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HealthMe: An Android App for Interlinking of nearby Hospitals for Resource Sharing in Emergency

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***Abstract*— Hospitals are exposed to mass causalities, natural disasters, and events. Within a short period, hospitals must provide care to large numbers of casualties in any damaged infrastructure, despite inadequate communications, great personnel risk, and limited resources. During emergencies communication in hospitals play a major role. During emergency situations and in the earliest emergency times, the data regarding the accidents and their true causes are often imprecise. Our application aims at building a communication bridge between Hospitals for Resource sharing in Emergency situations where a patient/relative of the patient can find nearby hospitals and resources available in that specific hospital. Our goal is to provide appropriate health care services during emergencies to the patients.**

Keywords*— Emergency services, health information management, medical information systems, Ambulance Services.

I. INTRODUCTION

This research project undertook sought to develop a mobile application for locating available hospitals near the user in Maharashtra, India. Thus, this research aimed at helping the patients during emergency situations. Earlier Android phones were limited to some people as they were not essential for everyone. During the Pandemic due to online education for over more than a year, Mobile phones are widely used and can be found commonly by everyone nowadays. During emergencies, patients visit the nearest hospital but due to a lack of communication between the hospital and patient, this can be fatal. Several times patients lose their lives in the process of finding out a hospital that has enough resources. Lack of resources is a major con to the lack of proper infrastructure of a hospital. A mobile application might be used for broadcasting the available hospitals near the user along with the doctors available in that specific hospital. Specialization of the available doctors can be displayed which can reduce the efforts of finding specific doctors by hospitals during

II. LITERATURE REVIEW

Before the deployment of this application we have gone through different research papers, this literature review is the summarization of these papers. Dhanesh Sharma et al. (2018) explored that the time-lapse in medical help to accident victims is a concern of increasing urgency in India and other countries. Their application Doctors Nearby (an android app) fills the gap between the doctor and the person in need. It provides the information of all the doctors present in the nearby locality. This app provides the specialists, an OPD doctor, and all the necessary information regarding the selected hospitals, with location and hours. Also, it has a special Emergency button for accidental cases.

Sarandis Mitropoulos et al. (2021) explained the development of the eEKAB, a pilot emergency medical information system that simulates the main services offered by the Greek National Instant Aid Centre (EKAB). Agile methodology was implemented for the production of the eEKAB. eEKAB has 3 main modules: the “On-time Incident Reporting”, the “On-time Arrival at the Incident” and “Transfer to the Health Center”. It reduces the total time of the EMS procedures and allows for easier management of EMS, by providing a better allocation of human resources and a better geographical distribution of ambulances. The analysis shows that the application helps to reduce the response time of ambulances and proves to be very useful to ambulance drivers and the performance of medical system.

Eunjeong Park et al. (2020) deployed that Emergency medical service (EMS) tends to happen in pressured environment, where paramedics is responsible to get decisions for recording information, non-complete data, the restricted resources, and priorities. The EMS necessitates collaborative workflows between patients or carers, paramedics, and community medical facilities. In a traditional EMS, getting the reasons of emergencies and personal medical histories, which are critical for a quick and proper response, is challenging. They looked at the requirements for a smart EMS (SEMS) system and used information and communication technologies to identify the major components in connected care environments.

Michal Gaziel Yablowitz & David Gary Schwartz (2018) explained that Smartphone applications to support healthcare are proliferating. A growing and important subset of these apps support emergency medical intervention to address a wide range of illness-related emergencies to speed the arrival of relevant treatment. The emergency response characteristics and strategies employed by these apps are the focus of their study, resulting in a mHealth Emergency Strategy Index. While a growing body of information focuses on the usability, security, and privacy features that distinguish such apps, research that maps the many emergency intervention tactics and provides assessment markers are also becoming more common. They surveyed an extensive range of mHealth apps designed for emergency response along with the related assessment literature and present an index for mobile-based medical emergency intervention apps that can address future assessment needs of mHealth apps.

III. PROBLEM STATEMENT

Build an android application that builds a communication gap between the hospitals and patients during emergencies. Build an android application that will display the nearest hospital and router to the selected hospital. After reaching the hospital, in some cases, patients are informed due to a lack of ventilators the patient cannot be admitted. So, the patient's family rushes toward another hospital. In this process, many patients lose their lives. To reduce this hassle our application displays all the available doctors in the hospitals. It displays the number of available resources like number of beds, number of ventilators, and number of available staff. Book an ambulance to the nearest hospital in one click. The ambulance booking section will have options to choose between different types of Ambulances such as Basic Ambulance, Cardiac Ambulance, and Mortuary Ambulance. For the people who are busy in their everyday jobs and also want some lab tests but can't really visit hospitals during working hours. Our application brings lab tests to users' convenient locations. A certified practitioner will visit users' selected locations and get all the tests done. The reports of the results will be delivered to their selected address.

IV. OBJECTIVES

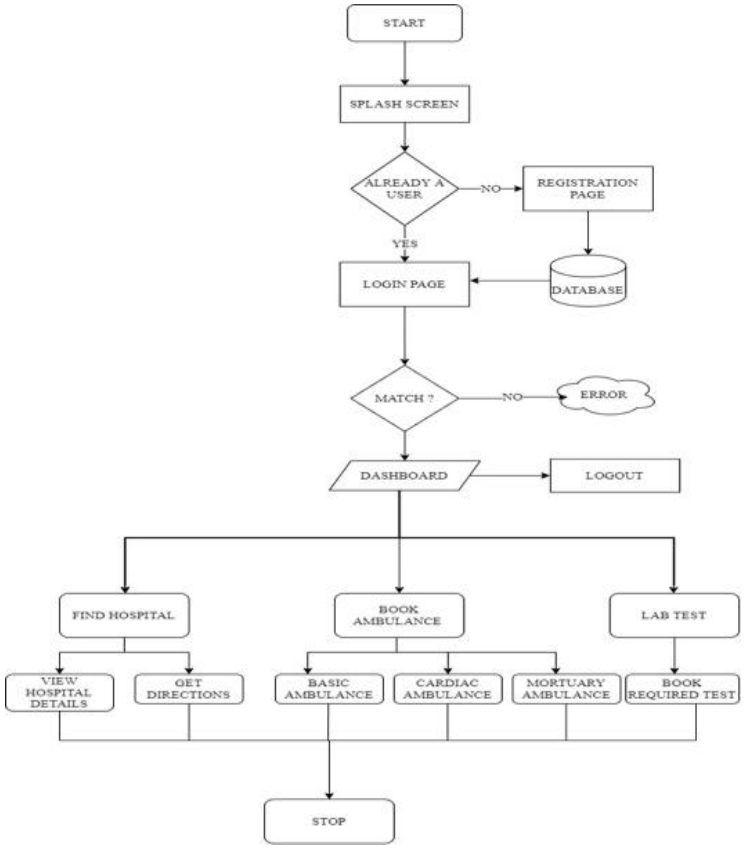
It will have a Splash screen. It will have a registration page for new users. It will have a Login page for an existing user. There will be an option to select the nearest hospital. The selected hospital will display available doctors. It will display the number of available resources like the number of beds, number of ventilators, and number of available staff. It will have a section to book an ambulance to the nearest hospital in one click. The ambulance booking section will have options to choose between different types of Ambulances such as Basic Ambulance, Cardiac Ambulance, and Mortuary Ambulance. A section to book a lab test.

V. SCOPE

It will help in minimizing the communication gap between the patients and the hospitals. It will improve the efficiency of available resources by using them to the fullest. It can reduce the death rate caused due to lack of information regarding available doctors and available resources in the hospitals during emergency situations. It will reduce the hassle of calling an ambulance physically and providing the user's current location since our application uses the current precise location of the user and reduce the time taken in process of booking an ambulance. It will provide lab tests by users at ease at their convenient location and time.

VI. PROPOSED WORK

A. SYSTEM DESIGN



B. SYSTEM ARCHITECTURE

C#:

C# is a modern, general-purpose and object-oriented programming language pronounced as “C sharp”. C# is a simple & powerful object-oriented programming language developed by Microsoft led by Anders Hejlsberg and his team within the .Net initiative and was approved by the International Standards Organization (ISO) and ECMA (European Computer Manufacturers Association). C# can be used to create various types of applications, such as windows, web, various console applications, or other types of applications by using Visual studio.

ASP.NET:

ASP.NET is an open-source server-side web application framework that was designed for web development to build dynamic web pages. It was developed by Microsoft which allows programmers to build dynamic websites, applications, and services. The name ASP.NET stands for Active Server Pages Network Enabled Technologies. The preliminary version being in January 2002 with the .NET Framework is the successor to Microsoft's Active Server Pages (ASP) technology. ASP.NET's successor is ASP.NET Core. It is cross-platform based. ASP.NET Web API, ASP.NET MVC, and ASP.NET Web Pages merged into an MVC which is unified.

Ms SQL:

Microsoft SQL Server is a relational database management system (RDBMS) that supports a wide variety of transaction processing, business intelligence and analytics applications in corporate IT environments. Microsoft SQL Server is one of the three market-leading database technologies, along with Oracle Database and IBM’s. Like other RDBMS software, Microsoft SQL Server is built on top of SQL, a standardized programming language that database administrators (DBAs)

and other IT professionals use to manage databases and query the data they contain. SQL Server is tied to Transact-SQL (T-SQL), an implementation of SQL from Microsoft that adds a set of proprietary programming extensions to the standard language.

SQL Server :

SQL Server is a database server by Microsoft. The purpose of this server is to store and retrieve the data requested by other applications. We can use the same computer to run it or a different computer. A special-purpose programming which can handle data in a relational database management system is SQL. The client-server model defines a database server as a computer program that provides database services to other programs or computers. A SQL Server is a database server that implements the Structured Query Language (SQL). A data centre version is tailored to higher levels of application support and scalability, while the Express version is a scaled down, free edition of the software.

C. SCREENSHOTS

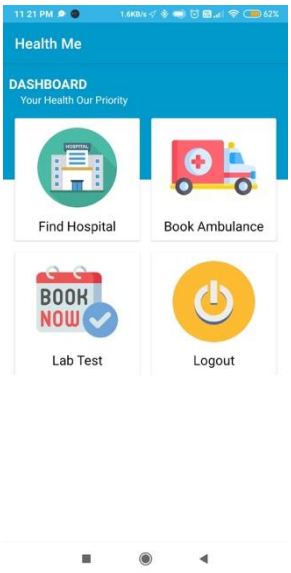


Fig 1. Dashboard

Fig 2. Hospital Module

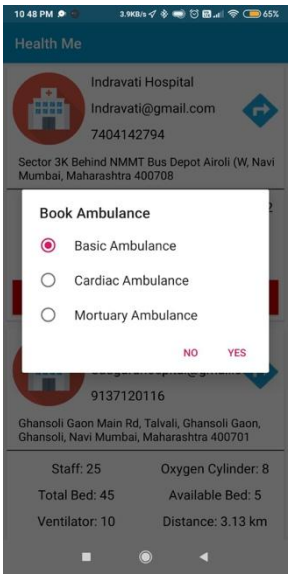


Fig 3. Ambulance

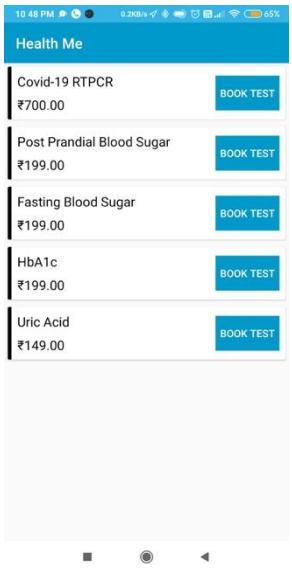


Fig 4. Lab Test

Fig 5. Admin Dashboard

VII. COMPARATIVE STUDY

HealthMe App Features:

1. Find Nearest Hospital

2. View doctors in the selected hospital.

3. View available beds, ventilator, and no. of staff.

4. Book an Ambulance from the user's current location to the nearest hospital.

5. Book lab test with home testing.

Applications:

1. Practo App features:

   a. Video Consultation.

   b. Find doctors listed in Practo services.

   c. Medicine delivery.

   d. Lab test

What makes us different?

- Practo App lists the doctors available only on the Practo app. Our app lists all the hospitals in our vicinity along with available doctors in the selected hospitals.

2. NetMeds features:

   a. Medicines delivery

   b. Cosmetics delivery

   c. Lab tests.

What makes us different?

- NetMeds App forces the user to purchase a package from the list below to access the lab test. Our app does not force users to purchase any plan to access the lab tests.

3. Apollo 24/7 App features:

a. Find doctors listed in Apollo services.

b. Medicine delivery.

c. Lab test

Apollo 24/7 App lists the doctors available only on Apollo 24/7 App. Our app lists all the hospitals in our vicinity along with available doctors in the selected hospitals.

During our comparative study, we figured out that none of these applications lists down the hospitals near the user's location. Nor do these apps provide an emergency Ambulance booking service. All these features are implemented in our mobile application (HealthMe). Even if some features like find hospital and lab test can be found common but their goal is different. These features are provided as per their own firm. Whereas HealthMe aimed at listing all the hospitals and their doctors altogether. Our application allows users to find Ambulance to the nearest hospital hassle-free.

VIII. CONCLUSION

This application intends to help patients during emergency situations. We have implemented features like view nearest hospital, and view doctors available in the hospital. Navigate to the nearest hospital. Book an ambulance through the user's current location. A section to book a lab test. Our proposed application also has an Admin Panel which has access to Manage Hospital, Manage Doctor, Manage Ambulance Booking, and Manage Lab tests. Admin panel controls all the bookings and can add new hospitals and edit the available hospitals. Admin panel can Update and Delete Doctors, and available resources. The latest bookings of ambulances and lab tests will be displayed on the top to reduce confusion and prioritize the latest bookings.

IX. FUTURE SCOPE

In this HealthMe android application, we can give the live location of an ambulance after booking. Live status of doctors can be available. In the future update of this project, we can include online consultation and offline consultation. Medicine delivery with the status of the order with live tracking. Health insurance can be purchased through our HealthMe android application.

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