A Report on

Emergency Ambulance Booking App

Submitted in fulfillment of the requirements
for the award of the degree of
Bachelor of Engineering
in
Computers

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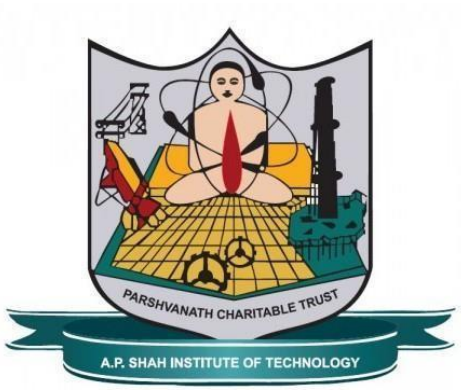

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1. Abstract

Mobile-telecommunication and applications have been intertwined in human society and our culture. While a respectable 64.8% of the Indian population is educated, the numbers shy away in front of the 79.8% of the population who own a mobile device and the numbers have only increased exponentially in the post-pandemic years. But the post-pandemic era has also shone a light on the fragile healthcare infrastructure in our country. Our solution aims to buttress this vast infrastructure by taking advantage of the mobile computing power in the hands of the majority of the people. Our solution is very simple at its core, yet will prove to be very effective. Our proposed android application (taking into consideration the colossal 95.23% android users in India), will serve as a simple interface to book an ambulance in any medical emergency from the nearby hospitals. This application aims to tackle all the problems faced by the common people when they are trying to obtain an ambulance in high pressure situations. Thus this solution will be the fastest and safest way to get an ambulance for any patient on a ticking clock.

2. Introduction

Mobile-telecommunication and applications have been intertwined in human society and our culture. While a respectable 64.8% of the Indian population is educated, the numbers shy away in front of the 79.8% of the population who own a mobile device and the numbers have only increased exponentially in the post-pandemic years. But the post-pandemic era has also shone a light on the fragile healthcare infrastructure in our country. Our solution aims to buttress this vast infrastructure by taking advantage of the mobile computing power in the hands of the majority of the people.

Our solution is very simple at its core, yet will prove to be very effective. Our proposed android application (taking into consideration the colossal 95.23% android users in India), will serve as a simple interface to book an ambulance in any medical emergency from the nearby hospitals. The World Health Organisation has set the recommended ambulance response time as 8 minutes. But the average time in India is way above the limit at 25 minutes. So our solution offers a much more refined, elegant, and rapid solution to minimise this response time.

The application will allow users to choose the location, specific type of ambulance as needed by the patient (a cardiovascular patient needs a different type of ambulance as compared to an accident patient) and the 3rd party ambulance service provider. The application also pings all the hospitals so as to not waste the patient's time in contacting multiple hospitals to check for vacancies. And most importantly, the app provides a live-tracking feature for the ambulance which is a relief in a highly stressful situation. The app will also feature an emergency button where even unregistered users will be able to call an ambulance to the very nearest hospital in the most dire situations like an accident. The application will track the unregistered user's IP to prevent misuse of this feature. There will be another interface for the 3rd party ambulance service providers to receive ambulance requests, and allocate the proper type of ambulance and a driver. The last interface is

for the driver who will have a live updated map with the shortest route planned out to the patient's location and then to the hospital.

This application aims to tackle all the problems faced by the common people when they are trying to obtain an ambulance in high pressure situations. Thus this solution will be the fastest and safest way to get an ambulance for any patient on a ticking clock.

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3. Objectives

- Buttress the vast healthcare infrastructure by taking advantage of the mobile computing power in the hands of the majority of the people
- Simple interface to book an ambulance in any medical emergency to the nearby hospitals
- The World Health Organisation has set the recommended ambulance response time as 8 minutes. But the average time in India is way above the limit at 25 minutes. So our solution offers a much more refined, elegant, and rapid solution to minimise this response time
- This solution will be the fastest and safest way to get an ambulance for any patient on a ticking clock

4. Literature Review

- Healthcare is an information intensive industry. As noted by Cho and Choi (2003), the healthcare industry is facing constant challenges to provide healthcare professionals access to patient information wherever and whenever it is required. They say this access can be achieved through mobile computing [1]
- Several recent studies have discussed the use of Personal Digital Assistants (PDAs) to document healthcare services at the point-of-care [2, 3, 4, 5]

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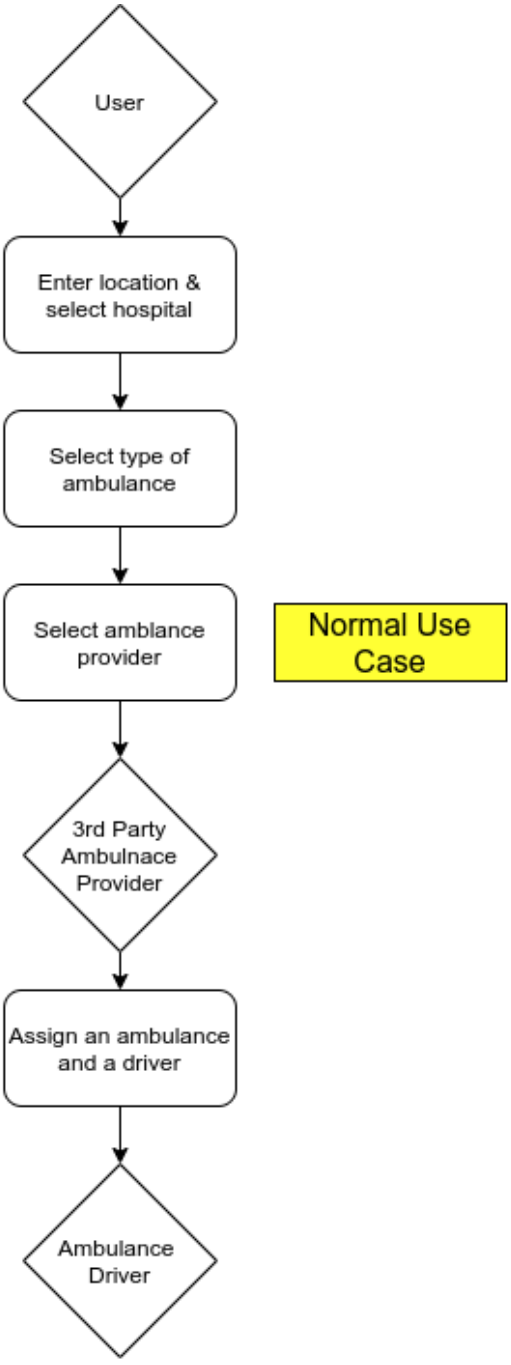
5. Problem definition

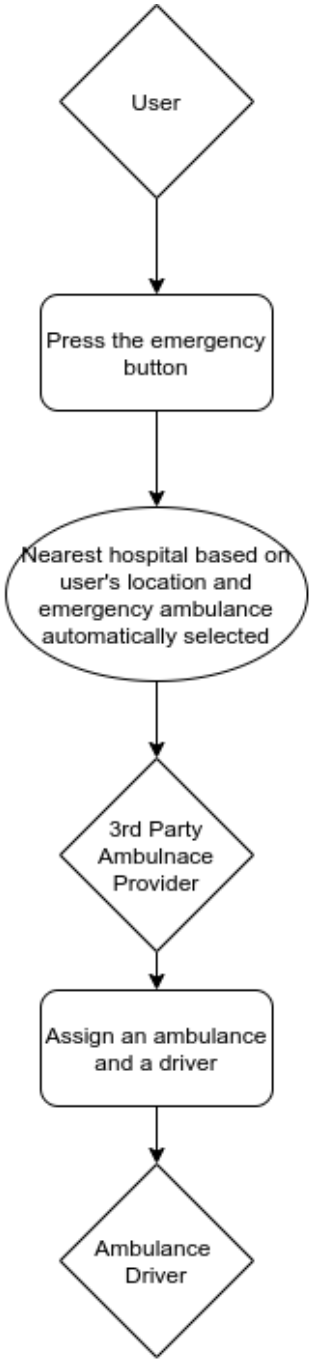
The World Health Organisation has set the recommended ambulance response time as 8 minutes. But the average time in India is way above the limit at 25 minutes; that too in urban cities. The unreliability of ambulance services and the tremendous delay in arrival of an ambulance is fatal for over 30% of the accident cases and over 50% of heart attack cases. This mainly results due to no channels of communication between the patient, 3rd party ambulance service provider and hospitals. Due to location unawareness, there is a considerable delay by the ambulance driver to reach the patient.

6. Scope & Methodology



Normal Use Case

6.a. Flow of app in normal use-case



Emergency

6.b. Flow of app in emergency use-case

6.a. Normal use-case

In the normal use case a user can book an ambulance for anyone at any location. Once the location is entered, they will see the list of hospitals in their pincode and can select their destination hospital.Then the user will select the type of ambulance they need. A list of ambulance service providers will be shown who offer that type of ambulance and users can select any one. After the booking is done, the ambulance provider will assign an ambulance and a driver from their fleet. The driver will see a live updated map on his mobile to assist them with the shortest path to the user's location and then to the hospital

6.b. Emergency use-case

In an emergency case, the user just clicks on the emergency button, and directly an emergency ambulance is called to their current location and they are escorted to the nearest hospital. This is specifically for accident cases where every minute cna mean the difference between life and death

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Technology Stack

- Java 8 (Application Backend)
- Python (Loosely Coupled Services and APIs)
- XML(Application Frontend)
- Google Cloud: Firebase (Authentication, Firestore, Cloud Functions & Analytics)

Benefits

- 1 in 10 patients die en route to the hospitals in India. According to the National Crime Records Bureau, nearly 24,012 people die each day due to a delay in getting medical assistance.
- The World Health Organisation has set the recommended ambulance response time as 8 minutes. But the average time in India is way above the limit at 25 minutes.
- So our solution will be the perfect application for the 95% of the Android users in India to help better integration of 3rd party ambulance services, hospitals and patients to mitigate the above mentioned problems.

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