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Good Samaritan: An Android Smart Phone App

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Abstract: **:—"GOOD SAMARITAN" is a smart phone android app which is designed to decrease the delay in hospitalizing the public when met with accidents. According to EMRI (Emergency Management And Research Institute), the average response time has gone up within ambulance taking 40 minutes and up by 10 minutes every year due to increased traffic density, which leads more fatalities.**

Hence to reduce this, a concept was proposed whose main objective is to design an android smart phone app, such that it can track both the ambulance and the vehicle. Ambulance and victim vehicle both take the shortest route to meet each other. Once both the ambulance and the victim vehicle are met at a common point, then, at that point accident victim is transferred to ambulance, in turn, ambulance ferry towards hospital.

I. INTRODUCTION

"THE GOOD SAMARITAN APP" is a mobile application. It provides a location based services and reduces the delay in helping the victims or patients in reaching the hospitals using GPS. It provides this facility by tracking ambulance and accident spot simultaneously.

Every clock tick is important for the person who is victimized by road accidents. But according to EMRI (Emergency Management and Research Institute), the average response time (time taken to reach a patient and time taken to ferry him/her to a hospital) has gone up with an ambulance taking 40 minutes and up by 10 minutes every year due to increased traffic density.

Eventually many unreported cases exists, where ambulance reaches late or not reached accident place at all or even no help from eye witnesses or bystanders. Like this scenario, if we wait for an ambulance at accident spot, it may leads to severe damages to the victims and more fatalities. Where in most of cases, the by standers or relatives of road victims take the victims in auto rickshaw or any private vehicle or their own vehicle to hospitals. So the ultimate target is to reduce the time delay in admitting the accident victims to the nearby hospital.

II. EXISTING SYSTEM

The Applications which all are available till now provide one-way communication for tracking the ambulance/Vehicle from the accident spot. The applications available till now are:

1. "**Track The Person**": It gets the information of ones location with an sms only with the help of GPS.
2. "**Location Tracker**": It shares the location with no registration.
3. "**Real-time GPS Tracker 2**": It shows your location to family and friends in real-time.

III. LITERATURE SURVEY

Paper [1] states the concept of Active system which were developed to detect the vehicle location automatically that can transfer the location information in real-time. This concept consists of hardware devices and a remote tracking server. This stuff is transferred to tracking server using GSM/GPRS modem on a GSM network which makes use of SMS or using TCP/IP protocol. This tracked information is stored in database which is available to android users over internet.

In Paper [2], the authors stated the concept of RFID for tracking the vehicles. The main step of tracking the vehicles based on RFID includes RFID reader, RFID tags, data centers, networks and user interface and it uses six-layered architecture. This concept can help even in intelligent charging and cargo tracking.

In paper [3], the author suggests the method of novel for vehicle detection and tracking at night times. OTSU algorithm is used for calculating the lower level and optimal threshold for taillight segmentation. Similarities between left and right taillights are used to extract candidate taillight pairs. Taillight tracking method based on taillight estimation is used to reduce the false negative

rate of vehicle detection. Kalman filtering is used to predict the taillight spot candidate. Vehicle tracking is accomplished soon after determining its location using 2 taillight spots. The results in tracking the vehicle are quicker, optimistic and readable in heavy traffic environment.

Paper [4], proposes the system of vision based multiple vehicle detection automation that can be applied in a wide range of environments. To achieve this, the system used is GABOR feature set trained BPNN. BPNN (Back Propogation Neural Network verifies and ensures the vehicle candidates and robustness in vehicle detection using taillight positions. A Color Probability Distribution Function (CPDF) is used twice in this system to detect and seek potential target vehicle locations and to measure the similarity of each particle for the target vehicle position. This proposed system proved to be 84% accurate in vehicle detection and hence these results make this system appropriate for real-world application.

In paper [5], the author considers the usage of systems, design for medical, sports and entertainment applications called WBAN. WBAN- Wireless Body Area Network is a special purpose network designed to operate autonomously to connect various medical sensors and appliances inside and/or outside the human body. This enables physicians to monitor and analyses the vital signs of the patients during consultation and medical diagnosis. This provides 2 important advantages:

(i)Patient mobility tracking due to use of portable devices and location independent monitoring facility and (ii) Author also uses the Multiple Beam adaptive Arrays (MBAA) at BAN coordinator (BAN_C) node. Hence the author notes how MBAA can be integrated into a single star topology as a BAN_C.

IV.PROPOSED SYSTEM

Vision of this proposed system is to provide help to an accident victim by developing an application for tracing the accident spot and the ambulance availability. The application which we are going to design focuses on providing the two-way communication between the ambulance and the bystander of accident victim. Since the ambulance and the bystander tracks each other simultaneously, the delay for the accident victims to reach the nearby hospital gets reduced which is the main drawback of existing systems which are of one-way communication. Architecture of proposed system is depicted below

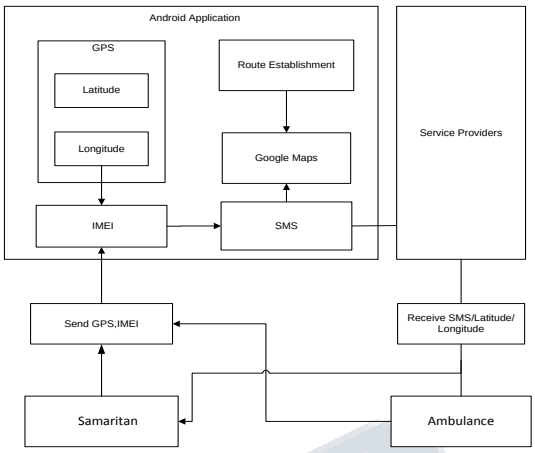

Fig.1 Architecture of Proposed System

V.METHODOLOGY

It describes about how the interaction takes place between bystander and the ambulance driver. Location tracking is done using GPS. In the very 1st level of interaction, the bystander logs on the application and pings a request to the ambulance.

In this level, 1st the ID is exchanged between bystander and ambulance driver through which both of them can interact. Next, all the possible routes between accident spot and the ambulance are found out. Finally, shortest route is picked among all the possible routes and then that route is established.

The below diagram shows the tasks that have to be carried by the ambulance driver. First, it has to share its ID to the bystander as it is mutual exchange process. Next, it has to share it's location to the bystander and then finally it has to trace out the accident victim.

Sequence Diagram

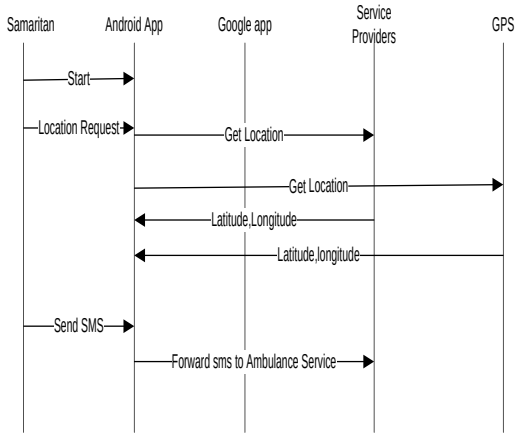

Fig.2 Bystander/Samaritan Activities

It describes the sequences of actions involved in carrying out the process between ambulance driver and the bystander. 1st the bystander pings a request by opening and logging on to the app, then a call is made to the ambulance driver, then the bystander shares it's ID, location. Then the intended ambulance driver shares it's ID and location. Next, the bystander tracks the location of ambulance and the shortest route is found out, next bystander traces out the ambulance. The moment both the accident victim and the ambulance meets at a point, the patient is ferried towards the hospital.

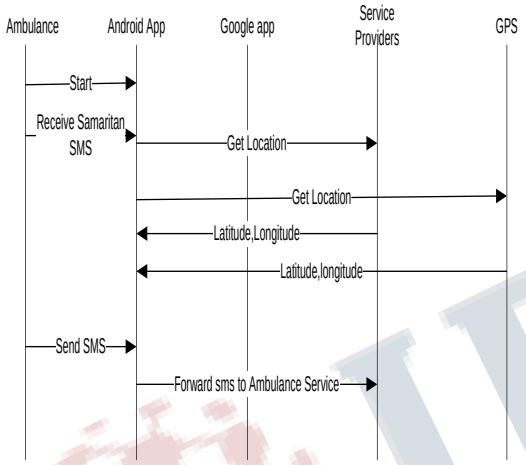

Fig.3 Ambulance Driver Processes

VI. IMPLEMENTATION MODULES

1. Patient Module

- ***Start:*** The user needs to start the application in their mobile.
- ***Ambulance number*:** Provide the phone number of ambulance driver which helps in exchanging the ID.
- ***Current patient's location*:** Provides ambulance with the current location of patient in the form of latitude and longitude.
- ***Send Request:*** after entering the above details, a request is sent to get an ambulance service.
- ***Track Ambulance*:** Tracks the location of ambulance after receiving the information of it' s location.
- ***Display path*:** Provides patient with the shortest path available between patient and ambulance.

2. Ambulance Module

- ***Start:*** The Ambulance driver starts the application in their mobile.
- ***Patient Number*:** Sends an ID to the patient after receiving request from patient.
- ***Current Ambulance's location*:** Provides patient with the current location of patient in the form of latitude and longitude.
- ***Confirm Request*:** Provides the service to patient by sending a text.
- ***Track Patient*:** Tracks the location of patient after receiving the information of it' s location.
- ***Display path*:** Provides patient with the shortest path available between patient and ambulance.

VII. SNAPSHOTS

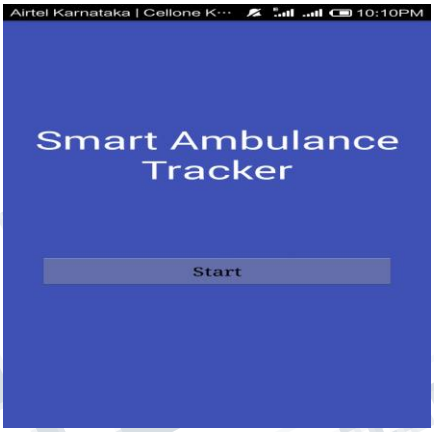

Fig.4 Home page of the SMART AMBULANCE TRACKER (App on the by-stander's mobile)

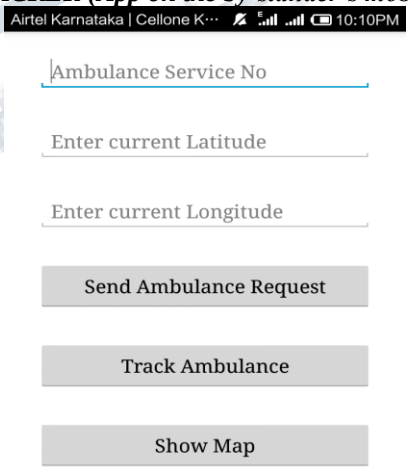

Fig.5 The page where bystander has to enter the details

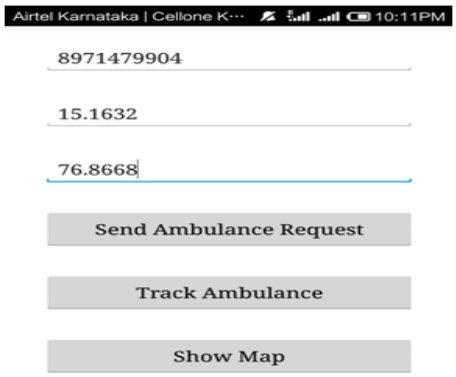

Fig.6 The details of the ambulance service number and etc are entered.

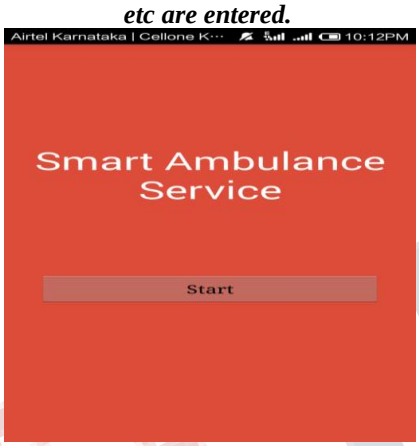

Fig.7 Homepage of ambulance service driver (ambulance driver)

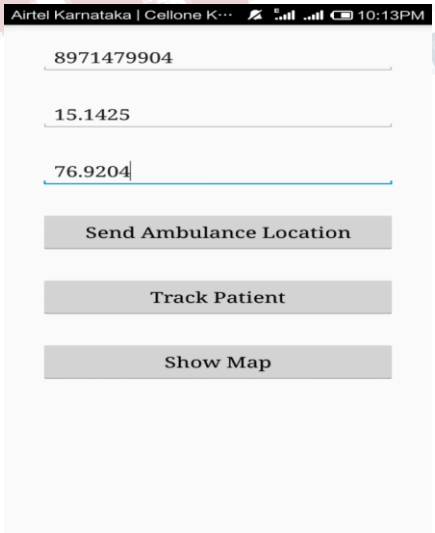

Fig.7 Details of the ambulance's location.

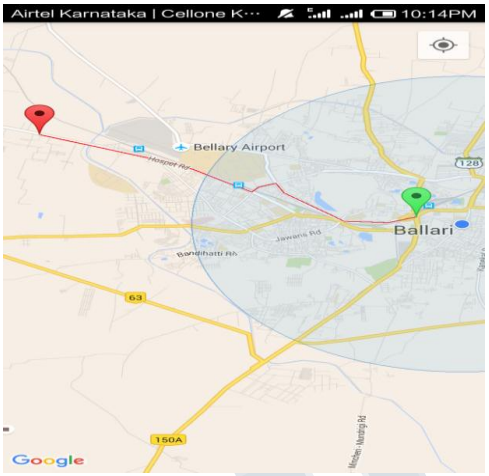

Fig.8 Display of shortest path in Ambulance driver's application

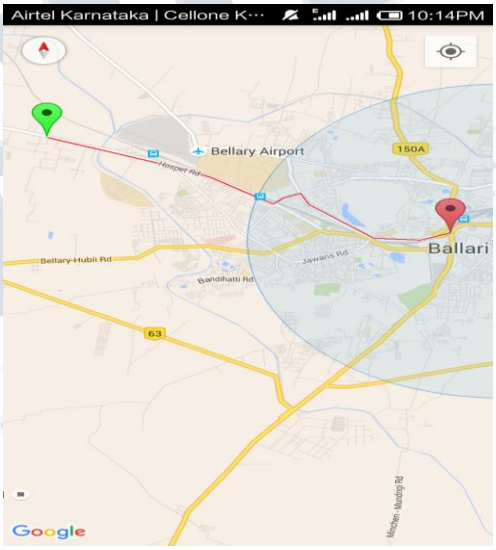

Fig.9Display of shortest path in bystander's application

VIII.CONCLUSION AND FUTURE WORK

Mission of this proposed project is to design an Android smart phone APP which can track both the ambulance and the victim vehicle simultaneously. Once both vehicles meet at one point of location, the victim is transferred to Ambulance, which ferries towards the hospital.

Live traffic management of routes and dynamically changing of routes (which is having less traffic) can be implemented as a part of future work.

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