MULTI-MODAL AI

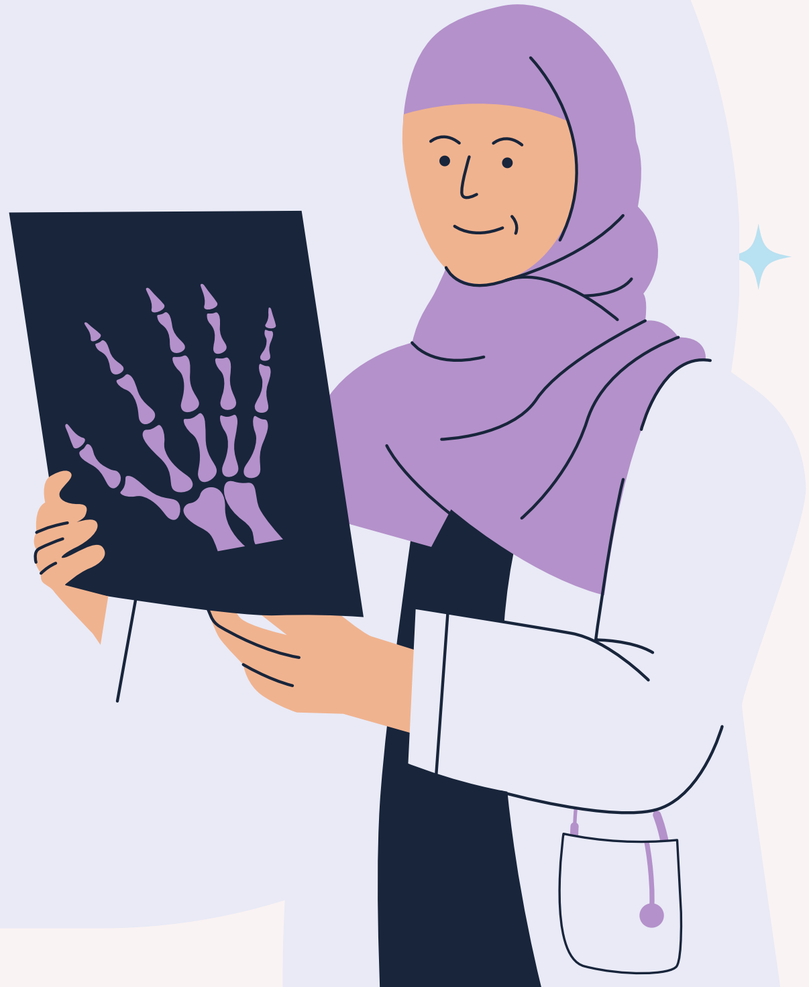
DiagnoGenie

By - Sanskriti Sharma (RA2311003010618)
Aarjav Godha (RA2311003010628)
Devika Manoj (RA2311003010641)

Problem Statement

There is a growing demand for accessible, reliable, and intelligent healthcare tools that can assist users in understanding and managing their medical concerns. Current digital solutions often lack multi-modal capabilities and are not comprehensive enough to simulate a general physician's diagnostic reasoning.

Develop a multi-modal AI chatbot that can act as a general physician assistant, capable of analyzing textual complaints, lab reports, and medical images to assist in diagnosing medical issues and offering initial guidance.



Our Solution

We propose a Multi-Modal AI Chatbot built on large language and vision models (LLMs + CV), capable of:

Text Understanding: Interprets user-written symptom descriptions.

Image Analysis: Parses and understands medical images (e.g., blood tests, scans).

Medical Reasoning: Uses a trained LLM to assess risk and suggest possible causes.

Conversational Interface: Asks relevant questions and gives guidance like a general physician.

Multi-Turn Dialogue: Maintains context over multiple messages to simulate a real consultation.

Our Tools and Techstack

Data Ingestion & Preprocessing

FastAPI File Handling
OpenCV (cv2)
PIL (Pillow)
PyPDF2
NumPy

AI & Model Layer

PyTorch 2.0+
CheXNet (DenseNet-121)
scikit-learn
Ollama LLM
GradCAM

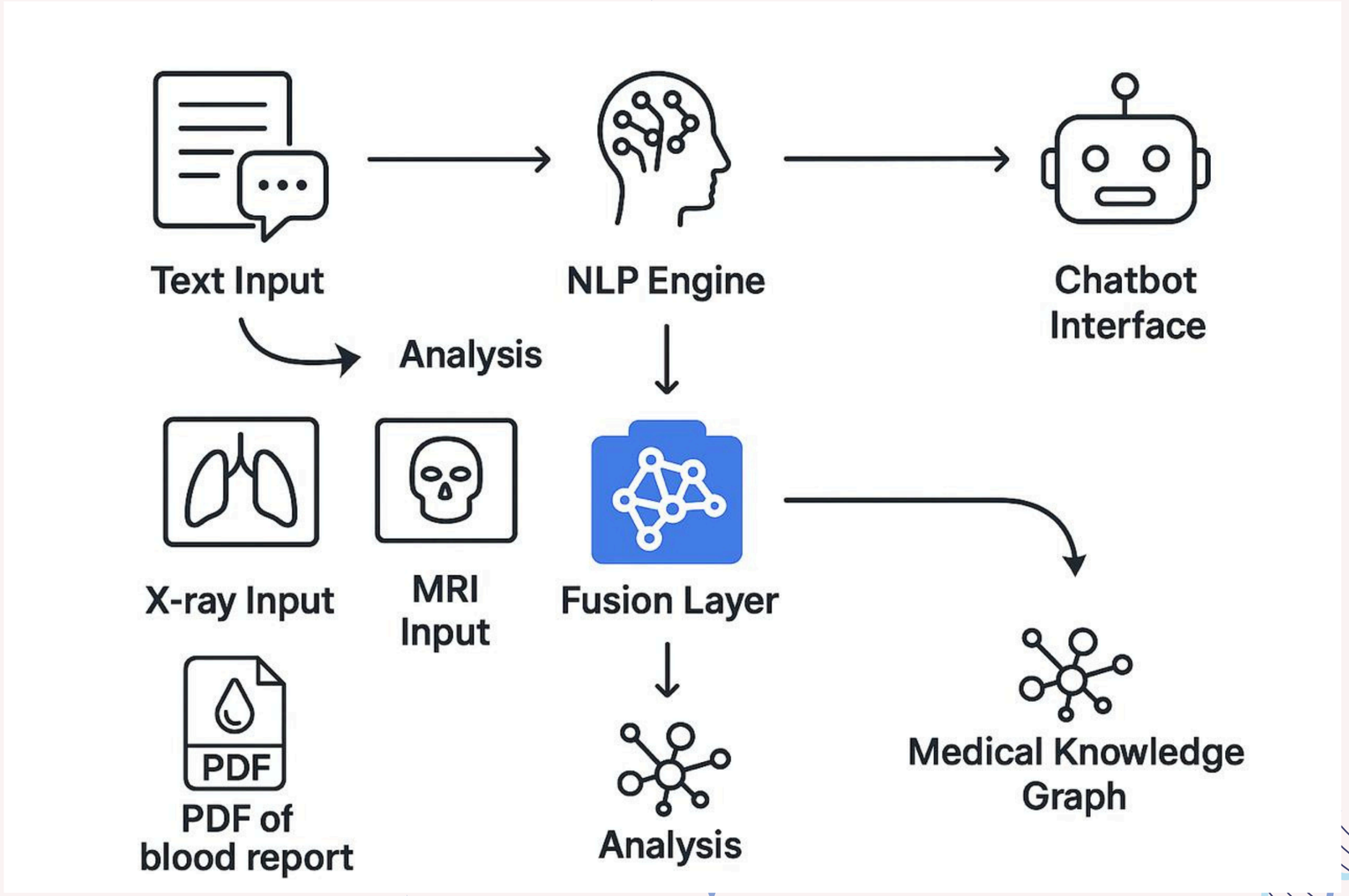
Backend & API Layer

Python 3.10+
FastAPI
Uvicorn
Pydantic
Async Processing

Frontend & User Interface

React 18.3.1
Vite 5.4.8
Tailwind CSS 3.4.14
WebGL + OGL
JavaScript (ES6+)

Architecture



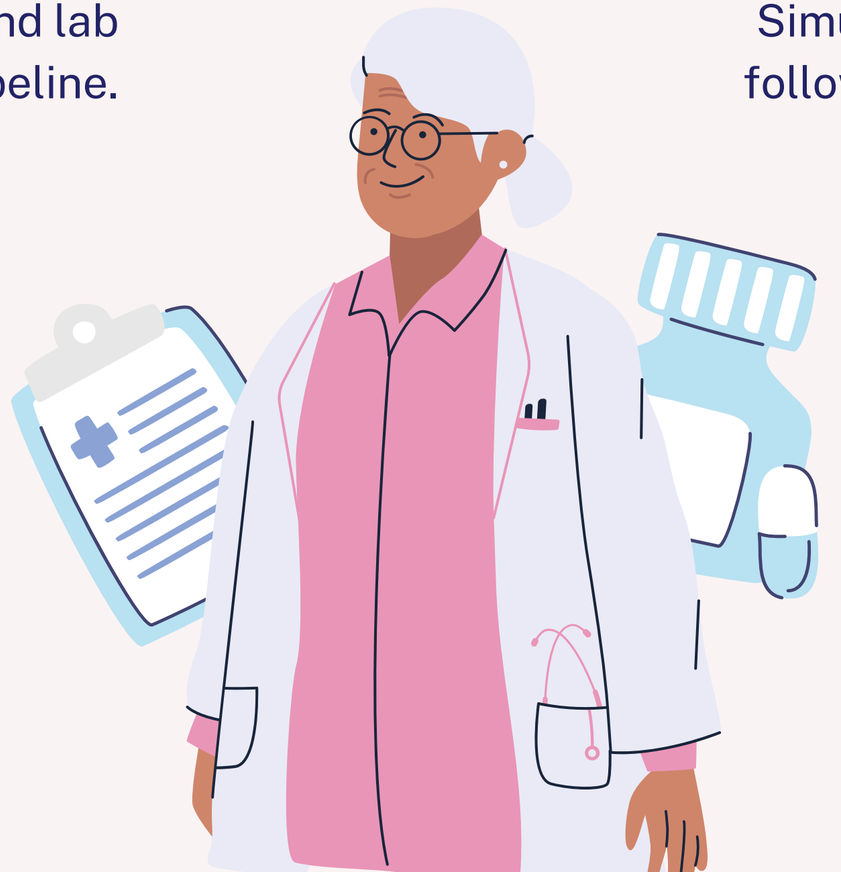
Innovative Highlights

True Multi-Modal Diagnosis

Integrates text, X-rays, MRI scans, and lab report PDFs into a single analysis pipeline.

Physician-Like Reasoning

Simulates real doctor consultations with follow-up questions, risk assessment, and context retention.



Medical Knowledge Graph Integration

Combines AI insights with structured medical databases for accurate, explainable reasoning.

Privacy-First & Bias-Aware

Built with HIPAA/GDPR compliance, bias mitigation, and safety disclaimers at every step.

Stakeholders

Consumers or Patients

Team
(Healthcare Professionals & Developers)

Business and Policy Teams

Conclusion

- DiagnoGenie is an AI-powered healthcare companion, not just a chatbot.
- Integrates text, medical images, and structured data for physician-like reasoning.
- Solves real-world needs of patients, doctors, and healthcare businesses.
- Built on advanced AI models with scalable cloud infrastructure.
- Ensures a safe, bias-aware, and user-friendly experience.
- Acts as an early diagnostic assistant, making healthcare more accessible and reliable.

Thank you for your attention