



TraumaRapid (Emergency Hospital Booking System)

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Abstract: The Trauma Rapid application is a comprehensive healthcare management tool designed to provide critical assistance during emergencies and improve overall healthcare access. Its primary objective is to swiftly connect patients in distress with emergency services and the nearest hospitals through seamless integration with Google Maps. This integration allows the application to expedite the dispatch of ambulances and trigger SOS alerts when urgent assistance is needed. Users of the application include doctors, patients, and ambulance drivers.

Key features of the app include its ability to pinpoint and direct users to the closest medical facilities, optimizing response times and saving crucial minutes during medical emergencies. Beyond emergency response, the application offers a convenient platform for scheduling non-emergency medical consultations, encouraging proactive health practices. Doctors can register, manage appointments. Additionally, the application integrates a blood bank contact and police station contact, broadening its utility to address healthcare and safety concerns. Users can seek blood bank services and report emergencies to local law enforcement, making the Trauma Rapid application an indispensable tool for ensuring the well-being and safety of individuals in critical situations and their ongoing healthcare management.

Index Terms - doctors, patients, hospitals, ambulance services, blood banks, police station, Google maps.

I. INTRODUCTION

In today's fast-paced world, unforeseen accidents and medical emergencies are an unfortunate reality that individuals may face at any moment. When confronted with these critical situations, the importance of rapid access to emergency medical assistance cannot be overstated. The Trauma Rapid application emerges as a beacon of hope and support during these distressing times, aiming to revolutionize the way emergency healthcare services are accessed and coordinated. By harnessing the power of modern technology, particularly through the integration of Google Maps, Trauma Rapid is designed to bridge the gap between individuals in need and the timely arrival of emergency services.

I.1. The Imperative for Improved Emergency Healthcare Access:

Every second counts in an emergency, and swift access to emergency services can be the difference between life and death. Despite the advancements in medical science, the accessibility and efficiency of emergency healthcare services continue to present significant challenges. Patients facing critical situations often struggle to promptly connect with the nearest ambulance or alert the appropriate healthcare providers for immediate assistance [1]. This delay in communication and response time can have severe consequences, emphasizing the urgent need for a solution that streamlines the process of seeking emergency medical help [6].

I.2. The Birth of Trauma Rapid: A Technological Lifeline:

Trauma Rapid was conceived with a mission to revolutionize the way individuals access emergency healthcare services. At its core, the application aims to expedite the critical process of seeking help during an emergency. The vision behind Trauma Rapid stems from the understanding that leveraging technology can significantly enhance the efficiency of emergency response systems. By employing a user-friendly interface and integrating cutting-edge technology, including the powerful capabilities of Google Maps, Trauma Rapid offers a seamless and immediate connection to emergency services.

I.3. The Role of Google Maps Integration:

The integration of Google Maps within the Trauma Rapid application stands as a cornerstone of its functionality. Google Maps provides precise and real-time location services, enabling Trauma Rapid to pinpoint the user's location accurately. This integration empowers users to request emergency services, such as ambulances, with just a few taps on their smartphones. Furthermore, the application utilizes Google Maps to facilitate SOS alerts, ensuring that urgent distress signals reach the necessary healthcare authorities swiftly and with precision.

I.4. Enhancing Connectivity with Nearest Hospitals:

In addition to linking users with emergency services, Trauma Rapid offers a vital feature that connects individuals with the nearest available hospital. The integration with Google Maps enables with the help of haversine formula the application to identify the closest medical facility, guiding users to receive prompt medical attention. This feature is essential for optimizing healthcare outcomes by reducing transit times during medical emergencies and ensuring that individuals receive timely and appropriate medical care [10].

II. USER MANAGEMENT

Patients: The patients must be registered users. If the user is brand-new to the app, they can register by giving basic information like their name, email address, password, etc. After logging in, customers will be taken to the homepage, where they can book an appointment with the specific doctor after viewing the different categories by specialization. The doctor will approve appointment requests and consult patients based on their availability.

Doctors: Doctors can register by providing the relevant information, such as their name, educational background, areas of expertise, work history, registration number, phone number, etc. The doctor can log in using their username and password after successfully registering. The doctor can incoming requests from patients, accept the request and consult the patient [7].

Ambulance: By providing the essential information, such as their name, license number, phone number, vehicle identification number, etc., ambulance providers can register. The ambulance provider can log in using their username and password after successfully registering. The service providers can see the calls for ambulances, accept them, and direct the patients to the hospital. The primary objective is to establish a swift and effective emergency response system, ensuring timely medical care for urgent cases [9]. The study also takes into consideration related systems, typically emphasizing enhancements in public transit rather than focusing on emergency medical services [3]. The app is designed to streamline the emergency response process and improve communication between patients and emergency services [6].

III. METHODOLOGY

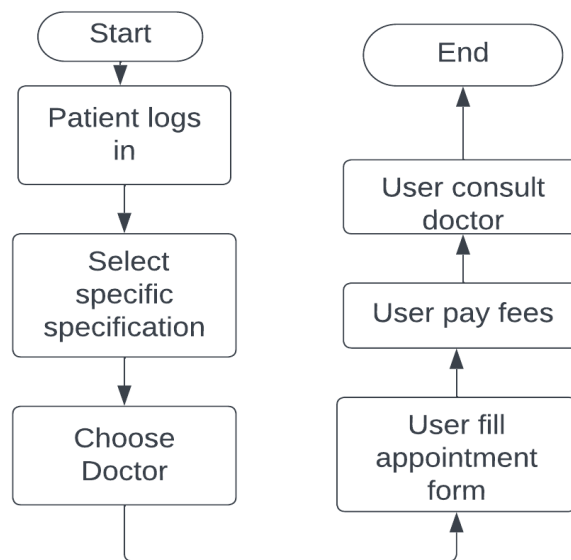


Figure 1. Workflow of Patient Side

Figure 1. illustrates a patient's seamless journey on a healthcare platform. It begins with "Patient login," followed by selecting a specific medical specialization and choosing a doctor from the list. The patient proceeds to fill out an appointment form, request the appointment, and securely pay the fees. This efficient process culminates in the patient consulting with their chosen doctor, ensuring access to timely and quality healthcare. The "End" point marks the successful conclusion of this user-friendly system, emphasizing its convenience and effectiveness in connecting patients with the right healthcare professionals.

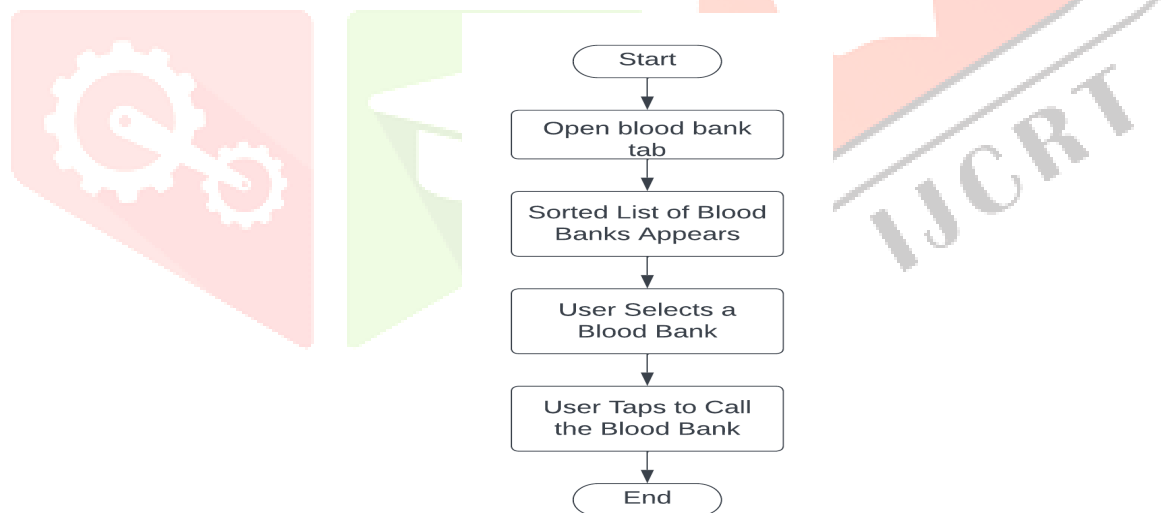


Figure 2. Workflow of Blood Bank

Figure 2. simplifies the user's journey to access vital blood bank information. It all begins with the "Start" point, as users navigate to the "Open blood bank tab." The app then compiles a "Sorted list of blood banks" based on proximity, simplifying the decision-making process. Users can easily "Select a blood bank" of their choice, accessing detailed information such as contact details. The user-friendly approach culminates in users being able to "Tap to call a blood bank," facilitating direct communication for inquiries or appointments. This efficient process streamlines access to crucial blood bank services, ultimately enhancing the app's value. The "End" point signals the successful completion of this user journey.

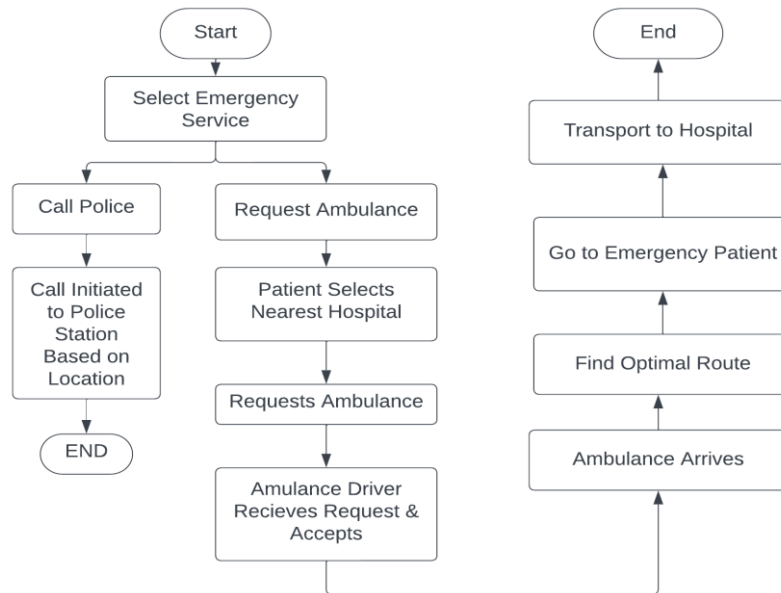


Figure 3. Emergency Flow Diagram

Figure 3. shows simplified process for accessing emergency services, allows users to select a nearest hospital and ambulance type, book an ambulance while collecting user information, facilitates real-time acceptance, communication with ambulance drivers, displays directions, notifies the hospital about incoming patients, and updates both user and hospital upon ambulance arrival for efficient emergency services. In case if emergency ambulance service is not visible, we can call the nearest police station for assistance.

IV. RESULT

The Trauma Rapid application has the potential to save lives and improve emergency response times by swiftly connecting users with nearby hospitals.

1. Emergency Service: Figure 4. shows interface dedicated to urgent situations, enabling users to quickly request immediate assistance or medical help during emergencies.
2. Figure 6 illustrates the specifics of the booked ambulance, providing detailed information on the assigned vehicle and associated details.

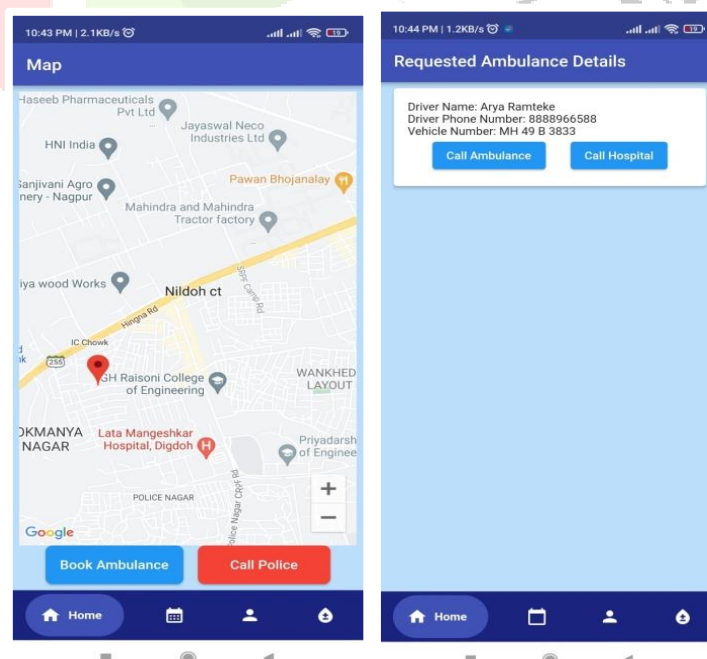


Figure 4. Emergency Service Figure 5. Ambulance Details

3. Doctor Appointment Screen: A user-friendly appointment scheduling page, streamlining communication with healthcare providers, allowing users to set up non-emergency appointments for improved healthcare access.
4. Patient Home Page: Figure 6. shows a welcoming interface displaying essential patient information and access to key features, offering a user-friendly and easy to use and simple introduction to the app.
5. Blood Bank: Figure 7. shows an interface dedicated to urgent situations, enabling users to quickly connect with nearest blood bank.



Figure 6. Home Screen

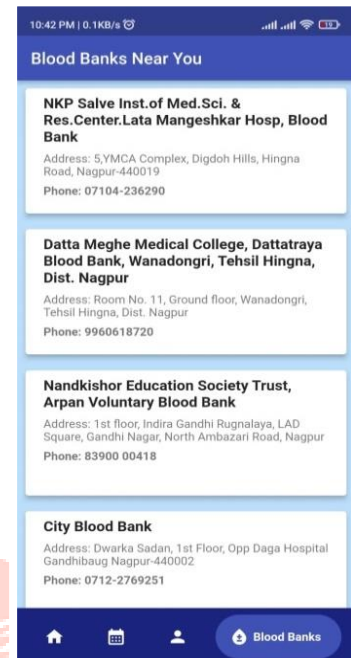


Figure 7. Blood Bank

The integration of Google Maps, Firebase, and Stripe for payment processing as shown in Figure 8. our application significantly enhances its result-oriented functionality. Google Maps provides accurate location services, enabling users to access nearby hospitals and ambulance services quickly, optimizing emergency response. Firebase ensures real-time communication, allowing for immediate ambulance requests and status updates. The Stripe payment integration streamlines financial transactions, enhancing user experience by enabling convenient and secure payments.

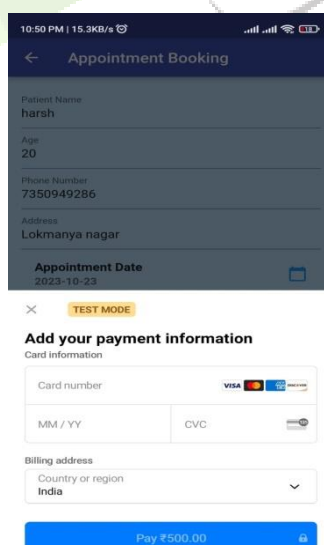


Figure 8. Payment Integration.

V. CONCLUSION

In the realm of healthcare management, emergency response, and user safety. Its primary mission to expedite emergency services, connecting users with the nearest hospitals through Google Maps integration, is a testament to its potential in saving lives and improving response times. By streamlining communication between doctors and patients, it not only enhances emergency healthcare access but also fosters proactive health practices through non-emergency appointment scheduling.

The Trauma Rapid application goes beyond healthcare, integrating a blood bank system and police station contact for comprehensive support. Users can access blood donation services, addressing critical healthcare needs, and connect with local law enforcement to enhance their safety.

VI. ACKNOWLEDGMENT

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REFERENCES

- [1] Mr. Atharva S. Wankhade, M. P. (Issue V May 2023). Doctor Appointment Booking System. International Journal for Research in Applied Science & Engineering Technology, 11(V).
- [2] Hussein, T. D. (22 May 2022). Ambulance Vehicle Routing in Smart Cities Using Artificial Neural Network. 6th International Conference on Advanced Technologies. Canada-Tunisia.
- [3] Sushil Sharma, U. T. (2022, May 5). Ambulance Booking Mobile Application. International Journal for Research in Applied Science & Engineering Technology, 10(V).
- [4] Banswar, Anuj. (2020). An Efficient Approach for Ambulance Tracking System using GPS and GSM. Journal of Physics: Conference Series. 1854. IOP Publishing Ltd.
- [5] Magar, P. S. (2020). Ambutech: Ambulance Booking Application for Emergency Health Response, Blood Inventory. TEST ENGINEERING AND MANAGEMENT, 83, 12068 - 12075.
- [6] Al-khafajiy1, M. (2019). Smart hospital emergency system Via mobile-based requesting services. Multimedia Tools and Applications, 1-25.
- [7] Kumar, S. (2019, September). Effective Online Medical Appointment System. INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH, 8(9).
- [8] S, Kumaran. (2017). A Study of Advanced Hospital Management System. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS, 16(2), 127-134.
- [9] Khalique, V. (2017). Automatic Ambulance Dispatch System via One-Click Smartphone Application. Indian Journal of Science and Technology, 10(36), 1-9.
- [10] Munir, M. W. (2015, May 9). An Android based Application for Determine a Specialized Hospital Nearest to Patient's Location. International Journal of Computer Applications, 118.