Providing Assistance in an Emergency Situation

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Abstract :*Many applications are providing location based services, like Ola and Uber in which they find the nearest ride and allocate that to user and travel to destination. But what in the case of an Ambulance, that is in an emergency situation in such cases we need to find the best path possible so that the patient can be assisted immediately reducing the traveling time to minimum. What A* algorithm does is it connects two paths or nodes together it, while in an emergency situation we need the best path possible we are not challenging to improve the algorithm but we are integrating A* with some repositories just to be more efficient in finding path.*

Keywords :*A*, API, FireBase, GeoFire, GitHub, SQL*

I. Introduction

After reading the abstract one may think why to calculate the best path if it's a delay of a minute or two it is fine even when the user is in a hurry. But as we have seen many cases or medical cases where a delay of sec could lead to someone's life. Also we are living in the world of optimization where the user company and organizations needs everything in an optimized way, so we are merely writing an optimization of path findingtechnique.

In our application in which we provide service to user in an emergency situation we are basically contacting the nearby ambulance, fire, police patrolling drivers so that they could provide their best service and in serving our society.

Talking about facts and figure about need of this technique we found that 70% of the total calls are unanswered and when talking about the figures it evaluates to 1.97 lakh of user specifically targeted in Maharashtra and Madhya Pradesh out of which most cases are of pregnant women. Also ambulance getting stuck in traffic or hospital not being equipped with prior services lead to a huge amount of human death and is not covered in many news media.

Aged people unaware of technology when get stuck by some medical condition usually can't find any help, cases have been seen where there are almost 85% of people are home alone or find difficult to inform nearby people or family members.

Having an Android app which get triggered through a button calling ambulance services immediately by forwarding locations through Google Api would be a boon to this society. Also found in the data of All India Institute of Medical Science AIIMS 28% of her are not being provided with ambulance hence reaching them through our application would be really helpful and this would educate the slum as they would be equipped with android phones.

To remove the problem we are currently facing with direct contact of the user and ambulance service provider. Developing a pure android based application using Google repositories and Github repositories of high end Api's could creating a useful application assisting user in almost every emergency situation. Continually sensing user location through google API's. Also using GitHub repository like GeoFire for storing location with string keys for latitude and longitude makes GeoFire a lightweight application with realtime database like firebase or sql. This solution could significantly improve location services and make application lightweight as well as developer friendly.

Applications like Ola and Uber are using Google repository but as they have a business model and a totally other domain they do not take care of the tie required to reach the destination as this would only make their application bulky because o integration of third party application. Also developing their own solution is also not required because while travelling no one minds a delay of minute of one or two.

Summary of Contribution
- No emergency service applicationavailable.
- No immediate assistanceavailable.
- Ambulance driver getting unpaid from emergency helplines due to lowturnover.

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II.   Related Work

According to a news report around 4.7 lakhs of emergency calls only 1.7 lakhs of calls are answered. The emergency calls are made to National Helplines like 102 108. 102 is registered for providing assistance to pregnant women's, and 108 being fire Helpline no also 110 has been introduced by the current government as Emergency number for every situation but still do not help in all cases.

Reports have been found depicting that calls are made to call center where there is no one amiable t answer the call, this is due to low wages provided to the workers and lack of skills to answer and forward call to localservices.

The funds raised by government are utilized for personal use rather than improving services like this. This leads to thousands or even lakhs of death per year in India.

In this world of growing technology where everyone is using a smartphone, constantly contacting with each other on social media calls and other stuff. We found that this could also be used in an Emergency situation. Also searching the web and play store even third party apps there is not even a single application available which aids in an emergency situation.

There are applications which provide remedy or provide symptoms of a disease but are not as much useful unless they guarantee to aid their users like Doctors. Therefore the only option user is left with is to visit hospital and consult doctor. Apart from this Google and third party developers are working on location based services .Google itself is providing hundreds of API's for location dependency application, thus by combing this things we found that we can develop an application that reduces the manual overhead totally and make thing good from worse. This could be done using services of Google and third party repository available in GitHub combing them altogether and making a single app which could help user in almost any emergency situation. Situations could be Medical emergency, Accident emergency, Fire emergency and Police emergency in case of burglary fraud murder etc. User could trigger the application and select the type of services to inform. In case of medical emergency the wages of driver would be automatically e-paid by user thus increasing employment and this would also remove the manual overhead. Thus we can make this as a national application which would improve our recognition in world market. A single application that aids in almost every services.

Later on we found that many NGOs are also willing to help by providing their vehicles and support. Further National NGOs like Robinhood Army and Care are willing to work and collar with this. This would be a boon to Human society.

III.   Methodology

In case of emergency user will trigger the application to find the nearest service available. Application will use A* Algorithm to find the nearest available service in real time. Thus by calculating the best path user will be aided in an inevitable. A* Algorithm is one of the best and popular technique used in path finding and graph traversals. And to find the Location of Ambulance we use GOOGLE MAP APIs. Google APIs is a set of application programming interfaces developed by Google which allow Communication with Google Services and their integration to other service. Example of these include Search ,Gmail, Translate or Google Maps.
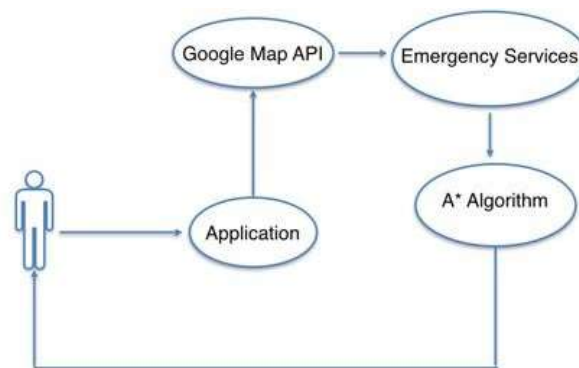

Figure: 3.1 Data Flow Diagram

IV.   Implementation

We stated that there can be an application that can provide assistance in an emergency situation, situation could be medical where there is a patient and needs ambulance so by triggering the application the service can be made available. Also in the meantime we stated that service would be as fast as possible,

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application will find the nearest ambulance and then by using some algorithm it would find the best path to reach the hospital in case.To achieve this we need the accurate update of user location and also when user triggers the application , application should find the nearest available ambulance. for this purpose to achieve we need concurrent access to driver location also. Hence we have used GEOFIRE Api which helps us in getting continuous location of the mobile phone.

Now we have the location of ambulance as well as the patient, no we need to connect them using certain sort of logic but the major prom here is database to store this for this we need realtime database and we have used Google Firebase, a relative database where we are storing the Id of customer and driver the available drivers are under different category and working drivers are under different category so we don't mess up between them. Basically we have created a User under which two Childs are present customer and driver now under customer again we have two Childs customer request and customer and same goes for driver we have drivers available and drivers working. And under each category there are Id present which also have child like latitude longitude and email, so whenever a customer logins inside application realtime database gets the customer id under customer and when customer issues a request for service the same id is placed inside the customer request category, so when a driver is logged in the driver id is present inside drivers available and when a driver Is working the id gets shifted to drivers working category thesis how the whole processworks.

The internal implementation includes like when a customer issues a request application checks driver available within 1 km if not found the application checks driver under 2 km and keeps growing the km recursively until a driver is found. And when a driver is found database is manipulated as stated above.

We have used google maps for the map purpose and certain google apis that are available for connecting path between two locations. For authentication of a user we have used harshitramani98@gmail.com and password method, by default provided by google. This is how combining different Apis and adding certain implementation we can save lives.
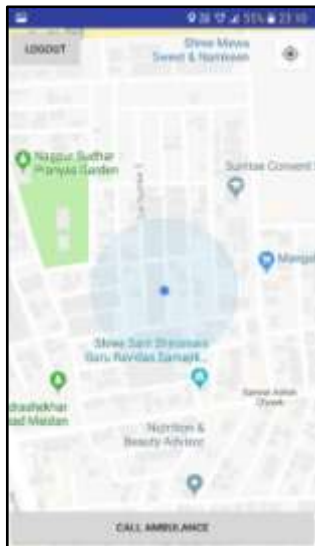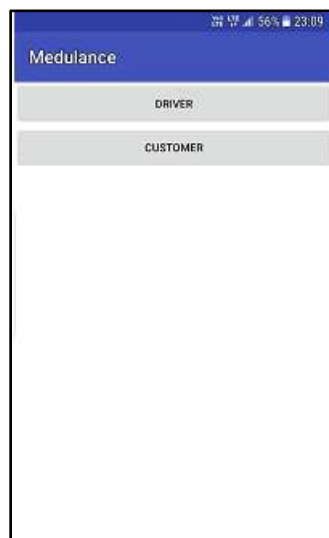

Figure :4.1 Logging Module   **Figure : 4.2** map activity

V.   Results and Discussion

Thus the Application developed will provide many benefits to all the stakeholders such as it is beneficial for users in case of emergencies as will saves time and this application will also provide more job on-time for ambulance providers. Traffic sensing technique will shift the control to nearby driver and this will provide the help more quickly. The special key will reduce the effort of registration or any other procedures to access the app.

VI.   Conclusion and Future Scope

Thus we can say that a minor optimization in finding path and updating database could be made just by adding a third party support to an application. And if A* is combined with such repositories it adds performance by a bit but is greatly required many emergency cases.

In this project, an idea to save patient's life in faster way possible was proposed and implemented

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successfully.

Future Scope:
- Integrating various NGOs which will be providing variousfacilities.
- Optimizing the current algorithms used to reduce the in app time for findingservices.
- Although application will always need an update accordingly through changing api and repository updates also making the application more user friendly and optimized.

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