



# HackOrbit 2025

## StellarSync5.0



Theme: HealthCare Tech

# THEME : Healthcare Technology

**Problem Statement:** Current healthcare systems suffer from a lack of personalization, limited awareness of personal health metrics, delayed diagnostics, poor lifestyle planning support, inadequate emergency response mechanisms, and significant language or literacy barriers. These issues lead to fragmented, inefficient, and often inaccessible services, making it difficult for patients to engage in preventive care, understand medical information, or access timely and effective treatment.



## Fragmented Access

Users face scattered tools for managing different health needs.



## Lack Personalization

One-size-fits-all solutions ignore unique health profiles.



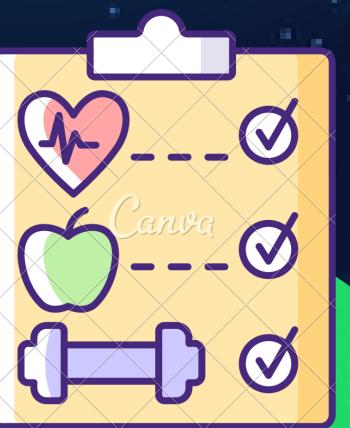
## Emotional Neglect

Current systems don't adapt to user emotions or motivation.



## Data Vulnerability

Online analysis risks sensitive health data and privacy.



## Poor Integration

AI insights often fail to align with clinical workflow.

# Proposed Solution HealthX-AI

01

## Voice - Based Medical Simulator

Voice-Based Medical Simulator captures symptoms via voice, generates reports, and sends them to doctors to speed up diagnosis and simplify bookings.

02

## 3D Lifestyle Avatar

3D Lifestyle Avatar provides a real-time visual of body metrics to enhance wellness tracking and boost user health awareness.

03

## MedVit Image Analysis & Report

MedVit Image Analysis scans medical images, detects issues, and generates reports instantly to accelerate the diagnosis process.

04

## VAPI Voice Agent & Routine Planner

VAPI is a personalized AI voice agent that plans routines, tracks body metrics, sends reminders, and helps manage lifestyle habits effectively.

05

## Automated Ambulance Tracker

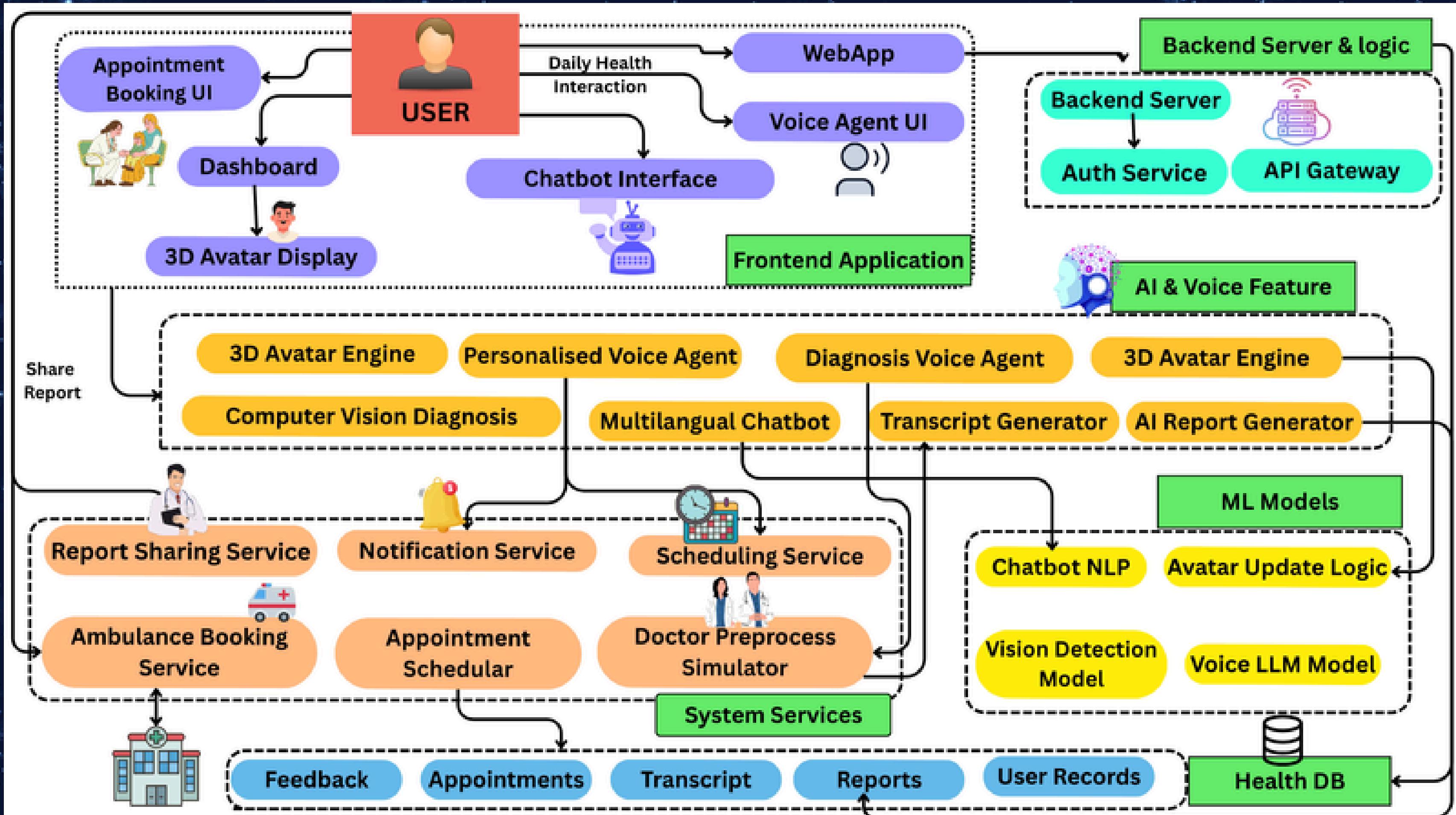
Automated Ambulance Tracker auto-books ambulances, alerts nearby hospitals, and reduces emergency response time through smart tracking.

06

## Healthcare Community Hub

Healthcare Community Hub enables real-time sharing, commenting, and learning through channel-based discussions to bridge healthcare knowledge gaps.

# FLOWCHART HEALTHX-AI





# Flowchart/Diagram - Explanation

1 Let's start with how the user interacts

## User Interaction Layer

User interacts via:

- Appointment Booking UI
- Dashboard (to view health details)
- 3D Avatar Display (to visualize health in human-like format)
- Chatbot Interface for general queries or support
- Voice Agent UI for voice-based interaction
- WebApp for overall access
- This is the Frontend Application that connects users to the health system.

2 These Interfaces are powered by AI modules

## AI & Voice Features

These are the core intelligence modules:

- 3D Avatar Engine: For rendering visual avatar health assistant
- Personalised Voice Agent: Custom voice interaction for each user
- Diagnosis Voice Agent: Voice-based medical diagnosis
- Computer Vision Diagnosis: Health data analyzed via camera/input
- Multilingual Chatbot: Supports multiple languages
- Transcript Generator: Generates conversation transcripts
- AI Report Generator: Summarizes diagnostic data



## Frontend Application

Includes:

- All user-facing modules (Chatbot, Avatar Display, Dashboard)
- Connected to AI and backend logic for dynamic responses



3

On the right side you can see AI Models and Logic controls these features

## ML MODELS

Backbone of Intelligent Processing

- Chatbot NLP: Natural Language Processing for chatbot
- Voice LLM Model: Understands and processes spoken input
- Avatar Update Logic: Updates avatar based on user health
- Vision Detection Model: Detects visible symptoms or patterns



## Backend Server & Logic

Includes:

- All user-facing modules (Chatbot, Avatar Display, Dashboard)
- Connected to AI and backend logic for dynamic responses

5 Finally, services like scheduling, ambulance, reports – all feed into one central Health DB.

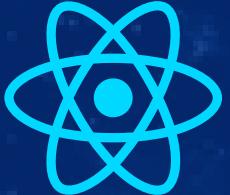
## Data Flow

- Final data like Feedback, Appointments, Transcripts, Reports, User Records is stored in the Health DB.
- All services read/write to this DB as per flow.

## System Services

- Report Sharing Service
- Notification Service
- Scheduling Service
- Doctor Preprocess Simulator
- Appointment Scheduler
- Ambulance Booking Service

# Technologies To Be Used

- Reactjs ,Tailwind and Material UI: Frontend logic and UI
 
  
React.js
- Tailwind CSS
 
- Material UI
 
- Bootstrap
 
  
Bootstrap
- Express.js and node.js : Backend logic
 
  
Express.js
- Node.js
 
- Tensorflow : Disease detection
 
  
Tensorflow
- Vext: setting up pipeline of LLMs
 
- GSAP: User friendly animations
 

# AI/ML Technologies Used

Feature	ML/AI Model / Technology	Purpose
Voice-Based Medical Simulator	Google Speech-to-Text API, NLP pipeline	Converts spoken symptoms into structured reports and enables faster diagnosis
3D Lifestyle Avatar	Three.js + biometric data mapping	Real-time visualization of user health metrics to boost engagement and awareness
MedVit Image Analysis & Report	YOLOv8 / TensorFlow	AI-based analysis of medical images for instant diagnostic insights
VAPI Voice Agent & Routine Planner	LLaMA2 (on-device) + NLP	Offline, voice-based assistant that plans personalized routines and sends wellness reminders
Healthcare Community Hub	WebSockets + NLP moderation	Enables real-time, channel-based peer discussions for health education and support

# FEATURES AND NOVELTY



## Voice-Based Medical Simulator

Enables fast, hands-free health reporting using natural voice interaction for quicker triage and report generation.



## 3D Lifestyle Avatar

Offers real-time, visualized health feedback through an animated avatar to improve user engagement and self-awareness.



## MedVit Image Analysis & Report

Leverages AI-driven medical image scanning for instant, auto-generated diagnostic insights.

- AI Voice Agent** that senses your mood, plans your day, fuels motivation.
- Doctor Simulator** slashing diagnosis time by **4x**—when every second counts.
- 3D AI Twin** that evolves—growing **older** or **fitter** with your real choices.
- Emotion-Aware System** that goes beyond steps to understand you.
- Multi-Language AI** for India—reaching **every voice, every village**.
- Real-Time Ambulance Automation** eliminating delays between home and hospital.

## Comparison Of HealthXAI With Existing Solution

Platform Name	Future Health Simulation	Emotion Adaptive Coaching	Personalized Risk Prediction	Secure Offline Analysis	Visual Disease Diagnostics	Doctor Bridg Protocol
Health x AI	✓	✓	✓	✓	✓	✓
Thrive AI Health	✗	✓	✓	✗	✗	✗
Ada Health	✗	✗	✓	✗	✗	✗
K Health	✗	✗	✓	✗	✗	✗
Empatica	✗	✗	✗	✗	✗	✗
BeEmotion	✗	✓	✗	✓	✗	✗
Earkick	✗	✓	✗	✗	✗	✗
Eko Health	✗	✗	✗	✗	✗	✗
EmoBay	✗	✓	✗	✗	✗	✗
Babylon Health	✗	✗	✓	✗	✗	✗



## VAPI Voice Agent & Routine Planner

Acts as a voice-based health companion that personalizes daily routines and wellness reminders using biometric cues.

## Automated Ambulance Tracker

Intelligently auto-books and routes ambulances based on patient location and hospital availability.

## Healthcare Community Hub

Fosters peer-to-peer medical knowledge sharing through structured, real-time discussion channels.

# SHOWSTOPPERS AND DRAWBACKS



## AI Voice Companion & Emotional Intelligence

Personalized, mood-aware coaching that understands and motivates users daily.



## Advanced Image Analysis & Visual Diagnostics

Instantly detects issues from medical images for faster, clearer diagnosis.



## Doctor Preprocess Simulator

Speeds diagnosis with voice-input symptoms and instant, shareable reports—bridging patient-doctor gaps.



## Offline Data Processing

On-device AI like LLaMA2 ensures privacy by processing data locally without cloud dependency.



## Instant, Multilingual AI Health Reports

Generates easy-to-understand, shareable reports in local languages to improve follow-up and care.

## Challenges and Risks

1. Model accuracy for diverse medical cases
2. Limited device resources for AI processing.
3. Latency in real-time communication with interns.
4. Securing sensitive medical data.
5. Scaling the medical intern network.



## Strategy for Challenges

- Continuous fine-tuning with diverse datasets and user feedback.
- Optimize models with TensorFlow Lite and ONNX Runtime.
- Use WebSocket and optimize network protocols for speed.
- Encrypt data and comply with HIPAA/GDPR regulations.
- Automate intern management and onboard new interns regularly.

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# thank you

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