



**ThalaMitra**

**India's AI-Powered Blood  
Companion for Thalassemia  
Warriors**

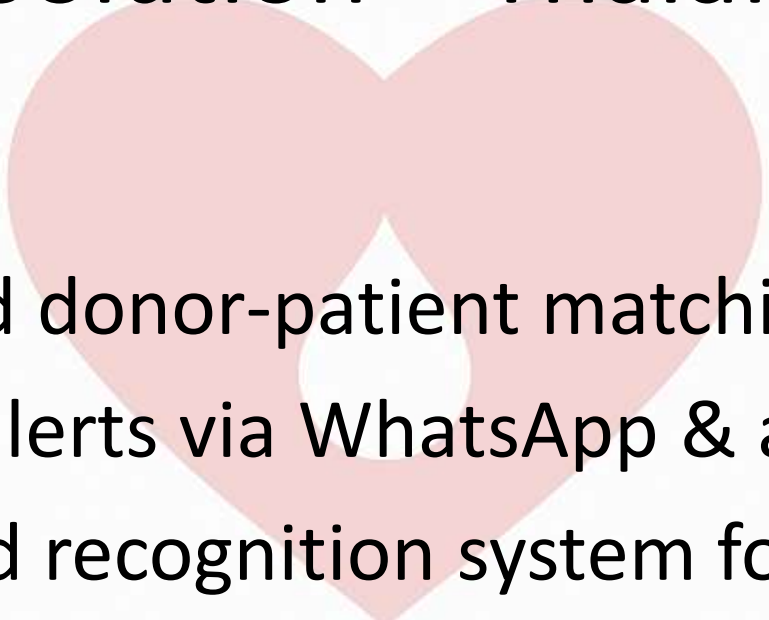
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# The Problem: The Challenge Thalassemia Patients Face

- 1 in 8 Thalassemia patients miss timely transfusions
- No real-time blood donor availability
- Patients & families under constant emotional and logistical stress

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# Our Solution – ThalaMitra



- AI-powered donor-patient matching
- Real-time alerts via WhatsApp & app
- Reward and recognition system for donors
- Builds a support network for Thalassemia warriors

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# Tech Stack & Tools Used

- **Backend & AI Logic**
- **Python** – Core logic and AI Matcher
- **Scikit-learn / Pandas** – Donor filtering, basic ML
- **◆ Database**
- **Firebase** – Realtime donor-patient storage (*OR*)
- **MySQL / PostgreSQL** – For structured donor records
- **◆ Notification System**
- **Twilio API** – SMS alerts
- **WhatsApp Business API** – Donor engagement
- **◆ Front-End / UI**
- **Streamlit** – Interactive prototype interface (*OR*)
- **Flask + HTML/CSS** – Lightweight UI option
- **◆ Maps & Location**
- **Google Maps API** – Show nearby donors & hospitals
- **◆ Deployment (Optional)**
- **Render / Streamlit Cloud / Heroku** – For quick hosting

# How It Works – Architecture: System Architecture



# Key Features



- AI Matching based on blood type, location & urgency
- WhatsApp + App notification integration
- Monthly donation reminders
- Digital donor medals & appreciation

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# Impact Story – “Rani”:Meet Rani – A 7-Year-Old Warrior

- Needs blood every 21 days
- ThalaMitra alerts her regular donor in time
- She smiles with strength, and studies with hope

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# Recognition for Donors

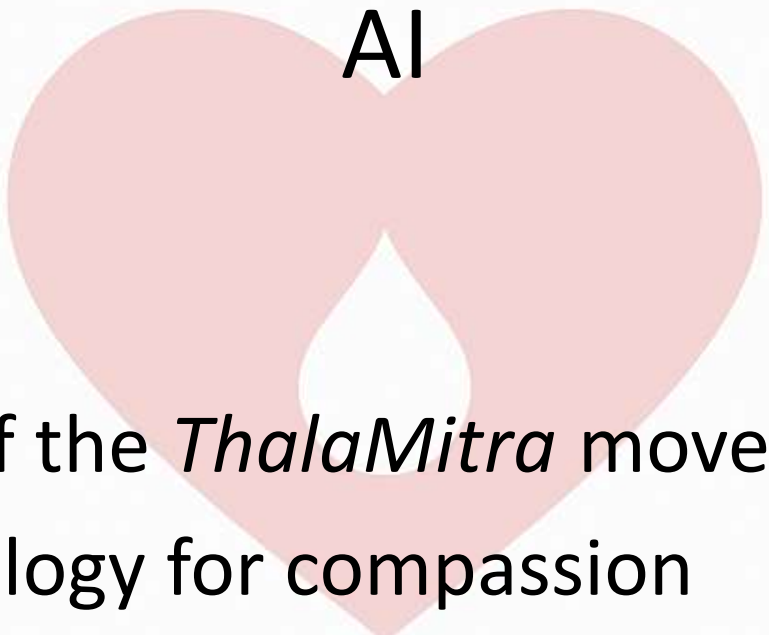


- Digital certificates signed by public officials
- Instagram stories, badges & thank-you reels
- Turns donors into community heroes

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# Join the Mission: Let's Save Lives with AI



- Be a part of the *ThalaMitra* movement
- Use technology for compassion
- Together, let's empower India's Blood Warriors

# ThalaMitra

# **Title: ThalaMitra-India's AI-Powered Blood Companion for Thalassemia Warriors**

## **1. Target Problem Statement**

Thalassemia patients require regular blood transfusions throughout their life. The existing blood donation ecosystem is fragmented and reactive, leading to last-minute rush, shortage of rare blood groups, and communication gaps between patients, donors, and healthcare providers. The challenge is to create a **real-time system** that:

- Connects patients with suitable donors efficiently
  - Encourages recurring donation
  - Maintains data privacy
  - Integrates with existing government and NGO platforms like e-RaktKosh and Blood Warriors
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## **2. Proposed Solution**

Our idea is to build a **centralised AI-powered platform** called **ThalaMitra** that serves as a bridge between Thalassemia patients, donors, healthcare professionals, and blood banks.

### **Core Features:**

- **Real-time Donor-Recipient Matching System** using AI algorithms and geolocation
- **Predictive Donor Availability** using ML models based on past donation patterns
- **Seamless Donor Tracking System** with badges, history, and gamified rewards
- **Offline Community Outreach** via public “**ThalaMitra Boxes**” installed in schools, temples, bus stands, and remote villages
- **Integration with e-RaktKosh, Blood Bridge, and hospitals** for automatic sync
- **Use of Social Media for Campaigning**, awareness, and volunteer mobilization

### **Unique Aspects:**

- Combines both online (AI-based tracking and prediction) and offline (community boxes, paper forms) components
  - Local language support and chatbot integration
  - Donor recognition at national level (certificates from MP/PM/President)
  - Storytelling-based motivational outreach
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## **3. Technology Stack**

- **Frontend:** ReactJS / Flutter (Web + Mobile App)
  - **Backend:** Node.js / Django
  - **Database:** PostgreSQL, MongoDB
  - **AI/ML:** Python (scikit-learn, TensorFlow), Keras, Time Series Forecasting
  - **APIs:** Google Maps, WhatsApp Business API, e-RaktKosh APIs
  - **Cloud:** AWS / Azure
  - **Security:** OAuth 2.0, HTTPS, AES encryption
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## 4. Functionality

- **Patients:** Register on the app or drop a request in a nearby ThalaMitra Box. Get matched with nearest available donors. Track transfusion history.
- **Donors:** Receive alerts about upcoming eligible donation dates. Book slots. View contribution history. Earn digital badges and real certificates.
- **Healthcare Providers:** Monitor patient transfusion schedules. Respond to urgent requests.
- **Admins/Government Bodies:** Track system-wide metrics, generate insights, integrate with policies.

Yes, the system will be **modular** and scalable – we can add local language support, SMS-only version, chatbot interfaces for low-literacy users, and integrate wearable health data in future.

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## 5. Impact

- **Patients:** Less anxiety, more consistent care, faster matching
  - **Donors:** Motivation, engagement, national recognition
  - **Blood Warriors:** Operational efficiency, better outreach
  - **Healthcare System:** Reduced last-minute shortages, data-backed planning
  - **Government:** Opportunity to align with Digital India and Ayushman Bharat goals
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## 6. Challenges / Constraints / Risks

- Ensuring **data privacy** and regulatory compliance (especially for health records)
  - **Training AI models** effectively with donor and patient behaviour data
  - **Connectivity in remote areas** – addressed partially through offline boxes
  - Resistance from users initially due to habit – tackled through awareness drives
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## 7. Assumptions

- Sufficient historical donation data is available for training models

- Public healthcare institutions will cooperate with the integration
  - Social media can be used effectively for mobilisation
  - Public places will permit installation of ThalaMitra boxes
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## 8. Timeline

### During Hackathon (48 hours):

- Build a working prototype of the web + mobile app interface
- Implement AI-based donor prediction module (basic version)
- Demo integration with dummy e-RaktKosh API

### Post Hackathon Milestones:

- Pilot in 1 city + 2 rural districts (within 3 months)
  - Partner with Blood Warriors for real-time use (6 months)
  - National-level deployment with government support (12–18 months)
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## 9. Storytelling: A Real-Life Use Case

### *Part A: The Village Box*

In a tribal village in Maharashtra, a 16-year-old Thalassemia patient named Maya drops a handwritten request in a **ThalaMitra Box** kept at the Panchayat. The local volunteer opens the box and uploads all paper slips via the app.

### *Part B: The AI Alert*

In Mumbai, Rohan – a 25-year-old regular blood donor – receives a notification:

"Hi Rohan! Based on your last donation on 15 June, you're eligible to donate again. A Thalassemia patient in Chandrapur needs your blood type. Would you like to help again?"

He confirms. The app guides him to the nearest blood bank. He receives a digital badge and later a **certificate from the MP** of his area.

### *Part C: Government Integration*

State Health Department uses a dashboard to monitor how many Thalassemia patients are matched in rural belts and publishes monthly performance stats. The central government integrates it into **Ayushman Bharat Health Mission**.

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## 10. Social Media Integration and Reward Strategy

- **Instagram/Facebook Campaigns:** Share real stories of donors and patients
  - **Influencer Tie-ups:** Collaborate with health influencers for awareness
  - **Donor Leaderboard:** Top donors shown weekly/monthly with badges
  - **Rewards:**
    - Bronze/Silver/Gold digital medals
    - Blood Hero of the Month award
    - Certificates signed by MP/CM/PM
    - National recognition on Independence Day or Republic Day functions
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**Conclusion:** Our solution is not just a technical fix – it's a **movement**. By blending AI, community participation, social media, and government support, **ThalaMitra** aims to revolutionize how India handles blood donation for Thalassemia. It makes healthcare more human, accessible, and intelligent.

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