



GPS Mapping of Resources for Crisis Management System

Prof. Ishwarappa Kalbandi¹, Harsha Marshettiwar², Meet Jhatakia³, Shruti Karande⁴

¹Professor, Department of Computer Engineering

^{2,3,4}Student, Department of Computer Engineering

^{1,2,3,4}DYPIEMR, Pune, India

Abstract- Road accidents is a major cause of mortality worldwide with the urgent action required to mitigate against the negative impacts. A comprehensive incident recording and analysis system can provide solution for control and management of accident events. This paper presents a road accident management based on the GPS location of the victim or of the by-standers. The victim or the by-standers can easily locate and contact the nearest hospital or police station or even the relatives in case of an emergency. The paper also presents an app that finds the nearest hospital or police station and ease the process of contacting them. This app can thus revolutionized SOS services.

Keywords - GPS Mapping, Requisition Authority, SOS service.

I. INTRODUCTION

Today road accidents happen almost everywhere and the world is a state where the number of road accidents had reached an alarming level. The rapid development of the road network and the escalating number of vehicles on roads cost increasing number of road accidents involving fatal and serious injuries. Association for Safety International Road travel states that there are approximately 1.3 million people who meet with fatal accidents on road every year. Average number of deaths per day reaches 3,287 people. Adding to the figure 20-50 million people are injured or become disabled due to road accidents. Emergency response of various emergency response team is the most critical basis where accident happened. Therefore, fast and efficient emergency response is demanded to minimise the number of casualties and injuries caused by the road accidents. However, the responses heavily rely on an accurate information reported by public during emergency reporting. Call Centre is the most critical part of the emergency response system in order to gain accurate and useful information of the reported accident as to ensure prompt and effective rescue mission.

There are many difficulties faced by the emergency operator when it comes to the situation of handling emergency calls for instance miscommunications. Stated "Misalignment refers to mismatching between structural properties of different conversational contributions so the projected sequence of activities in some way hampered". Misalignment of Communications between call-taker and caller might end up in risking someone else's life. The dissatisfaction expressed by the callers regarding the call-takers inability to entertain their request a crucial moment might lead to complaint by the caller. Thus, this may prolong time taken for the ERT to save the victim. Various factors that influence human decision making in managing emergency such as time pressure, stressful situations where the operator is afraid of the failure to manage emergency and high work-load of managing multiple task. This may lead to wrong information been transferred at wrong time that may affect rescue process and save victim's life. The highlighted problem that may cause disruption to the process of communicating accident information is the communication barriers experienced by the callers. The delay that occurs when the caller fails to communicate about the victim's condition and also the location of the accident, thus making it difficult for the operator to respond to the situation immediately. Also, in stated that the current method that is being applied for by the Emergency Response Team is "scoop-and-run" method where the patient of the victim will be transferred immediately to the hospital. Upon arrival of the patient in the hospital is the only time when the decision for the treatment is made and the Emergency Response Team are people in-charged to fill in the personal details and medical condition of the patients.

Therefore, two main objectives of this project are to develop a mobile application for public or eyewitness to be able to send accurate information to the emergency response call centre. The importance of this research is mainly to study about how revolving technology in current era will be able to become medium for life saving. Through the development of mobile application, by-standers are able to lend a helping hand by sending fast information to the ERT for immediate response. Important critical information is also conveyed faster and clearer through texting rather than verbal communication which may be interrupted by noise and language accent.

II. Goals and Objective

The objective of the development of an Emergency Accident Alert mobile application is to send an accurate alert and notification of accident to the emergency call center. It also needs to automatically detect the location and find the nearest Emergency Response Team (Hospitals or Police stations).

III. Existing System

The existing system alert's the user's pre-selected emergency contacts to their location in the event of a crash. Emergency contacts can then alert first responders. It also displays nearby hospitals and the routes to them in the event of an emergency. The panic button allows app users to alert their emergency contacts so that they can help immediately, if need be. It also uses GPS to monitor any situation of accidents.

IV. Limitations of the Existing System

The application automatically decides if an accident has occurred or not. A near accidental situation can be detected as an accident by the app and hence lead to false notification of an emergency. The application lacks automation and intelligent redundant emergency report screening is required to verify that the report is genuine.

V. Methodology

The method used is to automatically detect the location of the victim or the bystander and send the location to the emergency response team according to the requirement of the user. For the first wish the user must sign in to the app and create an account later on the user can directly use the app for emergencies. The user can also send an SOS signal to the relatives. Once the user account is created and whenever the user uses it during an emergency the app directly detect the location of the user and find the nearest hospital the nearest police station according to the requirement of the user. The hospital of the police station is send an SMS with the location of the victim so that they can reach the scene immediately. During an accident the ambulance as well as the police need to be contacted. The details of the person can also be contacted using the same app.

The app uses Dijkstra Technology to find the nearest hospital to the location of the accident. No Hospital then sends a Rescue Team to the location of the accident. This app can also be used by the bystanders to report an accident as eyewitnesses. The bystanders thus do not need to search for nearest hospital chicken directly do so by using the app. It provides accurate information related to location of the victim and avoids any miscommunications.

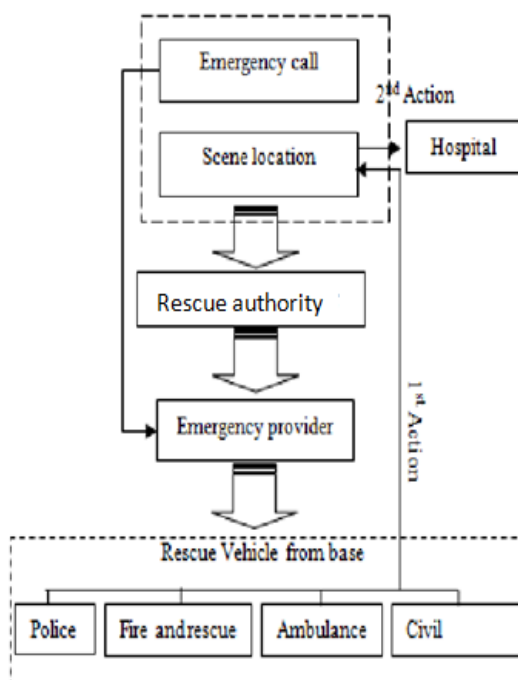


Fig :- Flow Diagram

The above diagram shows how the flow of the app will work. It will automatically call and locate the accident location as well as the nearest hospital and contact them, it also contacts the police.

The use case diagrams below show the flow of user functionalities as well as the emergency response team functionalities.

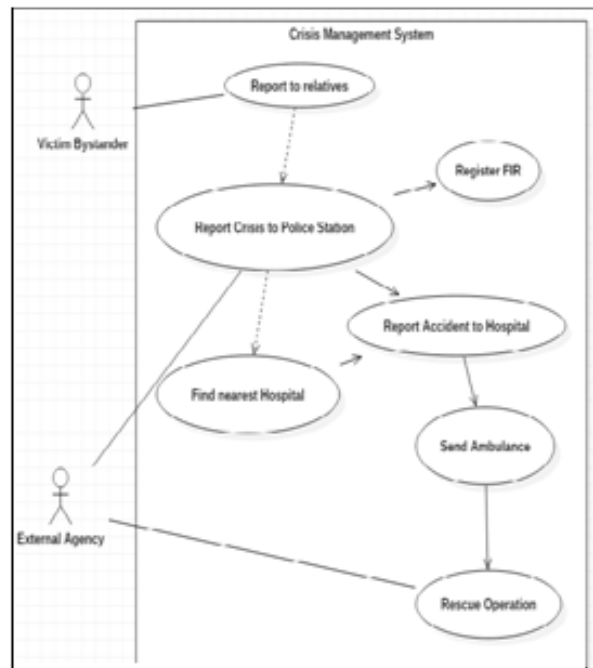


Fig :- Usecase Diagram

The sequential diagram below shows the flow of the sequence of the different functions and the order in which they will take place.

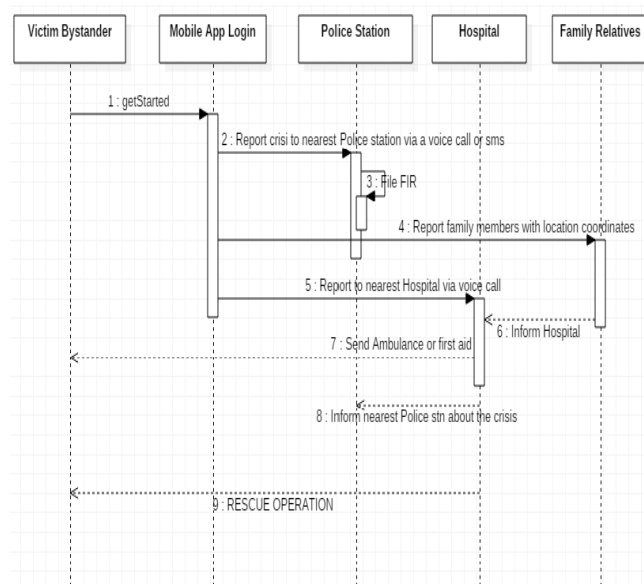


Fig :- Sequence Diagram

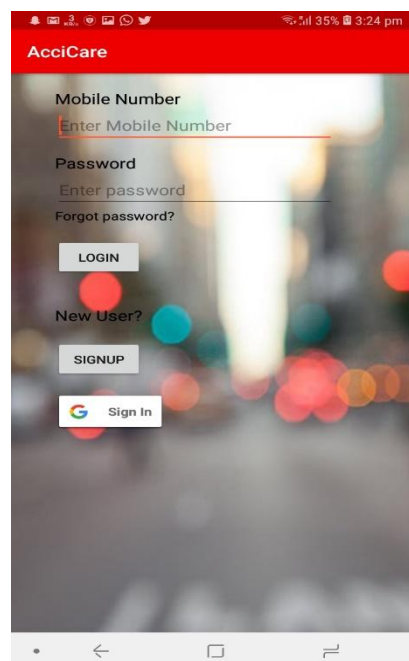
VI. Implementation

Our project “Android Application for Crisis Management” allows the user to contact the emergency response authorities during emergency situations such as accidents, earthquakes, curfew etc. This is done by the first logging into the app via Registration Module. If the user is already registered, he just needs to login using the Login Module. The user can switch between the Victim Module and the By-Stander Module via a toggle switch. In the Victim Module, he/she can call nearby emergency response services via the Hospital Module, Fire brigade Module or Police station Module as per his situation.

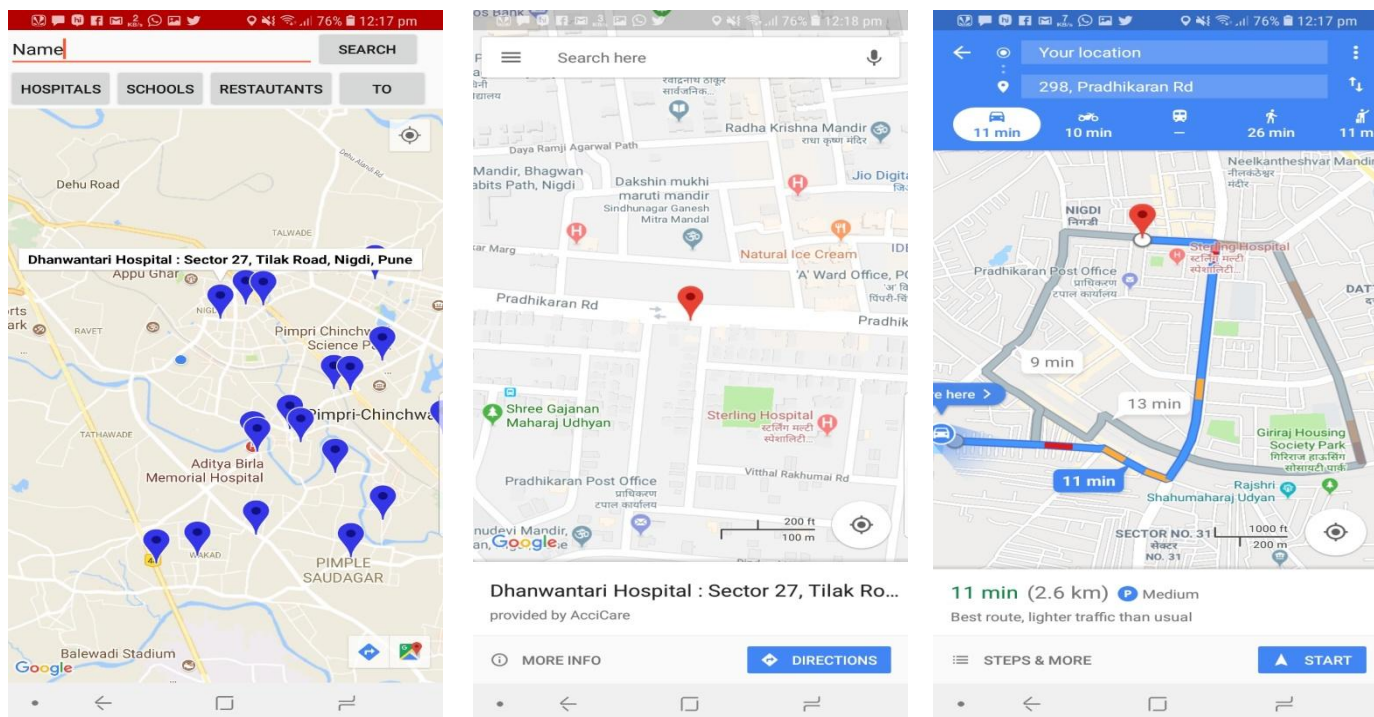
The SOS Module helps the user to send a normal text message to his/her emergency contact along with his/her location coordinates. In By-Stander module, the Report Generation (or simply Report Module) Module helps the bystander to capture an image with his/her devices to generate a report later

VII. Snapshots

7.1. Input



7.2. Output



VII. Advantages of proposed solution

The proposed solution is a facility that can be availed by both the victim as well as the by-standees. So that in case of emergency the victim gets the necessary help as soon as possible. The solution does not depend on human capabilities to interact with the services. This decreases the delay caused due to human error.

VIII. Future Scope

Another module of report generation can be added which would include location, image of the accident and timing at which the accident took place. This report would be handy and be used by the police and the media as a proof of the accident.

It can also be integrated with blood bank apps that can notify users with availability of similar blood group as that of the victim, in the vicinity.

IX. Conclusion

Emergency accident management involves medical and security domain. Here we came up a solution for providing resources on time for the needy in emergency accident crashes.

The proposed system will help victims get the necessary help as soon as possible in a hassle free manner.

X. References

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