ABSTRACT

A smart AI-powered blood donation system is designed to enhance accessibility and efficiency in blood donation. Blood donation plays a crucial role in saving lives, yet challenges such as donor availability and compatibility persist. The system is intended to provide seamless donor-recipient matching and eligibility assessment using AI. The primary objective of our project is to develop an AI-integrated blood donation platform that simplifies the process for both donors and recipients. The existing blood donation systems primarily focus on manual donor-recipient connections, often leading to inefficiencies. Our app aims to automate and optimize the process, ensuring faster and more reliable blood donation services. The system consists of a Flutter-based frontend and a Node.js backend with SQLite, ensuring smooth user experience and secure data management. It incorporates key functionalities such as a Blood Request Form for recipients and a Blood Donation Form for volunteers. An AI-based Eligibility Module evaluates donor suitability based on medical records and user inputs, while an AI-driven Donor Matching System ensures optimized donor-recipient pairing based on location, urgency, and blood compatibility. Our project primarily targets blood donors, recipients, and medical institutions, aiming to provide a cost-effective and intelligent solution. By integrating AI for decision-making and real-time matching, the system enhances accessibility and efficiency, ultimately contributing to a more effective blood donation ecosystem.