
HealthAI: Intelligent Healthcare Assistant Using IBM Granite

🔹 Introduction

HealthAI is a smart healthcare assistant powered by **IBM Granite**, a foundation model designed to process and generate human-like text. This assistant aims to support patients and healthcare professionals by offering symptom analysis, health recommendations, and general medical advice in real-time.

🔹 Technical Architecture

The architecture integrates several components:

- **Frontend**: User interface built using HTML/CSS/JavaScript or React.
- **Backend**: Python Flask app for processing requests.
- **IBM Granite**: Used via API for natural language processing.
- **Integration Layer**: Manages communication between the app and IBM Granite.
- **Database**: Stores user queries, responses, and logs.

🖼️ *[Insert diagram here: "HealthAI System Architecture Flowchart"]*

🔹 IBM Granite Integration

IBM Granite is a foundation model designed by IBM for enterprise-grade NLP tasks. It's accessed via REST APIs and allows seamless prompt-based communication.

Use Cases in HealthAI:

- Symptom checker
- Diet & fitness advice
- General health education
- First aid suggestions

🔹 Workflow Overview

1. User submits a health query through the UI.
2. Backend receives the query and formats it.

3. Query is sent to IBM Granite via API.
4. Model returns a relevant response.
5. Response is displayed to the user.
6. Interaction is saved in the database.

🖼️ *[Insert image: "Workflow Flowchart"]*

🔹 **Milestone 1: Model Selection and Architecture**

This phase involves choosing IBM Granite and designing the backend logic, deciding on request/response formats, and selecting a Flask framework for easy integration.

🔹 **Milestone 2: Core Functionalities Development**

Key features built in this phase:

- Prompt generation from user input
- API communication handler
- Response post-processing
- Logging and error handling

🔹 **App.py Development**

Here's a simple Python snippet for calling IBM Granite:

```
import requests


def query_granite_model(prompt):
    url = "https://api.ibm.com/granite/v1/generate"
    headers = {
        "Authorization": "Bearer YOUR_API_KEY",
        "Content-Type": "application/json"
    }
    data = {
        "model": "granite-healthcare",
```

```
    "prompt": prompt,
    "max_tokens": 200
}
response = requests.post(url, headers=headers, json=data)
return response.json()
```

🔹 **Design and Develop the User Interface**

The UI was created with a simple and clean layout, allowing:

- Easy input of symptoms or queries
- Real-time display of responses
- User-friendly feedback loop

🖼️ *[Insert image: Screenshot of the UI]*

🔹 **Deployment Strategy**

- Docker used for containerization.
- IBM Cloud for hosting the backend.
- CI/CD setup with GitHub Actions for deployment.
- Backend secured with authentication keys.

🔹 **Conclusion**

HealthAI showcases how AI-powered models like IBM Granite can be used to transform healthcare services. The project emphasizes simplicity, scalability, and real-time assistance to make healthcare more accessible.

By team member GUNTURU VENKATA NARASIMHA

Team ID : LTVIP2025TMID34812