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Covi-Helper: Hospital Management System

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ABSTRACT: The novel coronavirus (covid-19), which was first discovered at the end of 2019, has affected almost every aspect of modern life. In India, the number of covid-19 cases is constantly increasing. As a result, medical services such as bed and oxygen availability have been put under a lot of strain. Patient numbers have exploded, putting a strain on hospital equipment. The Covid assist web program is critical in preventing a lack of medical facilities during a pandemic. This research focuses on a proposed application that assists in tracking the availability of beds, oxygen, and plasma in various places. In addition, this web application system allows users to locate nearby vaccination clinics simply by searching their cities. This system has a full hospital management system that assists in the care of patients and provides all necessary information about medical services.

KEYWORDS: Covid 19, medical service, healthcare, beds, ventilators, oxygen, web app.

I. INTRODUCTION

COVID-19 is a global pandemic that affects health care and lifestyle all over the world, and early discovery is critical for controlling case spread and mortality. The construction of a COVID-19 spread pattern, analysis, and forecasting in India is proving problematic for national and local authorities. During the covid-19 epidemic, an increase in the number of covid patients combined with a paucity of medical facilities put a burden on medical services. The pandemic of COVID-19 poses a significant threat to healthcare systems. The greatest obstacle these expanding medical systems have ever encountered is COVID-19. It takes a long time to care for COVID-19 patients and deliver treatment. Providing safe and prompt care for COVID-19 patients, as well as proper application of multiple medical tools to protect public safety, is a vital element of this epidemic [1].

Various studies have been conducted to assess hospital capacity in various nations. As a result, it's clear that there's a huge demand for medical tools all over the world. The quick saturation of the healthcare system is particularly likely if there is no rapid availability or supply of beds, ventilators, oxygen beds, or ambulance service. The need for hospitalisation of covid 19 patients is steadily increasing due to a variety of circumstances, including a lack of accurate information about medical services provided by society [2]. People are unable to pay high-priced medical treatments, which has had a significant impact on the economy. Recent technology, such as a web-based application system, can analyse the strain on the healthcare system and can also assist in the establishment of a complete health service environment for people who are currently experiencing issues such as a lack of beds, oxygen, contact tracing tests, and vaccination programmes [3].

As a result, the suggested web application is critical for providing long-term service and maintaining collaboration between health experts and the public. The major goal of this work is to demonstrate the covid assistance web application, which is a Covi-Helper website. The initiative goal is to build this proposed web application system as a website to solve a problem of finding availability of beds, ventilators, plasma, etc medical services in various cities during covid pandemic [4,5].

III. RELATED WORK

In the American journal of emergency medicine, the role of emergency medical services in containing COVID-19 was described. In the event of a covid pandemic, medical assistance will be required immediately. This article focuses on covid 19 research, and the present limitations of medical services related to covid 19. The function of medical services in Covid 19 was thoroughly examined in this paper. This page may assist in comprehending the impact of the pandemic on medical facilities, as well as how to ensure that all medical treatments for covid patients are available during the epidemic [6].

Farrugia, Gianrico, and Roshelle W. Plutowski analyse the innovative outcomes of the COVID-19 pandemic in their essay " Innovation lessons from the COVID-19 pandemic." In this period of pandemic, individuals are constantly

infected with the Coronavirus, which has had a negative influence on both health and the economy. Governments, non-governmental organisations, and health professionals are collaborating to offer individuals with long-term healthcare. This article discusses an innovative digital healthcare solution that is playing an important role in hospital management systems in the fight against the covid epidemic [7].

III. IMPLEMENTATION DETAILS

A. Domain/Software requirements:

This project's domain is web application. The covi-helper website is a user-friendly GUI that displays information about the entire Covid medical service monitoring system using front-end technologies including HTML, CSS, Javascript, and frameworks like React JS. The following is some tool information:

I.A.1 HTML

HTML is a markup language that helps to organise a web page and allows the browser to display it. It aids in the entire management of the website's layout. By moving the code for this section into a different cell, web designers can build various sections and layouts like headers, footers, columns, sidebars, and navbars.

I.A.2 CSS

Cascading Style Sheets (CSS) is an acronym for Cascading Style Sheets. It's a web development tool that works in tandem with HTML to create web pages. The primary goal of this language is to style HTML elements and improve the overall appearance of a webpage by making it more attractive, appropriate, responsive, and aligned. Additionally, Bootstrap is used to make it even more attractive with superb layouts.

I.A.3 Javascript

JavaScript is a powerful client-side scripting language. It helps to enhance the interaction of a user with the net page. In other words, you can make your web content livelier and more interactive, with the assistance of JavaScript. JavaScript has a wide scope of implementation in game development and Mobile application development.

I.A.4 React JS

React is a frontend JavaScript framework that is based on the JavaScript library. It's a free and open-source front-end JavaScript toolkit for building user interfaces with UI components. User interfaces for single-page apps can be created with react js. It's used to manage the view layer in online and mobile apps. We can also construct reusable UI components with React. Developers can use React to build massive web apps that can alter data without refreshing the page. React's major goal is to be quick, scalable, and easy to use. It only works with the application's user interfaces.

I.A.5 Database

There are two modules in the coding lab system: front-end and back-end. The front-end is responsible for creating user-friendly web pages that contain all the necessary information regarding medical services. Back-end technologies like firestore are used to create this system, which functions as a database to store all of the information about the hospital and its medical services.

B. Description of the Proposed System:

The suggested system is divided into two modules: a hospital module for hospital administration and a user module enabling users to visit websites and track medical facilities. The following are detailed block diagrams for the project's various modules:

I.B.1 Hospital Admin System

The hospital must register on the covi assistance website to use this technology. The hospital can register for this website using a login and sign up authentication process supplied by the website. Hospitals can display their medical services on the dashboard after registering, as well as manage their administration.

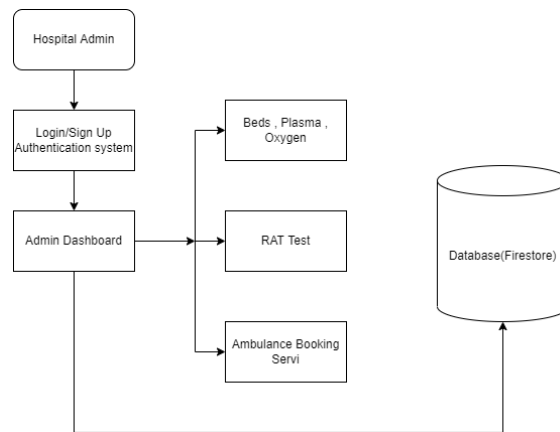


Fig. 1 Block Diagram of Hospital Admin System

I.B.2 User Side System

This module is about the user side, where individuals can utilise city names to look for the availability of beds, ventilators, and other items. The dashboards of several hospitals are exhibited in their entirety. Filtering can also be used to identify specific types of medical services, such as plasma availability, ambulance booking, and so on.

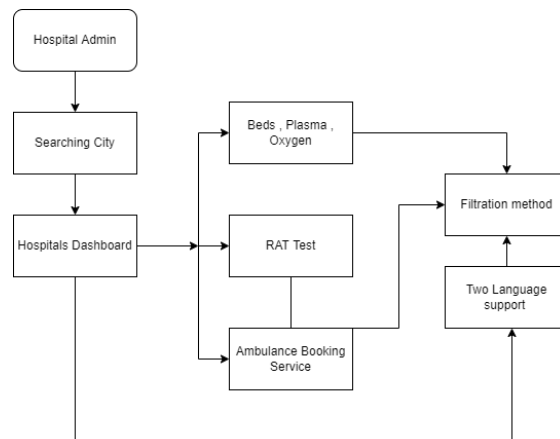


Fig. 2 Block Diagram of User Side System

C. Feature/Characteristics

This proposed system has various types of functionalities which are convenient and user friendly. This system has the following features through which people can use the medical services of different hospitals. The following is some features mentioned:

- Hospital Management System: It consists of a hospital dashboard which displays the different medical services for patients. People come to know about the facilities of a particular hospital by searching hospital in the city
- Beds, plasma, and oxygen availability tracker: People are able to track the availability of beds, plasma and oxygen in different hospitals across various cities.

Facility of Rapid Antigen Test: People can find RAT test facility center hospitals through this website. This will be helpful for covid patients for the early detection covid 19 viruses.

Finding nearest vaccination centers & booking of ambulance service: Through this website, people can find the nearest vaccination center in their city. Along with that in such a pandemic of covid-19, people suffering from covid can also take the facility of an ambulance. As a result, this system has provided ambulance booking service.

Functionality of filtering the medical data according to need: This system has a filtration method, so that people can filter the information according to their need.

Two languages support English and Hindi: This website has support for two languages like English and Hindi.

D. Working

People can use this website to find out if there are any beds, ventilators, or other medical services available by searching for a hospital in their city. This website allows hospitals to register and login to access information such as their name, address, contact information, beds, plasma, and ambulance service information, as well as display their medical services to the public. Through their login system, hospitals can update their medical data daily, such as the number of ICU beds, oxygen beds, and so on.

In addition to this, people can send feedback to the hospital about their medical service. Integration of google maps helps people to track the exact location of a hospital from their current location. Also, this website is supported with two languages like English and Hindi.

IV. RESULTS AND DISCUSSION

The project's end result can be seen in the implementation results. This proposed system is a web-based application that satisfies the user's requirements. The following are some screenshots of the application, along with their descriptions.

Home Page: The home page of the web application with a hospital login system and user system is this.

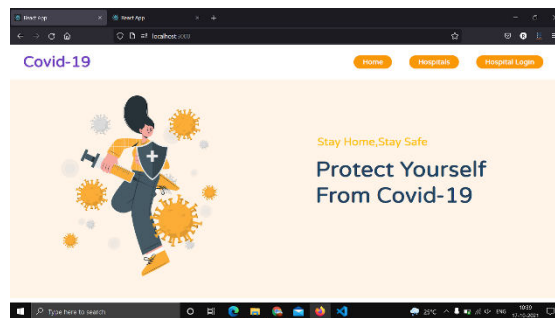


Fig. 3 Home Page of the Web App

Dashboard Page: This is a dashboard page where people can search hospitals by according.

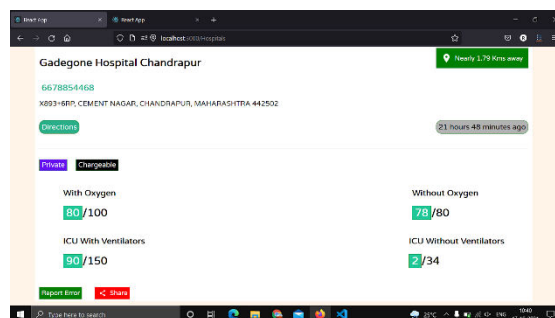


Fig. 4 Dashboard Page

Plasma Dashboard Page: Plasma details are mentioned. People come to know about the availability of various types of plasma with their quantity.

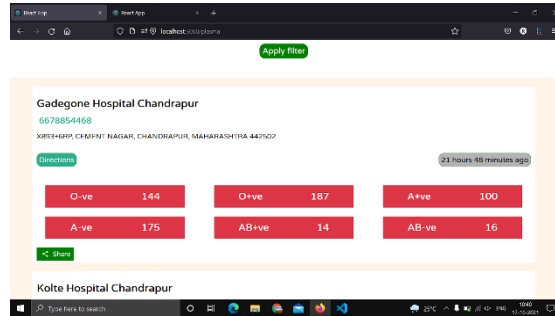


Fig. 5 Plasma Dashboard

Hospital Dashboard Page: This page highlights the details about the ambulance booking system.

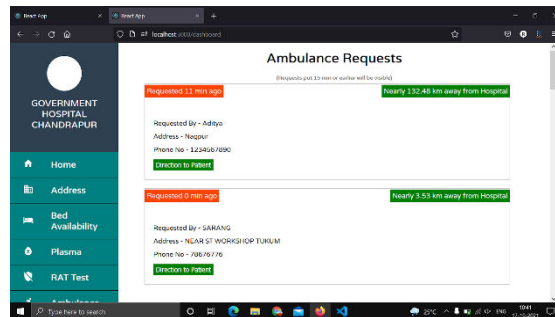


Fig. 6 Hospital Dashboard

Hospital Dashboard Page: Hospital management can keep the track of all medical facilities like number of beds, ventilators, oxygen beds, plasma, nearest vaccination centers and ambulance booking system, etc. Hospital management can update their medical services data by login to their hospital admin panel.

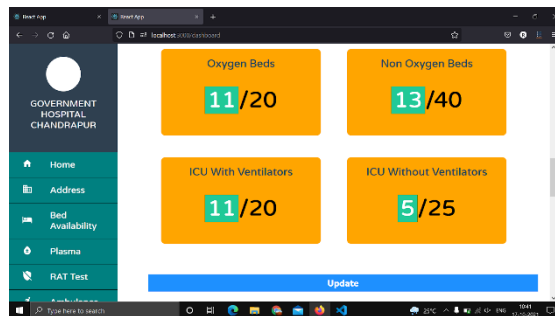


Fig. 7 Hospital Dashboard

V. LIMITATIONS

Even though the planned website is integrated with a full hospital management system, it still has some flaws. This system is unable to locate the hospitals' actual locations. The premium version of the Google API takes the longitude and latitude values of the hospital's location, which is a lengthy operation.

Another issue that the system had to deal with was real-time record updating. For example, while looking for the exact location of a hospital, the distance between the person's current position and the hospital's location is not calculated correctly.

VI. CONCLUSION AND FUTURE WORK

The suggested covid assistance website is created with the hospital administration system fully implemented. This website has all of the necessary features for tracking available beds, ventilators, and oxygen. Covid patients can locate hospitals with complete medical services simply by browsing the city on a website. This covi-assistant is acting as a



guide, guiding people through the epidemic and attempting to meet people's medical needs. The Covi Helper which is a digital healthcare web based app will prove to be a key in mitigating the spread of the virus.

Although the online programme provides medical services and amenities to persons with covid-19, it has the potential to be expanded to include a whole hospital administration system. Furthermore, the suggested system can be integrated with other technologies such as machine learning and deep learning, allowing enabling primary detection of the Covid-19 virus on this platform.

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