

ELLENKI COLLEGE OF ENGINEERING AND TECHNOLOGY



(Autonomous Institution - UGC, Govt. of India)
(Sponsored by Ellenki Educational Society)



Patelguda, Sangareddy Dist. Hyderabad.

Approved by AICTE & Affiliated to JNTUH, Accredited by NAAC, Recognition of 2(f), UGC,
MSME-HI

Department of Training and Placement

"AI-Powered Smart Blood Donation Network."

Date: 25/03/2025

Submitted by

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Event Summary:

As part of the final-year project presentations at **Ellenki College of Engineering and Technology**, students from the **CSE-CSM** department showcased an innovative project titled "**AI-Powered Smart Blood Donation Network.**" The event served as a platform for young technologists to demonstrate how modern technologies like Artificial Intelligence, Machine Learning, Blockchain, and Web Development can solve critical healthcare challenges. The team presented their solution through detailed technical insights and a live demo, highlighting the system's potential to optimize blood donation processes. The project received appreciation from faculty, peers, and evaluators for its practical application and technical excellence.

Group Members:

- **B. Kiran Babu** (22C71A6601)
- **S. Meghana** (22C71A6607)
- **P. Vishnu Reddy** (22C71A6606)

Project Incharge:

- **Dr. D. Kumaraswamy**

Head of the Department:

- **Dr. Kesavan Gopal**

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Objectives:

1. To build a smart blood donation system using AI and ML for intelligent donor-recipient matching.
2. To implement a Random Forest Classifier to analyze parameters like blood type, urgency, and proximity.
3. To integrate the Positionstack API for geolocation-based donor tracking and notifications.
4. To use blockchain for secure, tamper-proof record-keeping and donor verification.
5. To create a React.js-based user interface for seamless interaction among users.
6. To automate backend data handling using Flask for efficiency and scalability.
7. To enable real-time updates, notifications, and donation scheduling.
8. To reduce manual processes and streamline blood donation workflows.
9. To ensure system transparency, data reliability, and optimized blood management.

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Outcomes:

1. Successfully developed a web application integrating AI, blockchain, and geolocation technologies.
2. Built an ML model using Random Forest for accurate donor-recipient matching.
3. Enabled donor location tracking and optimized response using Positionstack API.
4. Developed a secure blockchain-based module for transaction verification and data integrity.
5. Created a user-friendly frontend using React.js for all stakeholders—donors, hospitals, and administrators.
6. Implemented automated alerts and status updates for improved communication and responsiveness.
7. Demonstrated system efficiency through live testing and real-time simulations.
8. Enhanced system reliability, transparency, and user trust.
9. Received positive feedback during the presentation for innovation and societal impact.

Conclusion:

The **AI-Powered Smart Blood Donation Network** is a significant step forward in modernizing the blood donation ecosystem. By incorporating AI for decision-making and blockchain for data security, the system offers an intelligent, reliable, and efficient platform to manage blood donations. Real-time tracking, smart donor-recipient matching, and transparent records ensure timely and safe delivery of blood to those in need. The project exemplifies how technology can solve real-world problems and make a measurable difference in saving lives. With further development and deployment, this system can serve as a model for nationwide healthcare integration and emergency preparedness.