PROJECT REPORT FORMAT

Date	27 June 2025
Team ID	LTVIP2025TMID33406
Project Name	Health AI-Intelligent Health care Assistant using Granite

1.INTRODUCTION:

1.1 Project Overview

A Conceptual or actual project using artificial intelligence to improve healthcare. If you have a specific company, product, or context in mind (e.g., diagnostics, wearable integration, hospital operations), I can tailor this further.

Objective:

To harness the power of artificial intelligence to improve patient outcomes, streamline healthcare operations, and enable personalized, predictive, and preventive healthcare.

Key Goals:

- Early Diagnosis & Detection
- Personalized Treatment Plans
- Remote Monitoring & Virtual Care
- Operational Efficiency
- Clinical Decision Support

Core Technologies Used:

- Machine Learning (ML) and Deep Learning
- Natural Language Processing (NLP) for analyzing clinical notes
- Computer Vision for interpreting medical imaging
- Wearable and IoT Integration
- Chatbots and Virtual Assistants

Expected Outcomes:

- Improved diagnostic accuracy
- Reduced hospital readmissions
- Enhanced patient engagement
- Cost savings through automation and early intervention
- More equitable care through data-driven insights

1.2 Purpose

Health AI is used to help doctors, nurses, and patients by making healthcare smarter and faster. It looks at health data to find problems early, suggest treatments, and make better decisions. It also helps reduce the time spent on paperwork and routine tasks.

Example:

- Reducing Hospital workload.
- It can remind patients to take medicine.
- Support clinicians.
- Automatic Healthcare processes.
- Easily identify the disease based on the symptoms.

2.IDEATION PHASE:

2.1 Problem statement

I want to build a generative AI application called “Health AI” , I want to integrate IBM granite/granite-3,3-2b-instruct model from hugging class, I want to deploy it with FAST API so give me html and CSS / GRADIO in google collab.

1.Symptoms Identifier:

- Here user give symptoms and model predict disease.

2.Home Remedies:

- Here a user enters his disease and model will give him a natural home remedy for the disease.

3.Patient chat assistant:

- Ask questions like "What does a sore throat mean?"
- Get AI-powered, reliable response(non-diagnostic).

4.Disease Prediction:

- user inputs symptoms (e.g., fever, cough).
- Ai suggests possible conditions (e.g., flu, cold).

5.Personalized Treatment Plans

- Suggest home remedies, medication guidelines (non-prescriptive).
- Based on user profile (age, gender, medical history).

2.2 Empathy Map canvas

- Frontend: HTML + CSS
- Backend: Fast API + IBM Granite 3-2b-instruct

(Install required dependencies)

- GRADIO app for google collab

2.3 Brainstorming

Feature	Prompt template
Symptom Identifier	User enters symptoms → AI suggests possible diseases
Home Remedies	User enters disease → AI gives natural /home-based remedies.
Patient Chat	Users can ask general health questions → AI provides informative, non-diagnostic answers.
Disease Prediction	Based on symptoms input, AI suggests potential conditions (e.g., cold, flu).
Treatment Plans	Suggests age/gender/history-based tips, non-prescriptive guidance, lifestyle improvements.

3. REQUIREMENT ANALYSIS:

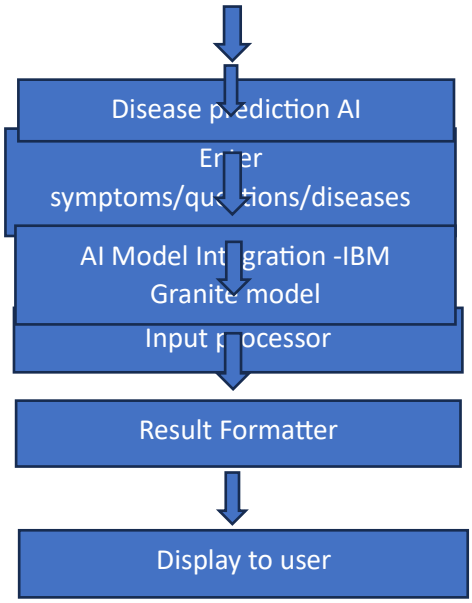
3.1 Customer Journey map

- Awareness
- Consideration
- First use
- Retention

3.2 Solution requirement

Item	Detail
Model	IBM-granite/granite-3b-instruct from Hugging Face
Prompt Design	Custom prompts per feature (symptoms → condition, condition → remedy, etc.)
Response Type	Short, clear, empathetic, natural language replies

3.3 Data flow diagram



3.4 Technology stack

Component	Technology
LLM	IBM-granite/granite-3b-instruct (Hugging Face model)
Model Access	Hugging Face Inference API or locally hosted model (via Transformers library)
Prompt Engineering	Python-based prompt generation logic

4.PROJECT DESIGN:

4.1 Problem solution fit

Problem:

Users lack affordable, personalized, and reliable health guidance for everyday symptoms.

Solution:

Health AI, powered by IBM Granite, delivers AI-based symptom interpretation, home remedies, general health Q&A, and safe treatment suggestions in a user-friendly web interface.

4.2 Proposed Solution

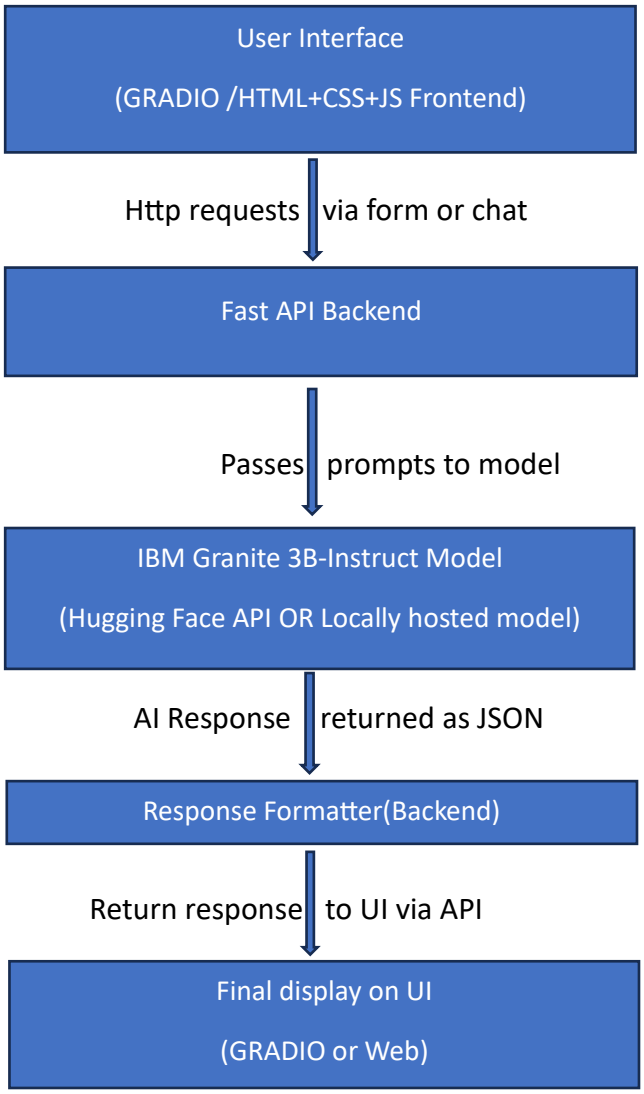
Health AI is an AI-powered web application that:

- Uses the IBM Granite model to generate accurate, contextual health advice.
- Provides natural language responses to health questions.
- Suggests possible conditions based on symptoms (non-diagnostic).
- Recommends safe, home-based remedies.

- Creates basic treatment suggestions tailored to user profile (age, gender, history).

4.3 Solution Architecture

Architecture overview



5. PROJECT PLANNING & SCHEDULING:

5.1 Project Planning

PHASE 1: Discovery and Planning (2-4 weeks)

PHASE 2: Data collection & Preparation (1-2 months)

PHASE 3: Model Selection (1-2 months)

PHASE 4: System deployment (2-3 months)

PHASE 5: Testing & Validation (1-2 months)

PHASE 6: Deployment (1 month)

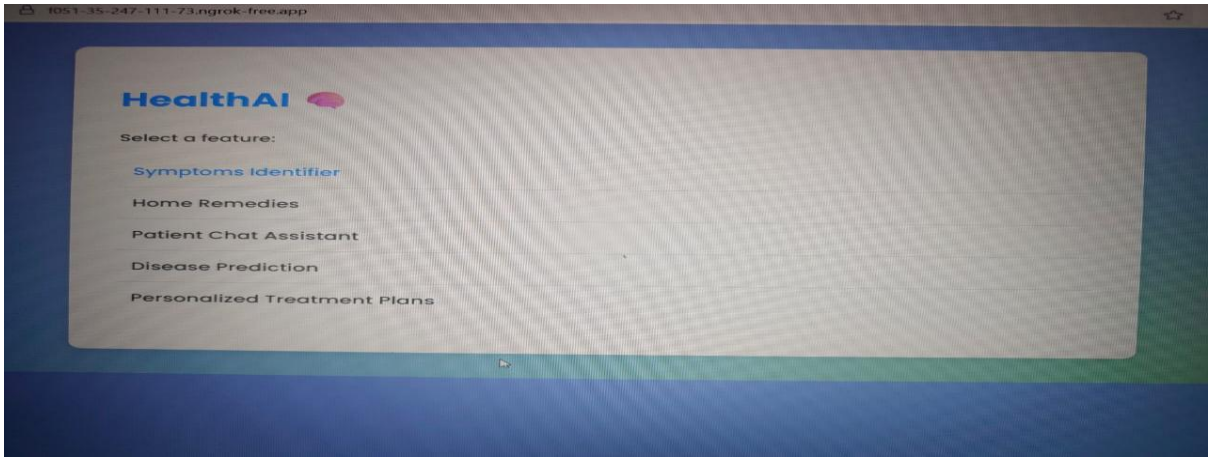
6.FUNCTIONAL AND PERFORMANCE TESTING:

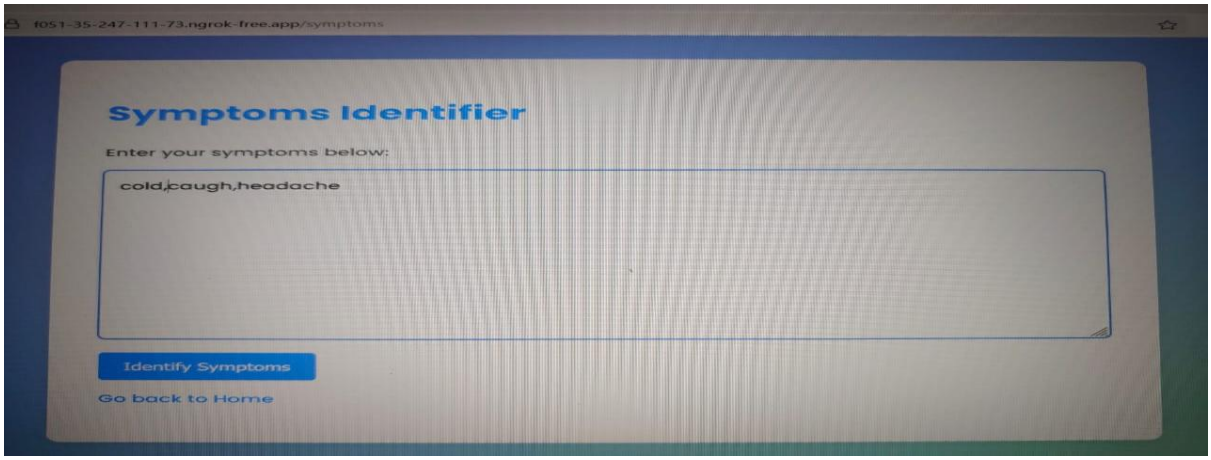
6.1 Performance Testing

- Test input validation
- Number input validation
- Content Generation
- API connection check
- Response Time test
- API speed test
- File upload load teat

7.RESULTS:

7.1 Inputs & Outputs Screenshots





8.ADVANTAGES & DISADVANTAGES:

Advantages

- Enterprise-Grade Foundation Models
- Customizability
- Privacy & Security
- Integration with WATSONX
- Multimodal Capabilities

Disadvantages

- Cost
- Model Size & Complexity
- Limited Public Benchmarks
- Vendor Lock-In
- Healthcare-Specific Pretraining May Be Limited

9.CONCLUSION:

In conclusion, IBM Granite is a strong choice for enterprise-level Health AI projects that require high standards of data security, transparency, and model governance—especially

when paired with IBM's robust AI platform ecosystem. Careful planning and customization will be key to unlocking its full potential in a clinical context.

Implementing a Health AI project using IBM Granite offers a promising path toward building secure, scalable, and trustworthy AI solutions in the healthcare domain. With its foundation in enterprise-grade models, IBM Granite provides strong support for data privacy, regulatory compliance, and customizability, which are critical in handling sensitive medical information.

10. FUTURE SCOPE:

The integration of IBM Granite with generative AI presents a transformative future for healthcare innovation. As IBM continues to evolve its Granite models and expand the capabilities of the WATSNOX platform, the Health AI project can scale into several cutting-edge domains.

- Personalized Healthcare & Treatment Planning
- Clinical Documentation Automation
- Medical Research & Drug Discovery
- Multilingual & Global Health Applications
- Predictive & Preventive Healthcare