Turkish Online Journal of Qualitative Inquiry (TOJQI)
Volume 12, Issue 3, July 2021: 5249-5256

Research Article

Ambulance Tracking System In Android Phone

Dr.S. Senthilkumar[1], Dr.K. Sasikala[2], T. Geetha[3], V. Govindarajan[4], K. Jammiammal[5]

Abstract

As ambulance does not reachthe patient in time, about 33,000 people died. It is not necessary that when you call an ambulance, the nearest ambulance will reach you. The paper depicts a model to track the next-door free ambulance in the region using Global Positioning System(GPS) and to get it to the person in distress. The GPS device always moves with the ambulance and will compute the co-ordinate of every position and can be obtained whenever essential by the server. Hence it can track the nearby ambulance and fetch it to the human being in distress.

Keywords— UWB, VSWR, FBW

---

[1]Associate Professor Department of computer science and engineering, Vinayaka Mission's Kirupananda Variyar Engineering College, Vinayaka Missions Research Foundation (Deemed to be University), Salem, India.
[2]Associate Professor Department of computer science and engineering, Vinayaka Mission's Kirupananda Variyar Engineering College, Vinayaka Missions Research Foundation (Deemed to be University), Salem, India.
[3]Assistant Professor Department of computer science and engineering, Vinayaka Mission's Kirupananda Variyar Engineering College, Vinayaka Missions Research Foundation (Deemed to be University), Salem, India.
[4]Master of Engineering Department of computer science and engineering, Vinayaka Mission's Kirupananda Variyar Engineering College, Vinayaka Missions Research Foundation (Deemed to be University), Salem, India.
[5]Master of Engineering Department of computer science and engineering, Vinayaka Mission's Kirupananda Variyar Engineering College, Vinayaka Missions Research Foundation (Deemed to be University), Salem, India.
Email id: senthilkumars@vmkvec.edu.in

I. INTRODUCTION

Amainbasis of information gadgetthat be capable ofused to share information with each other is mobile almost available with everyone in the globe. Mobile communication network plays a vital role for mobile devices with computing process capability to access network.With Android, Google successfully incorporated open source operating software, middleware, and an interface to cater to different kinds of user. It uses Android as its support along with GPRS, GPS and GSM services. It may happen that you don't want to receive calls/messages from a scrupulous person; our function allows you to do so without human intervention [5].

For the management of the ambulances on the mobile environment by tracking, task transfer and obtaining Patient Location from Driver End is done by Ambulance Tracking and Task Management System which is particularly designed for this.In 1973, a satellite-based navigation system, the Global Positioning System is a network of 24 space satellites launched by the U.S. Department of Defense. In 1980, the government made GPS accessible to not only for military applications but also for civilians. The GPS works anywhere, 24 hours a day, in nay weather condition.

A human location can be easily traced by GPS exactly at any point of time. GPS not only give the name of the street, it can be able to give longitude and latitude of the person location. However, Android's multi-dimensional features are more appealing to users. The"GPS-based Location Tracking System via Android Device" is therefore proposed, and it uses GPS and android phones to track the location of a person.

II. RELATED WORKS

Authors in [1] discussed ascampus navigation finds importance to assist the newcomer with an increase in College Admissions exercises, training and logical explores organized by universities. In order to address the problem, smart phones being more trendy.In paper [2] considers the rearrangementissue for anarmada of ambulances. This issue is encounter in the ongoing administration of urgent situationof medical services. Alively model is proposed and a unique rescue vehicle the board framework is portrayed.

Authors in [3] discussed that with crises being, sadly, part of our lives, it is critical to proficientlythink out and allotcrisisreactionoffices that conveyviable and convenientrelease to individuals most required. Allotment problems for Emergency Medical Services (EMS) are rooted in finding EMS facility among potential plots to supply competent and viable services over a wide area with a geographically dispersed load. In [4]discussed thatby considering both clinical and logistics issues one of the fundamental issues in case of a principle mechanical catastrophe (fire, blast or harmful gas scattering)is to adequacy oversee crises. From a logistics position of view the motivation of this work is to properlydeliberate onbasic patients from the insistent situation site to the most reasonable emergency clinics.

III. EXISTING METHODS

In this system the patient or third person can call to toll free number and they are assigning driver to attend the patient. In this situation there is devastate of time happens while discussion and also there is big problem to locate location of patient, high way and inside place is very hard to locate patient location. In this situation the patient may have trouble. Tracking device sends information in the form of SMS to the user, which does not give the precise position of tracked vehicle. Accurate place of the tracked vehicle wouldn't not be provided by it. To conquer this framework creator made an answer. Sending SMS and tracking user location are the features supported by existing systems which would have been observed from the existing system. The involvement which creator made resembled locates numerous vehicles area on Google Map. This will be useful for organization to simply track their vehicles. Furthermore, help the association to simply track their vehicles. And assist the organization to bann the criminal operations perform by the vehicle transporter. The limitations imposed are

1. Three way communication may take miscommunication.
2. Location of patient not exact to find.
3. Not timely precaution.

IV.PROPOSED DESIGN

REST APIs which supports IoT which makes different modules to work. Location of ambulance within the 5km radius from user's position is located by first module and alsoapproximately 10 km from the current location of the user, hospitals and its serviceswere located by the same module.GPS hardware device is used to trace the user's site. Latitude and longitudegives the location of user. It is specified by the double value. By executing POST request this location is transmitted to the server. The server matches data with database records, depending on the user's location. The result of the query is returned back to the user after the query is processed in JSON format.

The advantages are no need to search for ambulance by other means, which saves time for the users in case of emergencies. For appropriate patient's treatment, information about various hospitals is provided. The hospital's staff is able to prepare for the immediate treatment of the patient by sending them to the hospital with their current health condition. Hence forth the patient waiting time for the treatment to start is reduced which saves many human lives in emergency situations. Maps provide the Hospitals detail directly and which avoids visit of meticulous hospital's website for information. Improvement of medical procedure is done by Live feeds will helps in cutback patient's life in a successful way.

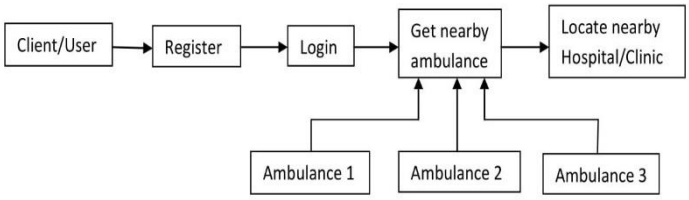

Figure 1: Block Diagram of proposed System

The proposed system helps out the patient to detect the close by ambulance and also to locate the nearby hospitals. The ambulance which is near to the patient is sent if there are multiple ambulances are available in the same locality by comparing the latitude and longitude of the ambulance location to patient location when it is booked by the patient. Once the ambulance reaches the victim spot, the hospitals/clinics available in the same locality is shown by the map which helps the patient to take immediate treatment as shown in figure1.

Modules

A. **User application**

Android was formerly required for user application. On initiationof the app, primary device without human interventionidentify the position of user by GPS. Afterward, a client will have the option of finding close by ambulances and hospitals or to view hospital services based on their need. To the server, this query is sent in JSON format. The server will practice on it and respond accordingly. Responses from the server will also be in JSON format. Upon opening the application, the user can inspect the data in response and plot coordinates or additional information to their request.

B. **Server end**

Work on the server end is planned in such a way as to minimize difficulties.PHP is used for design. In response to a device request, the server parses the data and retrieves the result from the database. A JSON formatted result will be returned to the device that made the request. In each JSON request, information will be sent based on the URL type. POST/GET query is the format of each request.

C. **Global Positioning System**

We can see a habitual update on the gadget whenever it's moving. All of these actions are performed during cloud registration. It's a satellite-based route framework provides accurate time and area data in all weather conditions anywhere on or close to the Earth where there are at least three GPS satellites visible. GPS tracking gadgets have been around for many years, and they combine the ability to track objects with other communication technologies, such as radio broadcast and telephony. As a result of tracking, a central tracking center can monitor the condition of many vehicles or people directly, without needing to transmit that data manually [9] [10] [11].

GPS Based Location Tracking

- Description and Priority: Highest priority as GPS location provider lets you know the exact longitude and latitude of a particular user.
- Stimulus/Response Sequences: Once we request for a location of particular user, that request is sent to a Web Server. Web Server will responds to our request in form of Latitude and Longitude.
- Functional Requirements: On receiving exact values of a Latitude and Longitude, that location is sent to the concerned person via text message using GPRS. REQ-1: GPS service in the Mobile Device. REQ-2: Real Time Latitude and Longitude. REQ-3: GPRS service in the Mobile Device.

V. SYSTEM ARCHITECTURE

Many of you may surprise why ambulance tracking is so significant. But in piece of information 10-second delay may fix on the crucial of a human being. It is notable with the prospect of a crisis emergency vehicle, a rescue vehicle which is utilized to go patients rapidly to genuine consideration in an earnest circumstance room under fundamental medical condition. They have the option to utilize for normal vehicle of non-critical cases, like transfers among medical clinics and nursing homes and mishaps. In many countries, ambulances are given need out and about, in acknowledgment of the way that time is significant while moving a fundamentally sick or genuinely harmed patient. So Ambulances are significantinstruments in aiding EMTs and other talented people on call rapidly show up at an earnest circumstance as well as give possibly life-saving methodology [6] [7] [8].

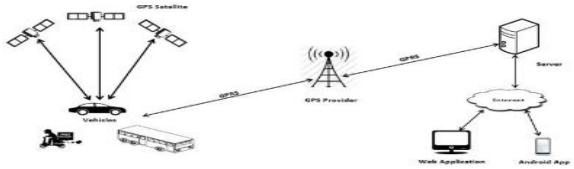

Figure2: SYSTEM ARCHITECTURE

1) Transmitting Unit:

The transmitting side contains an Android phone which has GPS, GSM and GPRS capability. Therefore, the phone will be used as the transmission unit.

A) GPS

GPS represents Global Positioning System. It'sanything but a satellite radio routeframeworkcreated by the Department of Defense (DoD) possessed by the United States Government (USG) and worked by the United States Air Force (USAF) [3]. GPS has given situating, route, and timing administrations to military and regular citizen clients on a consistent overall premise since first dispatch in 1978. An endless number of clients with a common or military GPS beneficiary can choose right time and area, in anys climate, day or night, anyplace on the planet [3].The framework utilizes a medium earth circle satellite group of stars

sending microwave signals permitting a GPS recipient to choose its position, speed and time. Various kinds of situating can be completed utilizing GPS recipients relying upon the calculations; sort of estimations and rectifications utilized in the route arrangement.GPS is a principle module in this Vehicle global positioning framework. As vehicle is followed utilizing GPS innovation. Creator has utilized it to get the specific area of individual vehicles. Be that as it may, to get right area of any vehicle it should be in a focal point of four satellites[12][13].

B) GSM

GSM is a Global System for Mobile Communications. It is created by European Telecommunications Standards Institutes (ETSI).It depicts the convention for Second Generation advanced cell organizations. A GSM modem is remote modem that works with a GSM remote organization. It's anything but a Dial-up modem. The working of GMS modem depends on orders; The Commands consistently start with <AT> (Attention) and get done with a <CR> CRacter.The AT Commands are given to the GSM Modem with the assistance of PC or Controller. In Vehicle global positioning framework creator is utilizing GSM administration for correspondence between every one of the three modules [14] [15].

2) Monitoring unit:

The actual position of proposed vehicles will get to know by the user by a Monitoring Unit (Android Applcation). This android gives the UI through which client communicate with the system. It gives login to the system. The exact location of vehicles is shown in the Google map after login to the system [16].

Tracking Device:

1) GPS satellites are continuously requesting information from the tracking device about its location.
2)The tracking device will also receive the location information from the GPS satellite while it is installed inside the vehicle.
3) Through GPRS, the tracking device transmits the location information to the server and continuously updates the database.

Monitoring Device:

1) Continuous access to the server's database is made by the monitoring device.
2) Google maps will plot the location information from the database.

There are four major smart phone operating systems which rule the mobile world namely, Symbian, Windows, iPhoneOS and Android. With Android, a new and yet dynamically growing mobile platform, nearly all applications can be changed to fit the system's requirements. GPS is one of the notorious applications. With the introduction of mobile technology, GPS has become one of the most widely used and widely developed applications on mobile devices. This will make emergency GPS use a challenging exercise, since there will be no user interaction and this is where ANDROID comes in, by developing an application that will solve the above mentioned problem.

V.RESULTS AND DISCUSSION

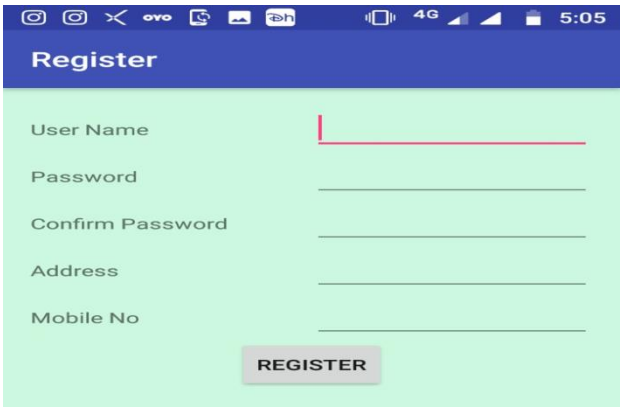

Figure 3: Registration of a Public user

Figure 3 shows that a public user can register in public user application by giving relevant information in the required field.

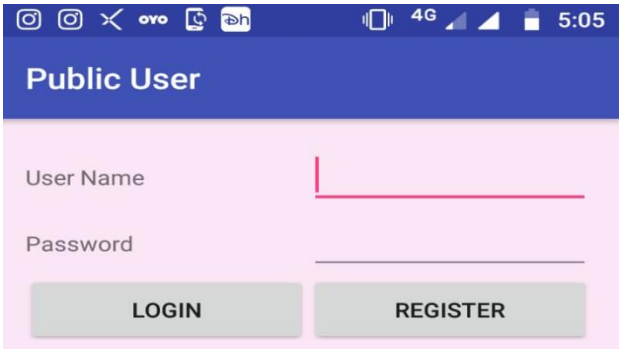

Figure 4: Login of public user

Figure 4 shows that a public user can login by providing user name and password.

Figure 5: Public user request to ambulance driver

Figure 5 shows that a message is sent to driver by selecting “Send” option.

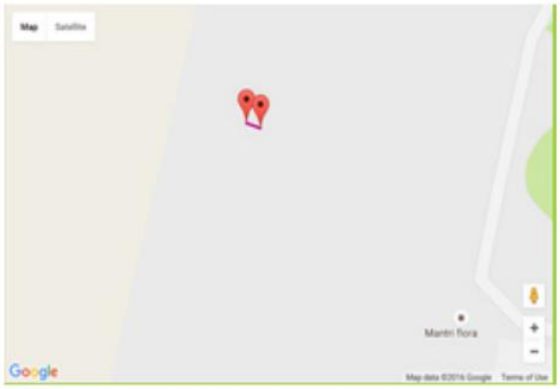

Figure 6: User and ambulance marking

The current location of public user by using Global Positioning System (GPS). Figure 6 shows ambulance and user marking in map. The first one is used to determine the user's location as well as identify a close by ambulance. Since everything would be available at the user's fingertips, many patient lives can be saved since the ambulance can be tracked at any time from anywhere.

Figure 7: Marking of hospitals, clinics and medicals

The second one allows you to find all the hospitals, clinics and medical facilities based on exactly where an ambulance is located, or based on the location of a user as shown in figure 7.

VI.CONCLUSTION

There are no longer those old days where ambulances were called to come to a patient's location to take them to the hospital. Implementing this would save lives as everything is at the fingertips of a user, who can track any ambulance from any location. This application could be upgraded into a more interactive one in the future in a way that when accident occurs, users would send a request to ambulance via the cloud, then the ambulance would call the hospital and bring the patient to the hospital in short time, thus saving lives.

The application can be upgraded in the future by making it more interactive in that during registration, a form is given to user's so they can fill out all their medical details and store them in the cloud. As soon as the patient enters the ambulance, the entire medical details that the patient filled out at the time

of registration along with the current patient condition will be sent to the hospital even before the ambulance reaches the hospital in order for the doctors to be prepared to treat the patient and save many lives.

REFERENCES

1. D. Li, M. Liu, J. Zhang and E. Cheng, “An Improved A* Algorithm Applicable for Campus Navigation System”, pp. 581-591, 2015.
2. M. Gendreau, G. Laporte and F. Semet, “A dynamic model and parallel tabu search heuristic for real time ambulance relocation”, vol. 27, pp. 1641-1653, 2001.
3. Xueping Li, Zhaoxia Zhao, Xiaoyan Zhu and Tami Wyatt, “Covering models and optimization techniquesfor emergency response facility location and planning: a review”, vol.74, pp. 281-310, 2011.
4. C. Y. Chen, P. Y. Chen and W. T. Chen, “A Novel Emergency Vehicle Dispatching System”, pp.1-5, 2013.
5. R. S’anchez-Mangas, A. Garc´ıa –ferrer, A. de Juan, and A. M. Arroyo, “The probability of death in road traffic accidents. How important is a quick medical response?” Accident Analysis & Prevention, vol. 42, pp.1048-1056, 2010.
6. Andersson T, Vaerband P, “Decision support tools for ambulance dispatch and relocation”, Vol. 58, pp.195–201, 2007.
7. Coskun N, Erol R, “An optimization model for locating and sizing emergency medical service stations”, vol. 34, pp.43–49, 2010.
8. C.-M. Huang, C.-C. Yang, C.-Y. Tseng and C.-H. Chou, “A centralized traffic control mechanism for evacuation of emergency vehicles using the DSRC protocol,” pp. 1-5, 2009.
9. Mallik, R., Sing, D. & Bandyopadhyay, R., “GPS Tracking App for Police to Track Ambulances Carrying COVID-19 Patients for Ensuring Safe Distancing”, Vol.5**,** pp.181–185, 2020.
10. M. Managuli, A. Deshpande and S. H. Ayatti, "Emergent vehicle tracking system using IR sensor," pp. 71-74, 2017.
11. Raid S. Sarhan, Bahaa T. Shabana, Hazeem M. El-Bakry, “Design of an Efficient Integrated System for Ambulance Management”, Vol. 6, Issue 4, ISSN 2249-071X, 2015..
12. B. J. Saradha, G. Vijayshri and T. Subha, "Intelligent traffic signal control system for ambulance using RFID and cloud," pp. 90-96, 2017.
13. Shantanu Sarkar, “Ambulance Assistance for Emergency Services Using GPS Navigation”, Vol.3, Issue. 9, 2016.
14. Bassey Isong and Nosipho Dladlu, Tsholofelo Magogodi, “Mobile-based Medical Emergency Ambulance Scheduling System”, Vol. 11, pp. 14-22, 2016.
15. Miss Vidya L. Desale, Mr. Sagar E. Pansare, Mr. rahul S. Lahane, “Automatic Ambulance Rescue System”, ISSN. 2349-9745, 2016.
16. Devigayathri P, Amritha Varshini R, Pooja MI, S Subbulakshmi, “Mobile Ambulance Management Application for Critical Needs”, Proceedings of the Fourth International Conference on Computing Methodologies and Communication (ICCMC 2020), PP. 319-323, IEEE Xplore Part Number:CFP20K25-ART; ISBN:978-1-7281-4889-2.