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AN ANDROID APPLICATION FOR INTELLIGENT TRANSPORTATION AND EMERGENCY SYSTEM

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ABSTRACT

An Android Application for emergency system is activated by any client, the request is sent to the corresponding server, then server verify the type of request and connect to the required local area medical server. The medical server has the ambulance driver contact to inform them and select the shortest path to reach the particular accident spot. The main server also connect to the local traffic controller and with mobile agent technology, response is given to the client or use. So that local traffic controller can easily handle the traffic in all emergency situations. It is the application for emergency system. Using this application ambulance driver can exactly known the accident sport with the help of Google map, more over local traffic controller directly interact with ambulance drive, so in this way traffic controller can know ambulance current location from receive GPS co-ordinate from ambulance driver app. Then traffic controller can clear ambulance route.

Keywords: Global positioning system, Global cloud message, Software Development Kit.

I. INTRODUCTION

Portable registering is human-PC communication by which a PC is relied upon to be transported amid typical utilization, which takes into account transmission of information, voice, audio and video. Versatile processing includes the portable correspondence, versatile equipment, and portable computer programming. Correspondence issues incorporate specially appointed systems and framework arranges and additionally correspondence properties, conventions, information organizations and solid innovations. Equipment incorporates cell phones or gadget segments. Versatile programming manages the qualities and necessities of portable applications**.** So we create a mobile application where any user from any location can access it with the help of GPS. The user mobile application gives the exact location of the accident spot.

II. EXISTINGSYSTEM

In Existing System, Public and EMT cannot directly communicate with Traffic Server, in purpose of notifying any Emergency situation. The Traffic Control Officers not able to manage the Emergency Vehicles (Like Ambulance). There is no client side application for notify accident sport. And also there is no interaction between ambulance driver and local traffic controller. It’s a complex system for notifying any emergency process.

DISADVANTAGES OF EXISTING SYSTEM

- There is no application for co-ordinate public, ambulance driver, and traffic controller.
- Ambulance driver hard to know exact accident sport.
- It's a complex system Notify Any Emergency process.

III. LITERAURESURVEY

[1]Comparison of static ambulance location models, over the years, several ambulance location models have been discussed in the literature. Most of these models have been further developed to take more complicated situations into account. However, the existing standard models have never been compared computationally according to the criteria used in practice. In this paper, we compare several ambulance location models on coverage and response time criteria. In addition to four standard ambulance location models from the literature, we also present two models that focus on average and expected response times. The computational results show that the Maximum Expected Covering Location Problem (MEXCLP) and the Expected Response Time Model (ERTM) perform the best overall considered criteria, as the computation times for ERTM are long.

[2]Double Coverage Ambulance Location Modeling using Fuzzy Traveling Time, One of the novel issues of the world regarding the location of ambulance stations within a given area to cover the maximum amount of demand is studied. In this study, the classic version of location problem is improved using the double coverage models so that two radii are considered for covering. Furthermore, the developed study contains the meaningful factors indicating the demand for each patient location covered by each station (vehicle location). In the proposed model, the uncertainty existed in the travel time between the patient locations and vehicle locations have been considered as triangular fuzzy numbers. To solve the proposed model, the goal programming approach is applied in the GAMS software and desired outputs have been achieved. The obtained results represent a significant improvement compared to the past models with uncertainty.

[3]Design and Evaluation of an IOT enabled Secure Multi-service Ambulance Tracking System, Discuss practical problem that is of lack of information shared during transfer of a patient in ambulance to hospital. We provide a solution to this with an IOT enabled ambulance tracking system. Second, we provide a secure protocol for IOT devices specific to the tracking system. The protocol uses implementation of AES-CCM optimized for IOT devices. It provides the basic communication requirements such as confidentiality, authentication and data integrity. The system works in a Server-Client model and we use dual channel to communicate with the IOT module. One secure channel (SMS), through which key exchange occurs, and one insecure (Internet), through which encrypted data is transferred. Finally, we present the evaluation metric of the proposed system including memory footprint and energy consumption.

[4]Deployment and redeployment of ambulances using a heuristic method and an Ant Colony Optimization. The management of pre hospital logistics is addressed by several researchers. That is due to the big impact that has healthcare around the city development. Thus, optimizing emergency traffic helps to smart cities growth. This paper includes coverage problems existing in literature and addresses the ambulance allocation to cover sectors in Casablanca region of Morocco and minimize the lateness of emergency intervention. Our work proposes a comparison between a heuristic method and an ACO ‘Ant Colony Optimization’ algorithm. Instances are given by real data of the existing emergency location in Casablanca region. As a result, the ACO hybridized by a guided local search provides a distribution of ambulances at potential waiting site (hospital and fire station), and minimizes the total lateness of emergency intervention. The ACO gives best results than the heuristic.

[5]Call Ambulance Smart Elderly Monitoring System With Nearest Ambulance Detection Using Android and Bluetooth**.** In the real world, patient has to be monitored by the person present in the home or by the helpers. There is no automatic alerting system being implemented so far. In this paper, the condition of the Patient is fully monitored with the help of Micro-Electro Mechanical System (MEMS), Heart Beat, Temperature and vibrations Sensors that are connected through wireless communication. These sensors, senses the various parameters of the patient and those parameters are monitored by an android phone connected through Bluetooth communication. In case of any emergency Mobile GPS is automatically triggered and the message is sent to the Server via mobile GSM. The Server will calculate the nearest path to reach the Ambulance and also sends an alert SMS to the relatives.

IV. PROPOSED SYSTEM

In proposed system we created the client mobile application; client can notify accident location to main server. Main server gets address of the received GPS co-ordinate for find local area medical server. Medical server stored ambulance driver contacts. Then ambulance driver receive notification from medical server. Notification show exact location of accident sport in Google map. The medical server fined the nearby hospital using shortest path algorithm and share that route to the ambulance driver. And ambulance driver app automatically synchronized with local traffic controller, so traffic controller can clear traffic for ambulance coming route. This will make the ambulance to reach the hospital in short period of time.

ADVANTAGES IN PROPOSED SYSTEM

- Ambulance driver can easily know exact accident sport.
- Public and EMT(emergency medical technician) Directly Communicate With Traffic Server
- Time consumption.

V. FEATURES

1. Every user can share the information about the accident location without any hesitation.
2. Ambulance will reach the accident spot quickly and correctly.
3. The server can monitor the current location of the ambulance.
4. The medical server fined the shortest distance hospital and share to the ambulance driver.
5. Ambulance driver can also reach the hospital quickly and speedily.

VI. DIJKSTRAS ALGORITHM

1. Function dijkstra(graph,source)
2. Dist[source] = 0
3. For each vertex V in graph
4. If V ≠ source
5. Dist[V] = infinity
6. Add V to Q
7. While Q is not empty
8. While Q is not empty
9. V = vertex in Q with min dist[V]
10. Remove V from Q
11. For each neighbor U of V
12. Alt = dist[V] + length(V,U)
13. If alt < dist[U]
14. dist[u]= alt
15. return dist
16. end function.

VII. ARCHITECTURE

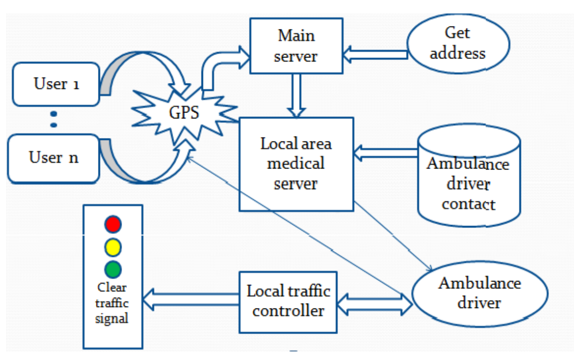

Figure.1.Overall architecture of the system

The user can register in the android application provided to all users mobile. The user can click accident button present in android application when any accident occur or in any emergency case, so that the current location of the user is send to the main server through GPS connection. The main server gets the address of the accident spot and intimate to the local area medical server. The medical server has all the ambulance driver contact. So that information will be informed to the ambulance driver. The medical also find the shortest path from current accident location to the nearby hospital and these details was send to

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the ambulance driver. The traffic controller can automatically synchronize with the ambulance driver and the traffic controller can clear the ambulance upcoming route.

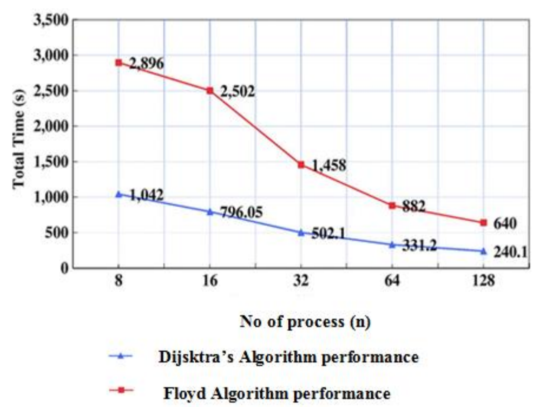
VIII. ORDER OF THE ALGORITHM

Time complexity is a function describing the amount of time an algorithm takes in terms of the amount of input to the algorithm. "Time" can mean the number of memory accesses performed, the number of comparisons between integers, the number of times some inner loop is executed, or some other natural unit related to the amount of real time the algorithm will take.

Space complexity is a function describing the amount of memory (space) an algorithm takes in terms of the amount of input to the algorithm. We often speak of "extra" memory needed, not counting the memory needed to store the input itself. Again, we use natural (but fixed-length) units to measure this. We can use bytes, but it's easier to use, say, number of integers used, number of fixed-sized structures, etc.

IX. PERFORMANCE EVOLUATION

The performance of the project was calculated by comparing the Dijkstra's algorithm with Floyd algorithm. In this comparison if the number of nodes in graph increases then the time taken to find the shortest path to reach the destination increases by Floyd algorithm. But the time taken by the Dijkstra's algorithm to compute the shortest path is minimum. Hence it has high performance.



Graph 1. Comparison between Dijkstra's and Floyd algorithm.

X. SHORTEST PATH [DIJKSTRA'S ALGORITHM]

In order to find the shortest path from source node to destination node, we implement dijkstra's algorithm. The following graph shows the number of nodes and the weight from each node. There are eight total nodes. The first node always acts as source node where it is the location the accident occurs And all other nodes are the destination nodes such as hospital location.

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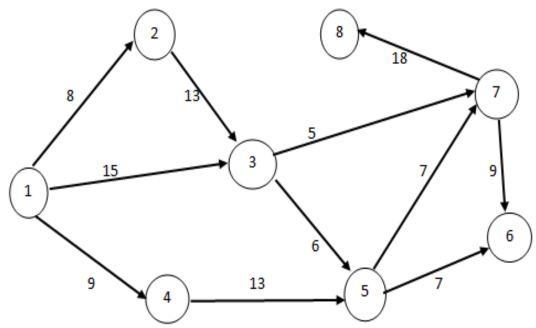

Graph 2. Shortest path graph

The shortest path calculated between source and destination node are mentioned in the below table **(Table.1).** It shows the shortest path from source node (1) to all destination nodes.

SOURCE NODE	DESTINATION NODE	DISTANCE	PATH
1	1	0	-
1	2	8	1-2
1	3	15	1-3
1	4	9	1-4
1	5	21	1-3-5
1	6	28	1-3-5-6
1	7	20	1-3-7
1	8	38	1-3-7-8

XI. CONCLUSION

The key idea of developing this module is to provide timely help to the patient and people in critical situation. An alert message about patient's condition is sent to the care giver for immediate help. A prototype of the system has been successfully designed and tested for the same. The information about the location where the accident has held can be send to the server so that the ambulance can reach the spot as soon as possible without any delay.

XII. FUTURE ENHANCEMENT

Future scope of this project can be planned by using some of the similar concepts used in this project. In order to save lives there are many other factors which can be taken into consideration. Traffic is one of the most serious issues faced in day to day life. This can create delay for the ambulance to reach the hospital. Traffic police can help in this if they know the ambulance's current location in advance. For the same, traffic police will be provided with an application which shows the current location of ambulance through GPS. Henceforth, traffic police will be able to clear the traffic in prior making way for the ambulance. And also all the persons details such as name, attar card number, phone number, blood group etc are stored in database of medical server. In an emergency case if the patient needs any blood so this may be notified to all the persons.

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