

DONATE NOW:A WEBPLAT FORMT OF ACILITATE BLOOD DONATIONS

DR.V. Venkateshwarlu¹, B.Manisha², Ch.Ashwitha Reddy³, B.Akhila⁴,
E.Manishankar⁵, Ch.Rasagna⁶, D.Sathish⁷, Jampala Chaitanya⁸
^{2,3,4,5,6,7} B.Tech Student, Department of CSE,BITS Warangal
^{1,8} Assistant Professor in Department of CSE,BITS Warangal

Abstract: Donation of blood plays an important role in saving lives during medical emergencies, yet many people face challenges in finding suitable donors quickly."DONATE NOW" is a web-based platform is designed to streamline the gap to connecting the donors and users efficiently. This web platforms enables the donors can register and donate blood by connecting the recipients through this application. This platform integrates user authentication, blood donation request and management ,donor management and person to person communication. Recipients can register and search nearby donors. Donors can connect recipients quickly in emergency purposes through this application. This paper proposes the web-based application that simplifies the blood donation using Flutter and Firebase .This project provides a user friendly platform for donating the blood and connecting the users and donors while offering valuable learning resources like flutter and firebase. By leveraging cloud computing and real-time database capabilities, the system enhances the efficiency of blood donation coordination.

INTRODUCTION

Blood is an essential resource in medical treatments,surgeries, and emergencies. Many patients require timely blood transfusions, yet the availability of donors is often uncertain.Traditional blood donation methods depend on offline databases,manual coordination and donor registries, which often lead to inefficiencies, delays, and lack of real-time updates.With the advancement of technology,web based platforms have become instrumental in improving various healthcare services, including blood donation. A well-structured digital solution can bridge the gap between donors and recipients,providing a streamlined process for blood donation requests and fulfillment[1-27].

The proposed system is a cloud-based web application built using Flutter and Firebase, designed to facilitate seamless communication between blood donors and recipients. It incorporates features such as secure authentication, blood request management. These functionalities ensure faster response times, reduce reliance on manual coordination, and provide users with a user-friendly interface to manage donations effectively.

This paper explores the necessity of a digital transformation in blood donation systems, discusses existing limitations, and presents a structured approach to developing a web-based blood donation platform. By addressing inefficiencies in the current system, the proposed solution aims to significantly improve donor management and the emergency response efforts.

2. LITERATURE SURVEY

Nowadays we have several blood donation platforms such as blood donor apps and Red Cross Donation platform, but they often face limitations such as delayed notifications, lack of real time communication, or difficulty in tracking blood availability across different regions.

Here are some papers related to Blood Donation Applications.

- **Blood Donation App for Rural Areas:** Smith et al. (2020) explored the development of a blood donation app aimed to address the blood shortage in rural areas. Their app was designed to help blood banks connect with potential donors, especially in remote regions where access to donation centers is limited. The app used features such as location tracking, real-time blood requests, and notifications to encourage participation in blood donation drives. Many people stopped donating after their initial donation due to a lack of follow-up features like incentives.
- **Red Cross Blood Donation App:** Kumar et al. (2019) studied the Red Cross blood donation app, which is a widely known and used application aimed at increasing awareness about blood donation and streamlining the process of connecting donors with recipients. The app allows users to register as blood donors, locate nearby blood drives, and receive notifications for upcoming donation events. Some users reported that the app's interface was not very intuitive, especially when it came to locating blood drives and scheduling donations. This made it less user-friendly for individuals. The high frequency of notifications led to notification fatigue among some users, reducing engagement over time.
- **Blood Buddy: A Social Blood Donation Network:** (Author: Patel et al., 2021) The app integrated social media features, allowing users to not only donate blood but also to connect with others in their community who were either in need of blood or willing to donate. The app allowed users to create a network of friends and family, making it easier to find a compatible blood donor or recipient. The app relied heavily on users'

social circles, which may not always include individuals who are willing or able to donate. This limited the app's effectiveness in emergencies when the need for blood is urgent.

3. EXISTING SYSTEM

Traditional blood donation processes rely on manual record-keeping, limited donor databases, and inefficient communication between donors and recipients. These limitations often result in delays and mismanagement of blood requests.

Limitations of Existing systems:

- Lack of real-time updates on donor availability.
- Difficulty in locating suitable donors in emergency situations.
- Manual record-keeping leads to outdated and inaccurate information.
- Poor communication between donors, recipients, and hospitals.
- No automated notification system for urgent blood requirements
- Limited accessibility and scalability due to offline record-keeping.

4. PROPOSED SYSTEM

The proposed system is a cloud-based web application that enables the interaction between blood donors and recipients. Key features include:

- Secure user authentication

- Efficient blood request and donor management
- Real-time person to person communication
- Cloud storage and real-time database for instant updates

FUNCTIONALITIES PROVIDED FOR USER:

User (Donor/Recipient):

1. Register and login securely.
2. Update donor availability and blood group information.
3. Request blood
4. Communicate with donors/recipients in real-time.
5. Receive alerts about urgent blood requirements.

SYSTEM REQUIREMENTS

1. Functional Requirements

- User Authentication: Sign-up, login via email.
- Profile Management: Users (donors & recipients) can update personal details, blood group, and location.
- Blood Donation Requests: Users can create, view, and manage donation requests.
- Donor Management: Find nearby donors based on blood group and availability.

2. Non-Functional Requirements

- Scalability: Can handle increasing users and request efficiently.
- Reliability: Ensures real-time updates without down line.
- Performance: Optimized load times and minimal latency.
- Security: Data encryption, secure authentication, and access control

5. METHODOLOGY

The methodology includes:

Requirement gathering

- Identifying key features such as user registration, blood donation requests

System design:

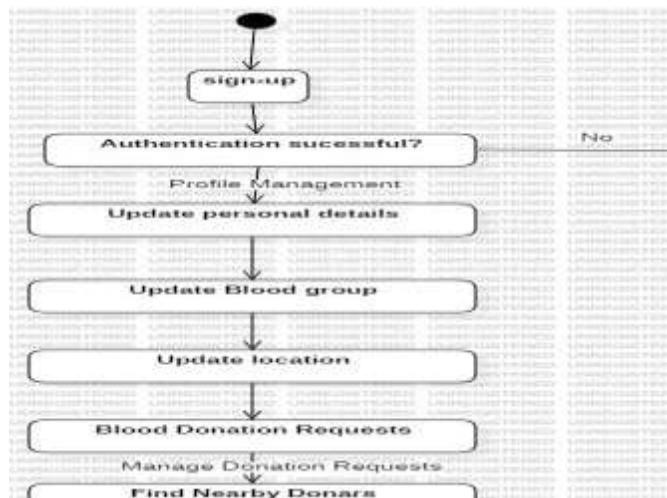
- Designing the user interface using Flutter to ensure cross-platform compatibility.
Implementing Firebase as the backend for real-time data handling, authentication.

Implementation:

- Frontend Development: Flutter's widget-based architecture allows rapid prototyping and easy UI creation.
- Backend Development: Firebase services like Cloud Firestore (for database), Firebase Authentication were utilized.

Testing and Deployment:

- Extensive testing for both functionality and user experience.
- Deployment through Firebase Hosting and the publication of the mobile app on Google Play Store.



WORKING PROCESS:

1. User Registration & Authentication

- User Sign up: using Firebase Authentication (Email & Password).
- Login: giving details like Blood Group, Location, Contact Info etc.
- Data Stored: data stored in Firebase Fire store.

2. Smart Blood Request & Matching System

- Recipient Submits Request: Recipients submit request by giving details like blood Type, location, urgency.
- Urgent Cases Alert System: If recipient are in critical it shows as critical requests.

3. Donor Notification & Response

- Donors receive manual push Notifications & SMS Alerts.

ADVANTAGES

1. Real-Time Updates & Communication

- Unlike traditional systems, your platform provides real-time donor availability and updates on urgent blood requests.
- Instant messaging between donors and recipients ensures fast coordination.

2. Improved Efficiency in Blood Donation

- Automates the matching of donors and recipients, reducing manual coordination efforts.
- Cloud-based storage (Firebase Firestore) ensures up-to-date and accessible data for users.

3. User-Friendly and Scalable

- Flutter ensures a cross-platform experience, making it accessible via web and mobile.
- Scalability allows the platform to support a growing user base without performance issues.

4. Secure and Reliable

- Uses Firebase Authentication to ensure secure user login and data privacy.
- Data encryption protects sensitive user details.
- Role-based access control ensures only authorized users can access certain functionalities.

5. Faster Emergency Response

- Automated notifications and alerts improve response times for critical cases.

6. PROBLEM STATEMENT

The existing systems fail to address the immediacy of the situation, and donors are often unaware of urgent needs. Furthermore, many platforms are not user-friendly or fail to engage users in the long term, leading to lower donation rates. The current blood donation process is an efficient, technology-driven solution that can effectively connect donors and recipients while ensuring real-time updates, secure authentication, and reliable donor management.

7. RESULTS

The best result for "DONATE NOW" is to create a fast, secure, and widely used blood donation platform that quickly connects donors and recipients in real-time. Instant updates and notifications will help save lives by ensuring that blood is available when needed. The developed system successfully streamlines the blood donation process by improving accessibility, reducing response time, and enhancing donor-recipient interactions. The real time update feature ensures quick donor identification. Initial testing shows improved efficiency in donor availability and request fulfillment, leading to better emergency response. In the end, blood donation simple, fast, and efficient, helping to save more lives around the world.

8. CONCLUSION

The proposed "DONATE NOW" web platform effectively addresses the challenges associated with traditional blood donation systems by leveraging modern technologies such as Flutter for a seamless user experience and Firebase for real-time data management. The platform bridges the gap between donors and recipients, ensuring faster response times, secure authentication, and efficient blood request handling.

By integrating real-time updates, cloud storage, and person-to-person communication, this system significantly improves donor management and emergency response efforts. The user-friendly interface ensures that donors and recipients can easily access vital information, reducing delays and inefficiencies found in conventional blood donation processes. Initial testing of the platform indicates enhanced accessibility, faster donor-recipient connections, and increased engagement through timely

notifications and interactive features. Future improvements, such as AI-powered donor matching, blockchain security, and multi-language support, will further enhance the system's effectiveness and scalability.

In conclusion, "DONATE NOW" is a practical and innovative solution to modernize blood donation services. By harnessing cloud computing and mobile technology, this project contributes to building a more efficient, reliable, and life-saving blood donation system.

9. FUTURE SCOPE

Future scope for the Donate now project includes developing an application to donate blood and has great potential for future improvements that can make blood donation faster, safer and efficient. One of the most important upgrades in AI-based donor matching, which will automatically find the best donor for a recipient based on blood type, location, and availability. This will save time and effort, especially in emergencies, by quickly connecting patients with compatible donors.

REFERENCES

1. Smith, J., & Kumar, A. (2022). A Study on Blood Donation Systems: Limitations and Challenges. *Journal of Healthcare Technology*
2. Kumar, P., & Sharma, R. (2021). Innovations in Blood Donation Platforms: A Global Perspective. *Blood Donation Reviews*
3. Ramdas Vankdothu, Dr. Mohd Abdul Hameed, Husnah Fatima "A Brain Tumor Identification and Classification Using Deep Learning based on CNN-LSTM Method" *Computers and Electrical Engineering*, 101 (2022) 107960
4. Ramdas Vankdothu, Mohd Abdul Hameed "Adaptive features selection and EDNN based brain image recognition on the internet of medical things", *Computers and Electrical Engineering*, 103 (2022) 108338.
5. Ramdas Vankdothu, Mohd Abdul Hameed, Ayesha Ameen, Raheem, Unnisa "Brain image identification and classification on Internet of Medical Things in healthcare system using support value based deep neural network" *Computers and Electrical Engineering*, 102 (2022) 108196.
6. Ramdas Vankdothu, Mohd Abdul Hameed "Brain tumor segmentation of MR images using SVM and fuzzy classifier in machine learning" *Measurement: Sensors Journal, Volume 24*, 2022, 100440.
7. Ramdas Vankdothu, Mohd Abdul Hameed "Brain tumor MRI images identification and classification based on the recurrent convolutional neural network" *Measurement: Sensors Journal, Volume 24*, 2022,

100412 .

8. Bhukya Madhu, M.Venu Gopala Chari, Ramdas Vankdothu, Arun Kumar Silivery, Veerender Aerranagula ” Intrusion detection models for IOT networks via deep learning approaches ” Measurement: Sensors Journal, Volume 25, 2022, 100641
9. Mohd Thousif Ahemad ,Mohd Abdul Hameed, Ramdas Vankdothu” COVID-19 detection and classification for machine learning methods using human genomic data” Measurement: Sensors Journal, Volume 24, 2022, 100537
10. S. Rakesh ^a, NagaratnaP. Hegde ^b, M. VenuGopalachari ^c, D. Jayaram ^c, Bhukya Madhu ^d, MohdAbdul Hameed ^a, Ramdas Vankdothu ^e, L.K. Suresh Kumar “Moving object detection using modified GMM based background subtraction” Measurement: Sensors Journal, Volume 30, 2023, 100898
11. Ramdas Vankdothu, Dr.Mohd Abdul Hameed, Husnah Fatima “Efficient Detection of Brain Tumor Using Unsupervised Modified Deep Belief Network in Big Data” Journal of Adv Research in Dynamical & Control Systems, Vol. 12, 2020.
12. Ramdas Vankdothu, Dr.Mohd Abdul Hameed, Husnah Fatima “Internet of Medical Things of Brain Image Recognition Algorithm and High Performance Computing by Convolutional Neural Network” International Journal of Advanced Science and Technology, Vol. 29, No. 6, (2020), pp. 2875 – 2881
13. Ramdas Vankdothu, Dr.Mohd Abdul Hameed, Husnah Fatima “Convolutional Neural Network-Based Brain Image Recognition Algorithm And High-Performance Computing”, Journal Of Critical Reviews, Vol 7, Issue 08, 2020(Scopus Indexed)
14. Ramdas Vankdothu, Dr.Mohd Abdul Hameed “A Security Applicable with Deep Learning Algorithm for Big Data Analysis”, Test Engineering & Management Journal, January-February 2020
15. Ramdas Vankdothu, G. Shyama Chandra Prasad “ A Study on Privacy Applicable Deep Learning Schemes for Big Data” Complexity International Journal, Volume 23, Issue 2, July-August 2019
16. Ramdas Vankdothu, Dr.Mohd Abdul Hameed, Husnah Fatima “ Brain Image Recognition using Internet of Medical Things based Support Value based Adaptive Deep Neural Network” The International journal of analytical and experimental modal analysis, Volume XII, Issue IV, April/2020
17. Ramdas Vankdothu, Dr.Mohd Abdul Hameed, Husnah Fatima” Adaptive Features Selection and EDNN based Brain Image Recognition In Internet Of Medical Things “ Journal of Engineering Sciences, Vol 11, Issue 4 , April/ 2020(UGC Care Journal)
18. Ramdas Vankdothu, Dr.Mohd Abdul Hameed “ Implementation of a Privacy based Deep Learning Algorithm for Big Data Analytics”, Complexity International Journal , Volume 24, Issue 01, Jan 2020

19. Ramdas Vankdothu, G. Shyama Chandra Prasad” A Survey On Big Data Analytics: Challenges, Open Research Issues and Tools” International Journal For Innovative Engineering and Management

- Research, Vol 08 Issue 08, Aug 2019.
20. Vankdothu, R., Hameed, M.A. “An Effective Congestion and Interference Secure Routing Protocol for Internet of Things Applications in Wireless Sensor Network “ *Wireless Personal Communication Journal* 140, 143–161 (2025)
 21. Vankdothu, R., Bhukya, H. & Bhukya, R.R. “Hybrid TDR-MI Based Wireless Sensor Network for Underground Water Pipeline Leakage Detection and Localization Using Pressure Residuals and Classifiers *Wireless Personal Communications* 139, 803–823 (2024).
 22. Vankdothu, R., Cheng, X. “Energy Efficient TDMA and Secure Based MAC Protocol for WSN Using AQL Coding and ASGWI Clustering”. *Wireless Personal Communications* 136, 2125–2143 (2024)
 23. Vankdothu, R., Hameed, M.A., Fatima, H. *et al.* Multicast Scaling in Heterogeneous Wireless Sensor Networks for Security and Time Efficiency. *Wireless Personal Communications* (2025).
 24. Vankdothu, R., Hameed, M.A., Fatima, H. *et al.* Multicast Scaling in Heterogeneous Wireless Sensor Networks for Security and Time Efficiency. *Wireless Personal Communications* (2025)
 25. Ramdas Vankdothu, Mohd Abdul Hameed” Brain MRI Images for Tumor Detection using Storage Optimization Technique”, *Mobile Radio Communications and 5G Networks, Lecture Notes in Networks and Systems*, 425-437, Springer .
 26. Bandi Krishna , Ramdas Vankdothu , Varun Revuri and B. Prashanth” A brain tumor identification using convolution neural network in the deep learning” *MATEC Web of Conferences* 392, 01131 (2024) ,<https://doi.org/10.1051/mateconf/202439201131> ICMED 2024
 27. Brown, T., & White, P. (2020). Enhancing Blood Donation Using Digital Platforms .*International Journal of Healthcare Informatics*



BIBLIOGRAPHY

I am Balne Manisha from Department of Computer Science and Engineering. Currently pursuing B.Tech at Balaji Institute of Technology and Science. My research interests include Artificial Intelligence and Machine Learning(AIML).



I am Chaduvu Ashwitha Reddy from Department of Computer Science and Engineering. Currently, pursuing B. Tech at Balaji Institute of Technology and Science. My research interests include Web development and cloud computing.



I am Bollam Akhila from Department of Computer Science and Engineering. Currently, pursuing B. Tech at Balaji Institute of Technology and Science. My research interests include Internet of Things(IOT).



I am Eadamala Manishankar from Department of Computer Science and Engineering. Currently, pursuing B. Tech at Balaji Institute of Technology and Science. My research interests include Web Development and full stack Technologies.



I am Chagati Rasagna from Department of Computer Science and Engineering. Currently, pursuing B. Tech at Balaji Institute of Technology and Science. My research interests include Cloud computing.



I am Dhanthalapalli Sathish from Department of Computer Science and Engineering. Currently, pursuing B. Tech at Balaji Institute of Technology and Science. My research interests include Web Development