

Project Design Phase

Solution Architecture



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Project Name: HealthAI: Intelligent Healthcare Assistant Using IBM Granite



Maximum Marks: 2 Mar



Solution Architecture – HealthAI

Solution architecture in HealthAI serves as the bridge between real-world healthcare challenges and advanced AI-driven technology. It outlines how HealthAI is built to deliver accurate, personalized, and responsive medical support.



Goals of HealthAI's Solution Architecture:

1. **Identify the most effective AI-driven technology** to solve the problem of inaccessible or unreliable healthcare information.
 2. **Design the complete structure** — from user input (like symptoms or questions) to backend AI processing using IBM Granite and secure API handling.
 3. **Define key features and development phases**, including modules like:
 - Patient Chat ○ Disease Prediction
 - Treatment Plan Generation ○ Health Analytics
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Key Characteristics of the HealthAI Architecture:

- **Modular and Scalable Design:** Each core functionality is independently built using Python and Streamlit.
- **AI Integration:** IBM Granite (13B Instruct v2) is used to process all medical queries and generate accurate, natural-language responses.
- **User Interface:** Streamlit provides an intuitive frontend with form-based inputs, chatbot interfaces, and dynamic visualizations using Plotly.
- **Data Flow:** User inputs are sent to the AI model via a central shared function (shared_model.py), processed securely, and returned in structured output.
- **Security:** Environment variables (.env) are used for API key management to protect sensitive credentials.

Schurction Architecture Template

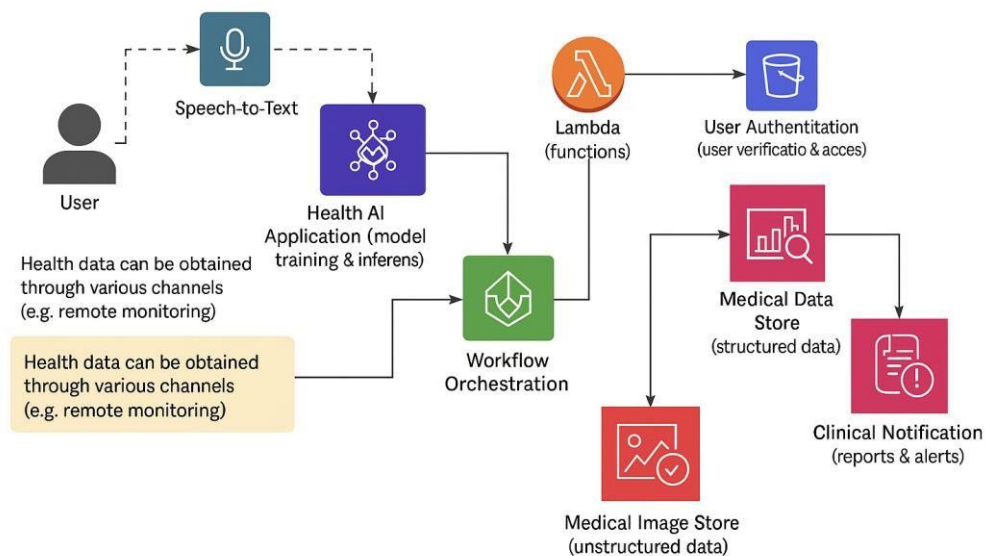


Figure 1: Architecture and data flow of the health AI system