ABOUT

PROBLEM STATEMENT:- Healthcare facilities, especially rural clinics, often face overcrowding due to non-emergency visits, while critical patients may not receive timely care. Many patients lack proper guidance to understand the urgency of their symptoms or the appropriate specialist to consult.

This project focuses on building an Urgency-Aware Health Triage and Care Navigation System that:

- Analyzes patient symptoms intelligently
- Generates a structured urgency assessment
- Explains the reasoning behind recommendations
- Guides patients to the right healthcare service or specialist

The solution aims to deliver clear, reliable, and responsible triage decisions, ensuring faster care for emergencies and reducing unnecessary clinic overload.

EXISTING SOLUTIONS

<u>Web Chatbots & Symptom Checkers</u>

Examples: Online symptom checkers on health portals or apps that ask questions and give advice.

Limitations
- Often text-only — poor accessibility for uneducated or rural users.
- Provide generic recommendations rather than structured urgency pathways.
- Do not explain reasoning clearly (e.g., why a case is urgent).

<u>Traditional Telephone Triage</u>

Patients speak with a nurse or call center agent.
Staff manually assesses urgency and guides next steps.

Limitations
- High staffing cost — requires trained personnel.
- Slow in peak demand — long wait times common.
- Human inconsistency — different triage decisions depending on individual judgment.

OUR SOLUTION

- Combines IVR + Website, both performing same triage logic
- Uses AI decision engine with symptom weighting
- Explains reasoning clearly —
  e.g., "Combination of age + fever + pregnancy indicates urgent care"
- Produces a structured urgency report
- Redirects to appropriate specialist or next step
- Designed for accessibility, clarity & defensibility

Advantages Over Existing Solutions

Multi-Channel Accessibility
- IVR for low-tech / rural users
- Web interface for broader access

Ensures no one is excluded due to device or literacy limitations.

Clear Justification & Traceable Path
- Each triage decision is explained
- Improves patient trust

Evaluation and debugging become easier

Proposed Solutions

Solution # 1

Intelligent Triage Engine: Instantly separates non-emergencies from critical cases using AI.
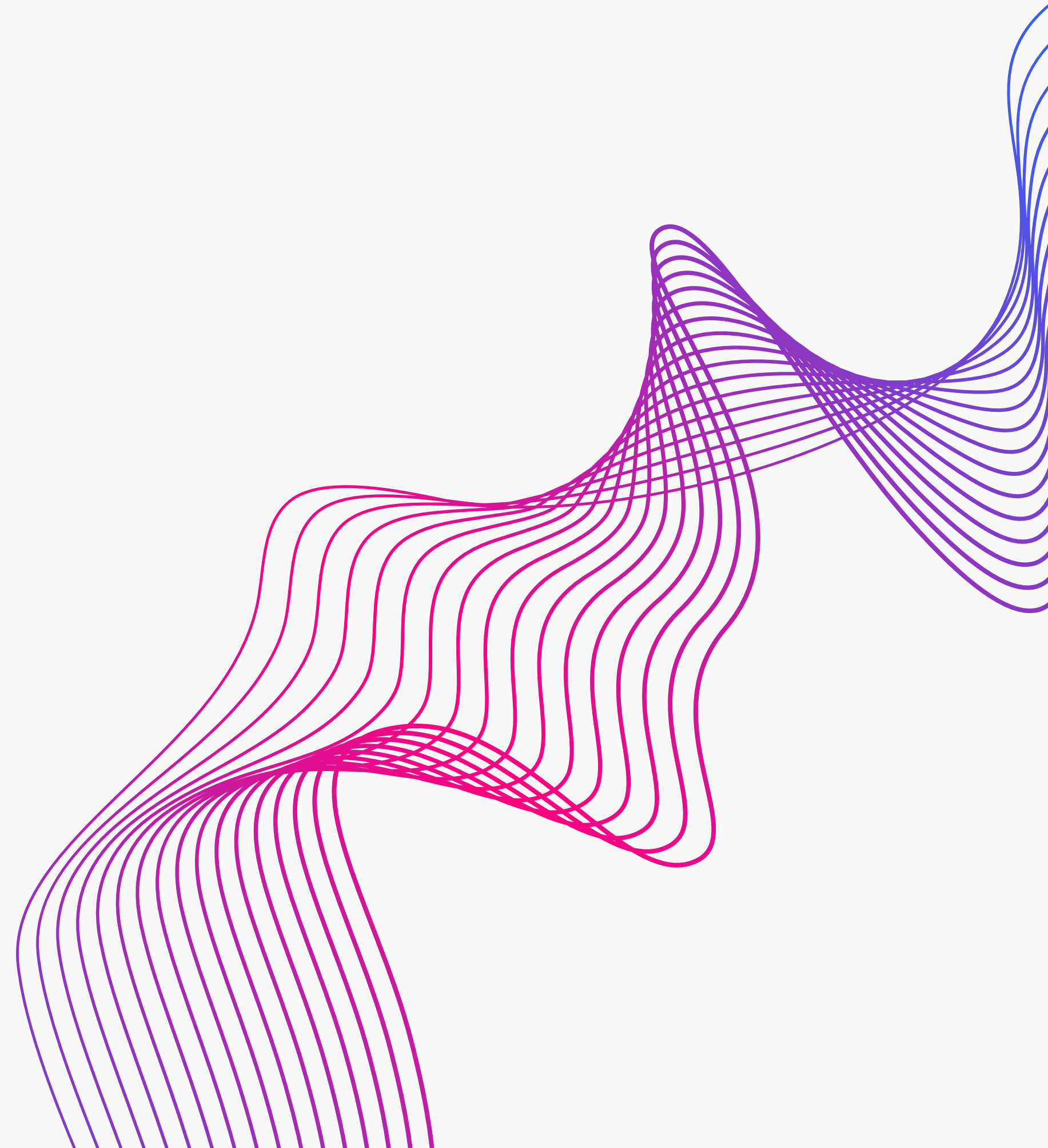
Solution # 2

"Traffic Light" Prioritization: Auto-assigns Red (Critical), Yellow (Urgent), or Green (Routine) status.
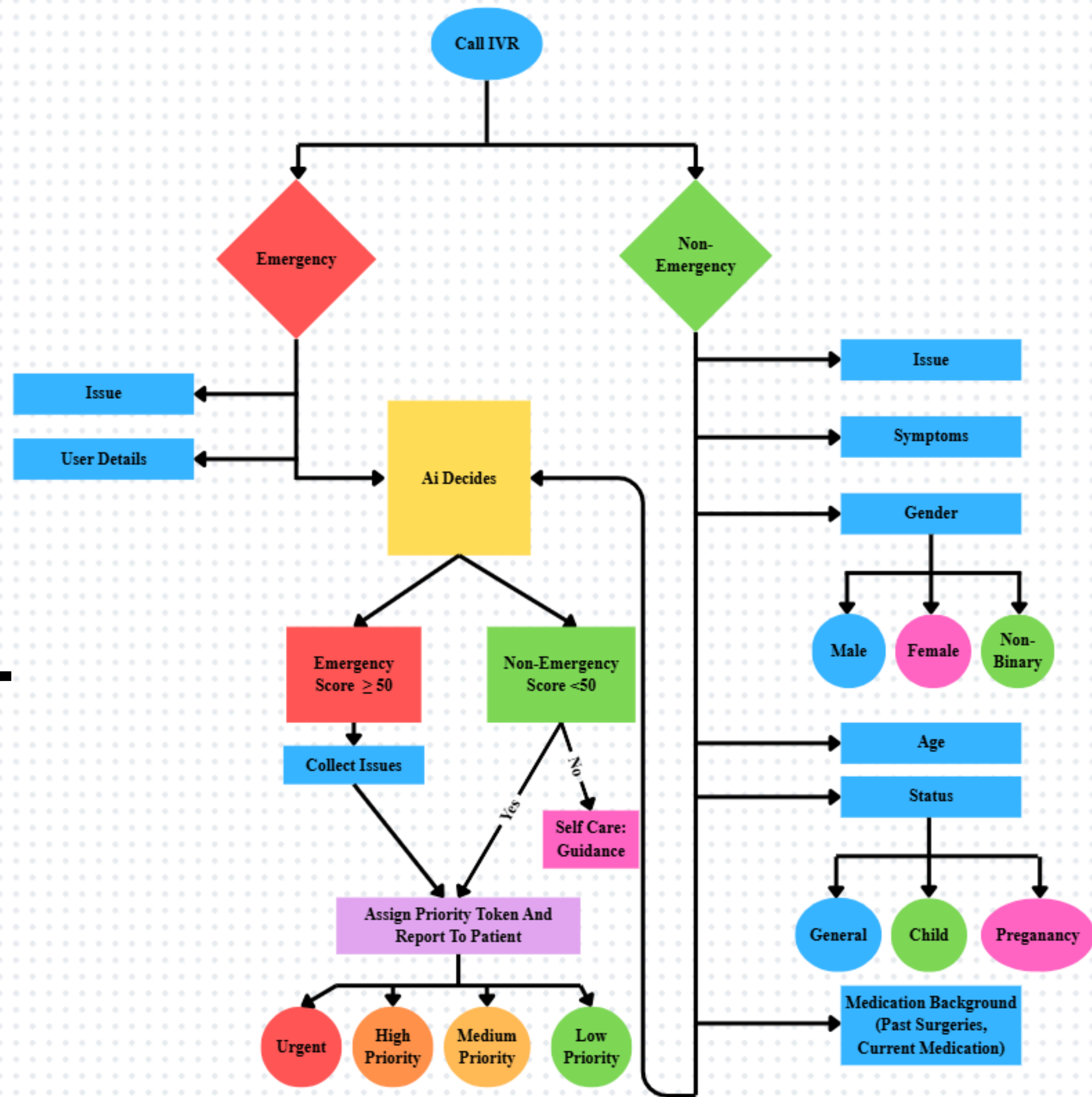
Solution # 3

Pre-Arrival "Handshake": Alerts the hospital and generates an Advance Token before the patient arrives.

Solution # 4

Universal Accessibility: Works via Voice (Tamil/Hindi) and Offline SMS/IVR for low-connectivity areas.
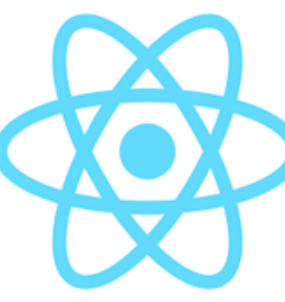
FLOWCHART

TECH STACK

Technology stack used in the project where users call a particular number and tell their problem. The AI scores the emergency level, then shows a list of hospitals and doctors with user details and user details.
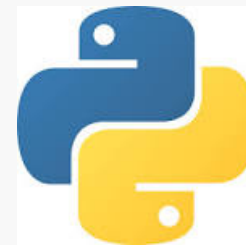
BACKEND:

PYTHON FAST API

DATABASE:

SQL

AI/ML:

OPEN-AI FLASK LANG CHAIN

FRONT-END:

HTML & CSS REACT MATERIAL UI

API'S/SERVICES:

TWILIO GOOGLE MAP API

IMPACT FOR PATIENTS

- **Zero Ambiguity:** Eliminates guesswork by providing precise medical direction ensuring patients know exactly where to go.

- **Optimizes Scarce Staff:** Prioritizes critical cases instantly, preventing small rural clinics from being choked by non-urgent crowds

- **Lower Costs:** Saves money by identifying minor ailments that can be treated locally, avoiding expensive and unnecessary travel to city hospitals

- **Offline Access:** Ensures universal access via SMS and IVR for non-smartphone users, bridging the digital divide in rural areas.

IMPACT FOR PATIENTS

- **Pre-Arrival Readiness:** Alerts trauma teams 15+ minutes in advance for critical cases, ensuring immediate action upon arrival

- **Resource Optimization:** Frees doctors to focus on serious patients by automatically filtering out minor cases. maximizing medical efficiency.

- **Smart Token Prioritization:** Replaces chaotic physical lines with digital Red/Yellow/Green tokens, allowing doctors to instantly identify and treat critical patients first..

- **Automated Triage:** AI handles the repetitive "screening" questions, reducing nurse burnout.

BENIFITS PUBLIC HEALTH

- **Golden Hour Protection:** Drastically improves survival rates for strokes and trauma by eliminating pre-hospital delays.

- **Epidemic Early Warning:** Identifies disease clusters in real-time (e.g., Dengue outbreaks), enabling rapid containment before they spread.

- **Standardized Care:** eliminates dangerous guesswork by applying high-quality, uniform triage logic to every patient, everywhere.

BENIFITS SYSTEMIC CHANGE

- Data-Driven Policy: Generates granular health data to guide government funding and specialist allocation where they are truly needed

- Behavioral Shift: Transforms rural healthcare culture from reactive "emergency-only" visits to proactive, managed wellness.

- Plug-and-Play Architecture: A modular add-on that upgrades existing rural clinic systems without requiring expensive hardware overhauls.

Conclusion

Transforming Rural Healthcare We are shifting rural medicine from "Reactive Chaos" to "Proactive Logic." By replacing first-come-first-served lines with AI-driven Triage (Red/Yellow/Green) and a real-time "Hospital Handshake," we ensure critical patients survive the "Golden Hour." Built on a Zero-Cost, Offline-First Python architecture that speaks 6 local languages, this system proves that life-saving innovation is feasible, scalable this system empowers every village health worker to act with the precision of a specialized hospital.