach the destination
3	In existing system, they will use RFID tag to detect the emergency vehicle	In proposed system, we will use ZigBee to detect the emergency vehicle
4	There is no connectivity in android app and hardware	There is connectivity in android app and hardware
5	RFID take more time to detect	ZigBee take less time to detect

Table 1

8. CONCLUSION

An algorithmic rule is style to monitor control system to avoid the traffic collision. So that they will save the lifetime of a patient during emergency time. Considering the real time state of affairs the system is improved by embedding GPS navigation system and adding an additional light-weight in control system and putting an alert inside 100m distance throughout ambulance arrival. So we can scale back the possibility of death rate throughout emergencies. The work presents review of the present analysis done in field and tries to develop a system appropriate for developing countries

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