Emergency Vehicle Recognition System

Thunugunta Swathi*, B Veera Mallu**

*(Department of Computer Science And Engineering, K.L University, India
** (Department of Computer Science And Engineering, K.L University, India

Abstract:

The main focus of EVRS is not to design a cost friendly system. Instead, it is on as useful it could get to save the life of people. System is easily operable and understanding the system helps people. A warning system for alerting the driver of a private vehicle that an emergency vehicle is approaching. In the daily life we always see that there is always a problem to an emergency vehicle such as ambulance, patrol car and fire-fighter to pass through traffic light because it was red and it's disturbing the drive. This situation is often happen because lack of cooperation from civilian, sometimes driver do not had an experience of this situation so they will waited the traffic light to turn green. The EVRS co-ordinates with the driver and guides him in a cleared path by avoiding delay in the traffic.

*Keywords***: EVRS, sensors, traffic management.**

1. Introduction

In the daily life we always see that there is always a problem to an emergency vehicle such as ambulance, patrol car and fire-fighter to pass through traffic light because it was red and it's disturbing the drive. This situation is often happen because lack of cooperation from civilian and sometimes the driver don't have the experience of this situation and so he waits till the signal turns to green. The emergency vehicle recognition system is used to co-ordinate with driver and guides him in a cleared path avoiding delay in the traffic. It helps driver reach the destination with in less time. A wireless alert will be given to the traffic wardens in case of any difficulty for the E-vehicles to clear the way. The users of the system are Traffic police, Wardens, Public and Emergency vehicle drivers. The radio system is now in its existence. As it has got some drawbacks it's been modified using different models namely: Centralized accident and trauma services (CATS), Emergency management and research institute (EMRI), Ambulance access for all (AAA), Emergency and accident relief centre (EARC).

The main focus of EVRS is not to design a cost friendly system. Instead, it is on as useful it could get to save the life of people. System is easily operable and understanding the system helps people. A warning system for alerting the driver of a private vehicle that an emergency vehicle is approaching.

Any part of a system designed to respond to medical emergencies and provide pre-hospital or in-hospital treatment. Often refers to ambulances and first responders, though emergency medical services (EMS) include all services necessary to help ill or injured people return to the state of health they enjoyed before their emergencies. EVRS also helps reduce life loss during travelling period of emergency vehicles. To avoid the ambulance and other emergency vehicles waiting in traffic. Automatically clearing the track of the vehicle from traffic blocks and signals. It is not to design a cost friendly system. Instead, it is on as useful it could get to save the people. System is operable and understanding the system helps people.

1 – EV
2 – Intersection Sensors
3 – Cell Phone Users
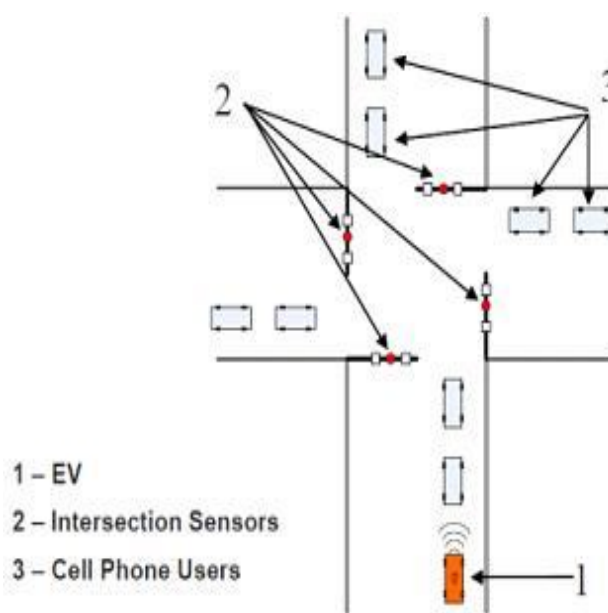
II. Problem Statement

There is no efficient method to recognize and transport emergency vehicles in the least possible time. So the objective is to avoid the ambulance and other emergency vehicles waiting in traffic by **automatically** clearing the track of the vehicle from traffic blocks and signals.

To provide a system to the users which can reduce the risk of life of the person in the vehicle by identifying the vehicle on road through?

- Sound Recognition
- Image Recognition
- System Functioning

A warning system for alerting the driver of a private vehicle that an emergency vehicle is approaching.

III. Existing System

The present existing system is the Radio system in the vehicle connected with the call Centre.

Emergency vehicles, such as ambulances, police cars, or fire trucks, typically carry a loud siren and flashing lights to warn motorists and other people on the road that the emergency vehicle needs the right of way. Unfortunately, however, many private vehicles are well insulated and include stereo systems which can fill the interior of the vehicle with sound such that the siren of the emergency vehicle becomes inaudible to the driver of the private vehicle. Furthermore, today's highways and streets often include many lanes. When an emergency vehicle is traveling down one of these multi-lane roadways, it is often very difficult for the driver of the private vehicle to determine the relationship of the emergency vehicle relative to the private vehicle, such that the driver of the private vehicle can make a clear decision as to what to do to safely yield the right of way to the emergency vehicle. For example, in certain situations it may be prudent to pull over to the right of the roadway, while in other situations, it may be safer to pull over to the center or left side of the roadway. In order to make the decision of what is the safest action in yielding the right of way, it is important to know the position and direction of advancement of the approaching emergency vehicle relative to the private vehicle. Known devices used for warning of an approaching emergency vehicle often use electromagnetic or acoustic waves to allow the emergency vehicle to communicate with the private vehicle. Another method is that radio system in the vehicle connected with the call Centre.

IV. Need for a Change

As there is no efficient guidance to the driver for navigation to the destination in a clear path avoiding traffic signals, traffic jams, road blocks etc, unnecessary delay in reaching the destination, and Loss of life due to traffic. So a proposed system is introduced.

This proposed system helps the system to co-ordinate with the driver and guides him in a cleared path avoiding delay in the traffic. Through GPS the traffic jams and road blocks are recognized by the system and an alternate and safe route will be navigated to the driver for reaching the destination with in less time. A wireless alert will be given to the traffic wardens in case of any difficulty for the E-vehicles to clear the way.

V. Proposed System

This system helps the system to co-ordinate with the driver and guides him in a cleared path avoiding delay in the traffic.

Through GPS the traffic jams and road blocks are recognized by the system and an alternate and safe route will be navigated to the driver for reaching the destination with in less time.

A wireless alert will be given to the traffic wardens in case of any difficulty for the E-Vehicles to clear the way.
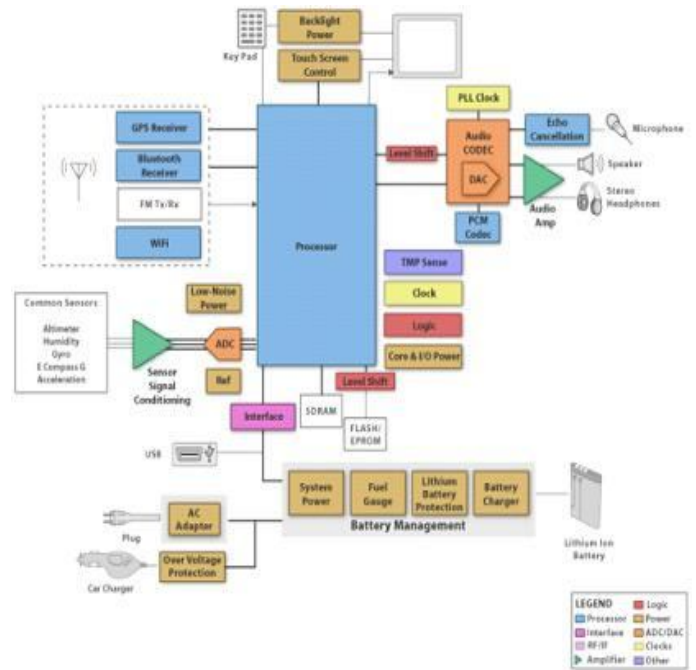
The in-vehicle E-Call is an emergency call generated either manually by the vehicle occupants or automatically via activation of in-vehicle sensors after an accident. When activated, the in-vehicle E-Call device will establish an emergency call carrying both voice and data directly to the nearest emergency point (normally the nearest E1-1-2 Public-safety answering point, PSAP). The voice call enables the vehicle occupant to communicate with the trained E-Call operator. At the same time, a minimum set of data will be sent to the E-Call operator receiving the voice call.

The minimum set of data contains information about the incident, including time, precise location, the direction the vehicle was traveling, and vehicle identification. The pan-European E-Call aims to be operative for all new type-approved vehicles as a standard option. Depending on the manufacturer of the E-Call system, it could be mobile phone based (Bluetooth connection to an in- vehicle interface), an integrated E-Call device, or a functionality of a broader system like navigation, telematics device, or tolling device. E-Call is expected to be offered, at earliest, by the end of 2010, pending standardization by the European Telecommunications Standards Institute and commitment from large EU member states such as France and the United Kingdom.

VI. Requirements:

To provide a system to the users which can reduce the risk of life of the person in the vehicle by identifying the vehicle on road through?

- ✓ Sound Recognition
- ✓ Image Recognition
- ✓ System Functioning

The Sound Recognition should be efficient to recognize

the emergency vehicles from other siren vehicles.

The siren vehicles are identified accurately without many disturbances due to weather and other hindrances.

The recognition of the E-Vehicles should start the image recognition system eventually.

Through image recognition the emergency vehicles are identified.

The Infra-Red makes possible to identify the E-Vehicle based on the lights.

The signal blocks should be opened for the vehicle to pass swiftly (RED to GREEN).

Wireless Alert is given to the traffic wardens if the vehicle finds difficult to clear the way (If the sound keeps continuing at same decibel).

VII. Analysis:

UML diagrams:
Identifying the classes:

By filtering out all of the nouns except for the classes, you will have many of the classes identified from your system. These are termed as ACL (analysis level classes) from which classes are categorized as good classes and bad classes where good classes are those relevant to the project.
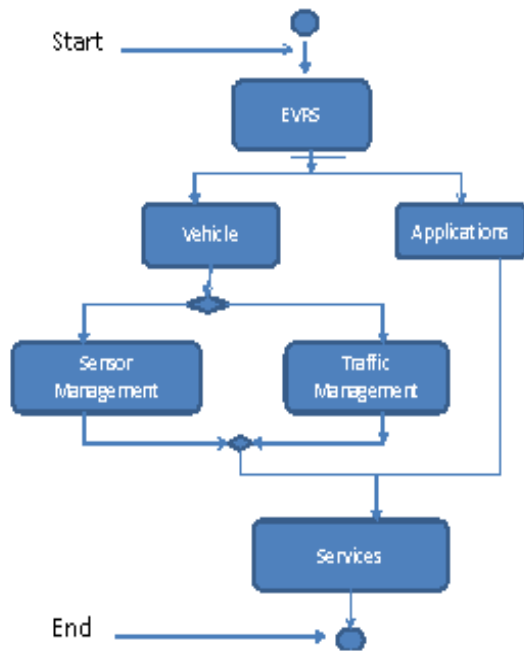

Another method is looking for the repeating objects to the level of different sequence diagrams at the analysis level. The repeating objects are the tentative objects at the design level class diagram.
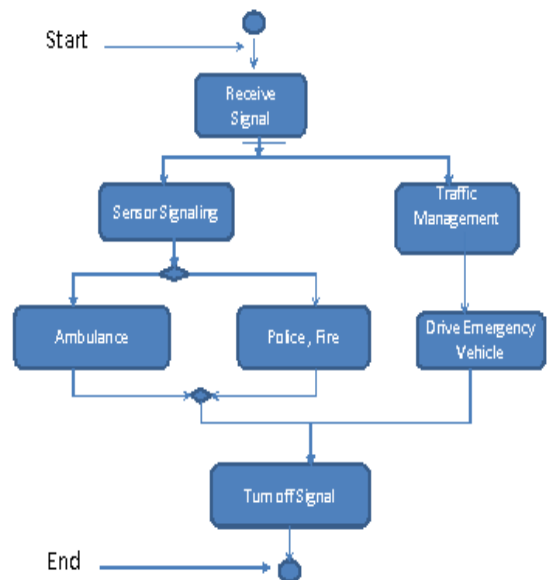
Use Case Diagram:

Cameras are fixed in all the streets or at the junctions. Cameras are used for detecting the sensors which allow the vehicle to reach the destination without stopping. Their emergency signals is they by detected easily.
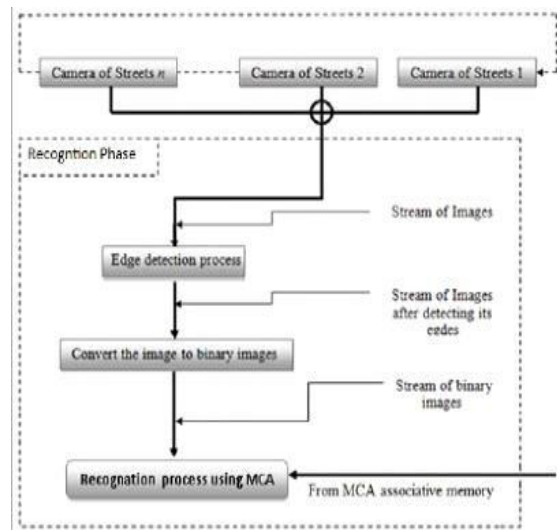

SEQUENCE DIAGRAM:

Sequence diagram and collaboration diagram are called INTERACTION DIAGRAMS. An interaction diagram shows an interaction, consisting of set of objects and their relationship including the messages that may be dispatched among them. A sequence diagram is an introduction that empathizes the time ordering of messages.

ACTIVITY DIAGRAM:

Activity diagram is a variation or special case of state machine. In this, the states or the activities represent the performance of operations. The transactions are triggered by the completion of operations. Activity diagram may be used to model an entire business process. It provides flow of the program. Activity diagram is used to show the internal state of the object by external events may appear in that. The activity diagram describes the sequence of activities, with the support for both conditional and parallel behavior.
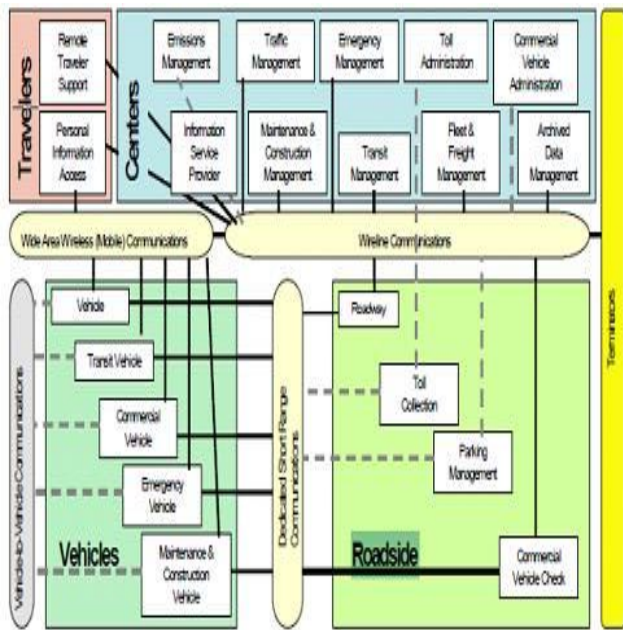
VIII. Design

User Interface Description:

This Application gives the user a very professional look and feel. This Web Application also gives multiple browser support for IE, NN, Mozilla, and Firefox. We have made use of a graphical tool like JASPER to show strategic data to admin.

All the reports exportable in .XLS, .PDF or any other desirable format.

IX. Implementation

Initially all the emergency vehicles have to be registered. And those vehicle details are maintained in a database. When a emergency vehicle approaches the tollgate then the signal is recognized by the sensors and the system verifies the details of the vehicle then it clears the path. If path clearance is not possible then it shows an alternative way to the vehicle.

X. Conclusion

At this stage, three conclusions can be drawn. They are

✓ Tolling with EVRS will become dominant. Sensors will replace manual tolling with the preferred technology for tolling.

✓ Scanning of toll tags for other traffic management applications will increase, as toll tags become more commonplace.

✓ Other benefits of EVRS will drive deployment. As the benefits become clearer, Users will want the technology. For example, the sensors that are fixed above the ambulance, fire engines and on police cars enable the toll gates atomize their passage.

References

➢ Ali Bahrami (2003),"Object Oriented Analysis and Design using UML", 2nd Edition Tata McGraw-Hill.

➢ Herbert Schildt (2002),"Java 2 Programmers Reference", 1st edition, McGraw -Hill companies.

➢ Roger S.Pressman (2002),"Software Engineering: A Practioners Approach", 5th Edition, Tata McGraw-Hill.

➢ http://gyancity.com/

➢ http://courses.engr.illinois.edu/ece445/projects/fall2010/project15_proposal.pdf

➢ http://en.wikipedia.org/wiki/Intelligent_transportation_system

➢ http://e-lightllc.com/source/grosse.pdf

➢ http://www.usfa.fema.gov/downloads/pdf/publications/fa_323.pdf