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SAVELIVES: AN ANDROID HEALTHCARE APPLICATION

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ABSTRACT

We are designing an Android application named SAVELIVES - AN ANDROID HEALTHCARE APPLICATION FOR RESCUE that will be beneficial for peoples to help other peoples who are suffering from incident like accident and other emergency cases like heart attack. The app is also beneficial for peoples who are not able to visit hospital in this covid pandemic. The main purpose of this application is to remotely communicate. Covid-19 epidemic across the country, many people are unable to go to the hospital or clinic because of the spread of the virus.. Remote consultation has been shown to be important as a way to support vulnerable patients with COVID-19, reduce pressure on inpatient care, and maintain access to standard services. While remote consultation may not fully replace face-to-face consultation, it is an inexpensive and effective way to allow access to care that was promoted long before the current epidemic but is rarely available in most systems. The continuous development of remote consultation infrastructure can create greater capacity for programs to help prevent future shocks while also ensuring that forums are designed to protect patient privacy. Our application is designed to give you the best experience while you talk to a doctor anywhere in India. This way, you'll be diagnosed professionally at the convenience of your own home

Keywords: Remote Consultations, Digital Health, EHR : electronic health record, GPS : Global Positioning System, HLRs: Home Location Registers, MSC : Mobile Switching Center.

1. INTRODUCTION

There are two main use of the application savelives.

One is to help other peoples who are suffering from incident like accident and other emergency cases like heart attack: there are two scenarios in emergency case first one is accident and the second is heart attack or any other medical emergencies.

In the first scenario of accident app will suggest nearby hospitals or police stations for help by. This app will display a list of 5 nearby hospitals located a short distance from the scene of the accident. Then the user has to choose the best options based on his comfort in the suggested list. After selecting a specific hospital, the application will send a text message with a help message and location. The request will wait for a response from the selected hospital for a limited period of time. If selected hospital does not respond to that message then the selection will be shifted to another nearest hospital and so on. On the other hand, the same message will be conveyed to the police station. The application hides the user's phone number to avoid problems related to police cases and user privacy.

- finding out the location using the Algorithms.
- Google API provides location.
- find out list of hospital
- Using min-max algorithm Sort in ascending order
- end Image and location Information to hospital.

In second scenario of medical emergencies like heart attack etc. app will suggest nearby hospitals Application will display the nearest hospitals list of 5 with distance with the location of user. Then the user has to choose the best options based on his comfort in the suggested list. After selecting a specific hospital, the application will send a text message with a help message and location. If the hospital respond to the user the app will connect the hospital's doctor via video call through which doctor will able to help the patient until they reach the hospital. The app will provide the shortest path to reach the hospital using shortest path algorithm.

The second one is to consult with doctor via video call- Since the beginning of the pandemic, Digital Health technologies have been implemented and increased their usage. savelives is a part of the concept of Digital Health. savelives uses information- and communication technologies (ICT) involving technologies to treat, evaluate and diagnose patients from a distance through consultations and appointments via phone and video call. .Long-term consultation preceded the COVID-19 epidemic, and the potential for digital tools to improve access to services has long been recognized, especially as a means of overcoming the shortage of health workers in remote and rural areas and improving access to active patients. mobility or mental health problems. Evidence has also shown that long-term consultation can be more expensive compared to conventional care, especially conventional treatment for people with chronic conditions and those living in remote areas, while safe, efficient and achieving the same patient outcomes and

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improved patient satisfaction. However, before the COVID-19 pandemic, technological challenges, professional scepticism and ethical, financial, administrative and legal barriers had limited the uptake and use of remote consultations, ensuring they accounted for a limited proportion of patient consultations

2. METHODOLOGY

We are proposing an application that will make convenient for people to consult with doctor without visiting hospital during this covid pandemic. The user will take appointment with doctor with the help of app. There will an parallel app for hospital and doctor through which the doctor can accept the appointment of patient, after confirming the appointment video link will be generated at appointment time, at doctor dashboard an her will be provided to ensure to keep record of all the patient.

The Application also replaces the current manual processes for finding the location of hospitals in emergencies. The user will send a help message with those photos of the scene and the system will generate a list of nearby hospitals based on the min and max algorithm, providing minimum, or local location information based on the location of the nearby hospitals.. After that the user will send a help message to the hospital and wait for a reply message for a period of time if the user does not receive any consideration at that hospital where the system will automatically forward that help message to the next hospital location and selection will go. until the user receives a reply message.. After receiving positive response from selected hospital, the name of that particular hospital will send to police station by system.

2.1 Pseudo Algorithm

- User Login
- If remote consultation selected:
  - Book appointment
  - Video chat link will be generated at appointment time;
- Else if emergency services selected
  - Find nearest hospital;
  - System uses the min-max algorithm for obtaining nearest Hospital
  - System will Display the List of nearest Hospital's
  - System will Automatically select Hospital of minimum distance from the list
  - System will send help message along with image to selected Hospital.
  - After the certain time limit, system will select second most nearest Hospital if it does not receive any response and so on.
- User can Logout from Application.

2.2 Min-Max Algorithm

- Takes array as a input(array is nothing but list of the distance of nearest location)
- Consider first element of array as minimum value.
- Compare these elements to rest of element.
- Then algorithm checks for minimum value, which must be less than first element.
- If condition is true, it will consider that value as new minimum value.
- Again this new minimum value going to compare with rest of element and so on.
- Finally, we will got the minimum value as final output.

2.3 Manhatten Distance

The Manhattan distance function computes the distance that would be traveled to get from one data point to the other if a grid-like path is followed. The Manhattan distance between two items is the sum of the differences of their corresponding components. The formula for this distance between a point X=(X1, X2, etc.) and a point Y=(Y1, Y2, etc.) is:

$$d\,(x\,y) = |x_1 - x_2| + |y_1 - y_2|$$

Where n is the number of variables, and Xi and Yi are the values of the ith variable, at points X and Y respectively. The following figure illustrates the difference between Manhattan distance and Euclidean distance:

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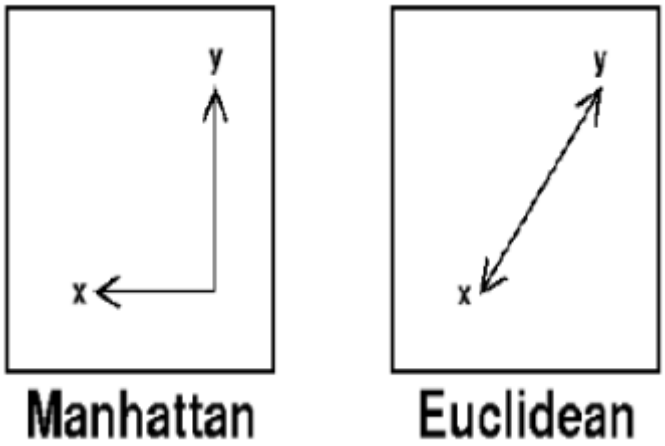

3. TECHNOLOGIES AND HARDWARE USED

3.1 Hardware

To simplify its application we have designed it in such a way that it works even with low end mobile phones that are easily available. The application is developed in Android so android phones are preferred.

3.2 Technology used

Some of the technologies we have used to implement this mobile application are:

Android Studio

Android Studio is the official integrated development platform (IDE) of Google's Android operating system, built on JetBrains IntelliJ IDEA software and specially designed for Android development. It can be downloaded from Windows, macOS and Linux operating systems. It replaces Eclipse Android Development Tools (ADT) as the main IDE for Android application development.

Google Firebase

Google Firebase is a Google-backed application development software that **enables developers to develop iOS, Android and Web apps**. Firebase provides tools for tracking analytics, reporting and fixing app crashes, creating marketing and product experiment.

WebSocket

WebSocket is **a computer communications protocol, providing full-duplex communication channels over a single TCP connection**. The WebSocket protocol was standardized by the IETF as RFC 6455 in 2011. The current API specification allowing web applications to use this protocol is known as WebSockets.

Google Maps Api

The Google Maps API is **one of those clever bits of Google technology that helps you take the power of Google Maps and put it directly on your own site**. It lets you add relevant content that is useful to your visitors and customize the look and feel of the map to fit with the style of your site.

4. CONCLUSION

We are designing an Android application named SAVELIVES - AN ANDROID HEALTHCARE APPLICATION, which is helpful in emergency situation like accidents ,heart attacks etc. . The system will work on GPS (Global positioning system) which finds nearby location based on our current location. Provides default location messages. We'll use Google Maps to find a minimum of two locations based on a small and advanced algorithm that also knows how to show driving directions between two locations.. The app is also beneficial for peoples who are not able to visit hospital in this covid pandemic. The application will help people to get consultation from doctor via video chat. The app will use google firebase database to store all patient data and websocket for communication between doctor and patient.

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