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SMART CITY EMERGENCY SERVICES RESPONSE SYSTEM

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ABSTRACT: Traffic overcrowding has become a biggest problem in this technical era. There are many reasons for this traffic overcrowding. Among all, one of the reason is rapid growth of the population. Resulting in increase of the vehicles on road. The increase in the number of personal and commercial vehicles also causes traffic overcrowding. This creates a problem for the ambulance to reach the hospital in minimum time. Due to the rapid growth of technology and engineering field the life of the mankind has got automated. Automation is the process of monitoring the cars through centralize server to serve the purpose of the human. All cars are connected to the internet and sends run time data to the centralize server. This paper is based on the cars communication with cloud to save the human life at critical situation. This paper is to notify the cars which are on the route of the ambulance, so that in run time cars could respond to the arrival of the ambulance. According to the positioning of the ambulance cars can give way to the passing ambulance. Thus this paper will act as a life saver.

1. INTRODUCTION

With the increase of road networks and vehicles, traffic congestion has become an enormous problem in all mega-cities in the world. During rush hours, it is very common for an emergency vehicle to be stuck in long vehicle queue for several hours. Traffic congestion has huge impact on public health and national economies. However, traffic congestion can be disastrous following a catastrophic event by disrupting the rescue and recovery operation and delaying the transportation of emergency deliveries. A good management strategy in post disaster scenario requires notifying all the vehicles on the way of the emergency vehicle so they can move aside and give way to the emergency vehicles.

"A world where physical objects are seamlessly integrated into the information network, and where physical objects can become active participants in business processes. Services are available to interact with these 'smart objects' over the Internet, query, and change their state and any information associated with them." Currently the Internet of Things (IoT) is focused on architectures, protocols, and networking for the logical interconnection of different things, infrastructure deployment, and creation of value-added services. The majority of the IoT products, services, and platforms are supported by cloud-computing platforms. With the IoT being a multidisciplinary ecosystem, it is now being utilized in connection with scenarios demanding real-time data processing and

feedback, for example, connected and autonomous vehicles scenarios In this paper, we explain the fundamentals of what forms a smart city which we need as a city in which ICT is fused with traditional infrastructures, coordinated and integrated using new digital technologies. These technologies forms the functions of the city and also give ways in which citizen groups, governments, businesses, and many agencies who have an interest in making more efficient and equitable systems, which can interact in augmenting their understanding of the city and also give essential engagement in the design and planning process. We sketch our vision for developing a new understanding of urban problem such as response for emergency services.

In existing model we have the feature of enabling the traffic signal to be green to avoid delay of the emergency vehicle. But what happens is that it eventually causes traffic congestion as all the vehicles on the signal rush ahead to their destination because they have no prior knowledge of arriving of any emergency vehicle on their route.

The more efficient way to clear the route is to individually notify all the vehicles on the route of the emergency vehicle so that the vehicles at the extreme right on the road can move aside and give way to the arriving emergency vehicle. As we all know that the extreme right of the road is used by the emergency vehicles.

So the chances of saving the life of the person and avoiding economic losses will increase.

2. LITERATURE REVIEW

The associated work can be divided into categories below:

2.1 Dr. A. Balamurugan, G. Navin Siva Kumar, S. Raj Thilak, P. Selvakumar,

"Automated Emergency System in Ambulance to Control Traffic Signals using IoT"

This paper is based on the Internet of things and cloud to save time and avoid loss of life at critical situation. This paper is to form the communication among the traffic signals and ambulance so the traffic signal can respond to the appearance of the ambulance and respond according to it. When traffic signals changes its color according to the position of ambulance, it helps to make way for the ambulance.

2.2 Venkatesh H, Shrivatsa D Perur, Jagadish M C

"An Approach to Make Way for Intelligent Ambulance Using IoT"

This paper states that by making use of IoT scenario, It is possible to clear the traffic by sending message to the signal board hence ambulance can reach hospital without delay in time and without wasting time for the clearance of traffic load, By making use of Embedded and IoT it can develop a model to clear the traffic while ambulance coming in the path.

2.3 Devyani Bajaj, Neelesh Gupta,

"GPS BasedAutomatic Vehicle Tracking Using RFID"

This paper shows the vehicle tracking system is an electronic device installed in a vehicle to track the vehicle's location. Objects of the paper are: Designing of a remote control vehicle which has the facility of tracking location through GPS and detecting objects to avoid collision.

2.4 Dr. Khalifa A. Salim, Ibrahim Mohammed Idrees,

"Design and Implementation of Web-Based GPS-GPRS Vehicle Tracking System"

This paper shows that an integrated profitable web based GPS-GPRS vehicle tracking system, was designed and implemented. The system enables various

enterprise owners to know the present and past positions recorded of the desired vehicle on Google Maps through designed web site. The recent, position of the vehicle was taken by GPS device which is integrated in the desired vehicle, the location coordinates are passed through GPRS service which is provided by the GSM network. The GPS data is passed using GET method of HTTP protocol, the data at server side is stored in database table and could be retrieved as request for position browsing on map. A web application is developed using JavaScript, AJAX, XML, and MySQL with embedded Google Map to redeem and display on track details.

2.5 Obuhuma, J. I., Moturi, C. A,

"Use of GPS With Road Mapping For Traffic Analysis"

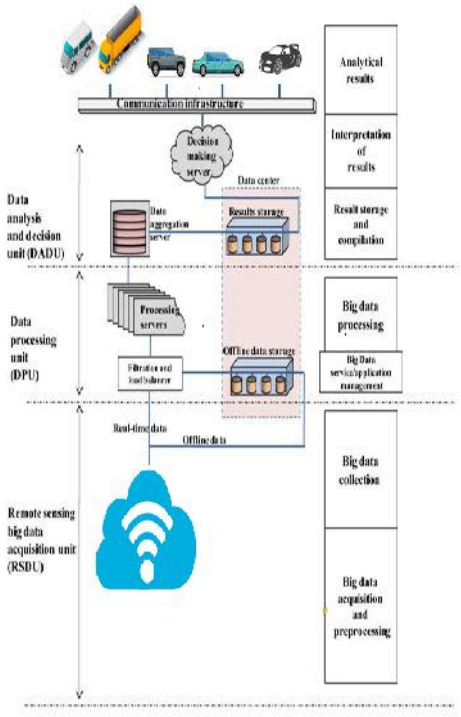
This paper, explores the development of a GPS-TCP Server which listens to GPS trackers data and routes it to a centralized database. Furthermore, client-side application that redeems and shows the raw GPS data in a user-friendly and human readable format was also explored. Additionally, a road mapping concept for various analytical purposes relating to traffic analysis on the Kenyan roads is assimilated. The study focuses on streamlining the transport industry by analyzing the operation patterns on the roads and the general road usage patterns including speed of traffic with email alerts on speeding.

2.6 Joseph Owusu, Francis Afukaar and B.E.K. Prah,

"Urban Traffic Speed Management: The Use of GPS/GIS"

This GPS/GIS integrated system gives real-time location and status of the vehicles in the network. The system shows second-to-second positional changes in speed and directions of vehicles travelling in Kumasi. Using the geographic components in a dataset and visualizing the results in a map provides a clear picture of the traffic activity for every route in the network. The GPS clearly indicates the road sections where speeds are not acceptable affecting drivers behaviour, which gives transport planners the option to choose the desired speed management technique to improve the traffic system.

3. SYSTEM ARCHITECHTURE



Now days increasing number of vehicles on roads increase the problem of traffic congestion. Due to which it takes more time for Emergency vehicle to reach its destination. To overcome this, relied on all statistics, traffic congestion should be minimized or controlled. So, the proposed system is build in real time. This application works as life saver. Cloud plays an important role between emergency vehicle and all other transportation vehicle or commercial vehicle. The above architecture consist of 4 different models they are:

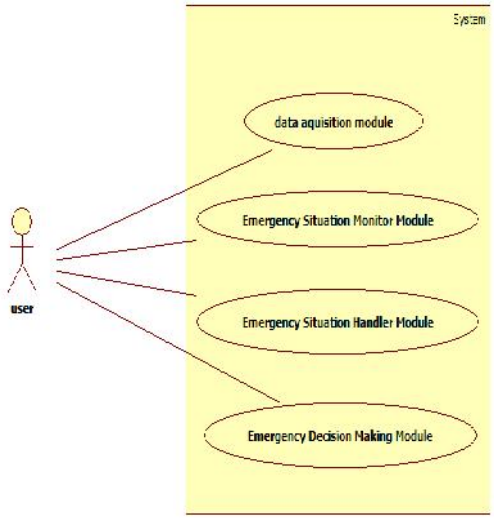
1. Data Acquisition Model:

This model consist of Remote Sensing big data acquisition unit (RSDU) which helps to collect data of 2 different types from cloud such as Real Time data & offline data. Real Time data is data about location, source and destination of all other transportation vehicle or commercial vehicle. Second type, Offline data which stores all the information required for processing identifying and notifying vehicles.

2. Data Processing Model: Data processing unit (DPU) it processes data acquired form data acquisition unit. It involves the process of data filtration & load balancing. DPU combines all the data filters the requested data and processing server forwards data for analysis.

3. Data analysis and Decision Model: In this model, Data aggregation server aggregates information of vehicles on route. Data center collects all the results stores and compile. The results interpretation process with the help data center used for Decision Making.

4. USE CASE DIAGRAM



The use case diagram is vigorous in nature there should be some internal or external factors to make interactions. These internal and external agents are known as actors. Use case diagram consists of actors, use cases and their relationships. The diagram is used to model the sys-subsystem of an application. Single use case diagram captures a particular functionality of a system. So to model the entire system various use case diagrams are used.

5. CONCLUSION

1. Intelligent Transport System is proposed for controlling traffic congestion in favour of emergency vehicle at the time of emergency cases.
2. ITS provides advance warning in emergency situation & increases customer satisfaction also saves critical minutes of person's life.

6. FUTURE WORK

In future almost all cars may have integrated Intelligent Transport System(vsf) which will be in a network, communicating with each other by sending important data about the traffic, arrival of emergency vehicles alert etc. for example, live data recording, mapping of emergency vehicles.

REFERENCES

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