BLOOD DONOR AND FINDER APPLICATION

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DOI: doi.org/10.34293/shanlax.9789361631474.ch017

Abstract

The Blood Donor and Finder Application is a web-based system developed to address the critical challenge of locating suitable blood donors during emergency medical situations. The application enables real-time identification of eligible blood donors based on blood group compatibility and geographic proximity. It provides an efficient platform where donors can register their details and blood seekers can quickly find nearby donors using location-based filtering. The system incorporates health eligibility verification, donation interval validation, and secure data storage to ensure donor safety and reliability. By leveraging modern web technologies and centralized database management, the application enhances communication between donors and seekers, reduces response time during emergencies, and promotes voluntary blood donation. The project aims to provide a scalable and reliable solution for enhancing blood availability, particularly in rural and semi-urban areas.

Keywords: *Real-Time Blood Donor Matching, Location-Aware Services, Blood Finder System, Geo-Spatial Data Processing, Emergency Healthcare Information System, Database-Driven Donor Registry.*

I. Introduction

Blood donation is an essential component of modern healthcare systems, as it plays a vital role in saving lives during emergencies such as accidents, surgeries, childbirth complications, and severe medical conditions. Despite significant advancements in healthcare infrastructure, the timely availability of blood remains a major concern in many regions. In emergencies, even a small delay in locating compatible blood can lead to serious consequences for patients. Traditional methods of finding blood donors rely heavily on blood banks, hospital records, and personal networks. These approaches are often slow, inefficient, and unreliable, particularly when accurate donor information is not readily available. In rural and semi-urban areas, the lack of organized donor databases further complicates the situation, making it difficult to identify donors quickly. The Blood Donor and

Finder Application is designed to overcome these limitations by providing a centralized and digital platform that connects blood donors and blood seekers in real time. The system allows donors to register their personal, medical, and location details, while seekers can search for eligible donors based on blood group and proximity. By automating the donor search process, the application significantly reduces response time and improves accessibility to lifesaving resources. The project also aims to encourage voluntary blood donation by making the registration process simple and accessible. With a user-friendly interface and secure data handling, the system ensures reliability, safety, and scalability for real-world deployment.

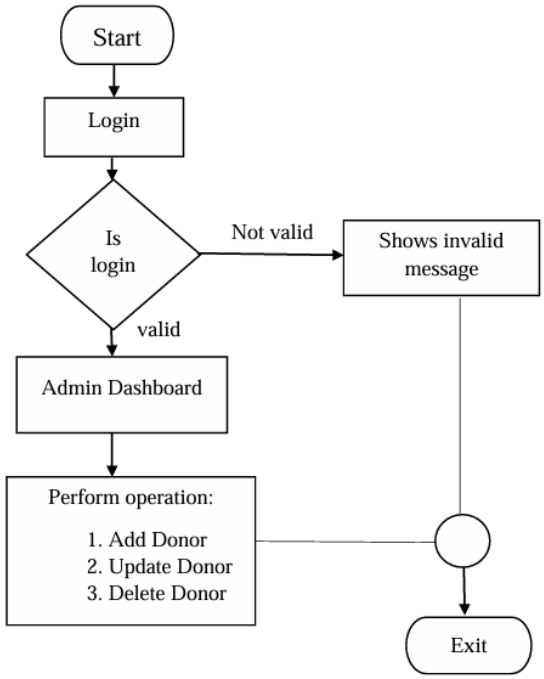
II. Related Work

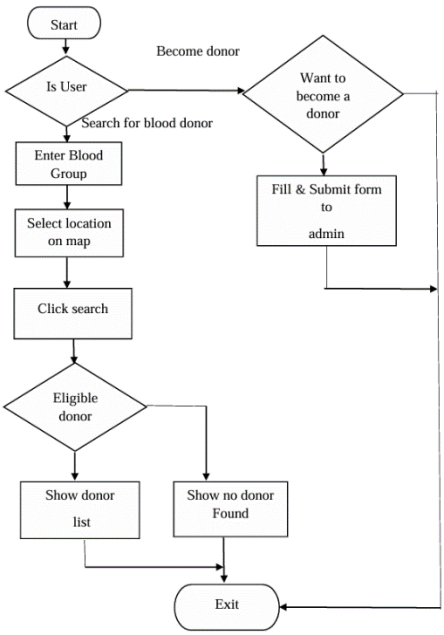
Several blood donor management systems and applications have been proposed in recent years to address the issue of blood scarcity during emergencies. Early systems were largely manual, relying on paper records maintained by hospitals and blood banks. These systems often suffered from outdated information, limited accessibility, and inefficient donor matching processes. With the advancement of mobile and web technologies, various digital solutions have been developed to connect donors and seekers. Some applications utilize SMS-based notifications to alert donors, while others use mobile apps to locate donors within a specific region. Although these systems improved communication, many lacked accurate health verification, real-time location filtering, and centralized administrative control. Existing platforms often face challenges related to data accuracy, scalability, and privacy. In many cases, donor availability is not updated regularly, leading to ineffective search results. Moreover, the absence of proper admin management increases the risk of data inconsistency. The proposed Blood Donor and Finder Application improves upon these existing solutions by integrating location-based filtering, donor eligibility validation, and centralized database management. The system ensures accurate donor matching while maintaining data security and ease of use, making it a more reliable alternative to existing approaches.

III. System Architecture

The Blood Donor and Finder app uses a client-server setup that helps process data quickly and allows real-time interactions. The system has three main parts: a user-facing website, a server that handles the behind-the-scenes work, and a central database that keeps all the information safe. Users can sign up as donors or look for donors who match their needs using the website. The server takes care of user requests, checks if donors are eligible, and finds matching donors from the database. It uses location details like map coordinates to find donors who are close to the person looking for blood. The database stores

donor information securely and makes it easy to search for the right donor quickly. The system is built in a way that makes it easy to add new features later, like a mobile app, alerts for users, or connections with hospitals and blood banks. This organized setup makes the app reliable, fast, and simple to update.





IV. Implementation

The Blood Donor and Finder Application is built by combining the frontend, backend, and database parts of the system. Donors sign up by filling out an online form where they give personal details, their blood type, health information, and location. All this information is checked for accuracy and then kept safe in the database. When someone needs blood, they can search for donors. The system looks through the database to find people who match the required blood type, are healthy enough to donate, and are nearby. It uses location data to find the closest donors, which helps in emergencies. The search results are shown in an easy-to-read way so that people can reach out to the donors directly. The admin part of the app lets approved administrators handle donor information. They can add new donors, change existing details, or remove outdated entries. This helps keep the data correct and stops any misuse. The system also has security features to keep user information safe and stop unauthorized people from accessing it.

V. Results

The Blood Donor and Finder Application was successfully implemented and tested across various user situations. It properly recorded donor information and quickly found eligible donors according to specific search requirements. Using location-based filters made the search results more relevant, and health checks helped ensure the safety of donors. The user

interface was easy to use and straightforward, making it simple for users with little technical experience to move around the system with ease. The admin section worked well, allowing for secure handling of donor information. In general, the system performed reliably and met its main goals.

VI. Future Work

The current system works well at linking donors with those in need, but there are still ways to make it better. In future updates, the app could add SMS and push alerts to notify donors right away during urgent situations. Connecting the app with hospitals and blood banks would also help improve how things are organized and ensure blood is available when needed. Other useful features like showing donor availability, supporting mobile apps, and adding detailed analytics could be included to make the system easier to use and more effective. These changes would make the system more complete and better suited to meet real healthcare challenges.

VII. Conclusion

The Blood Donor and Finder App offers a good tech solution for dealing with blood shortages during emergencies. It helps quickly find matching donors by showing their real-time availability and location, and keeps the data safe. This makes it easier and faster to locate compatible blood donors. The project shows how modern web tools can help solve important healthcare issues. With more improvements and wider use, the app could save many lives and encourage more people to donate blood voluntarily. The successful use of this system shows it's practical, dependable, and can grow in the future.

VIII. Reference

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