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🏥 Intelligent Healthcare Assistant using IBM Granite

Overview

This project is an Intelligent Healthcare Assistant powered by IBM Granite Foundation Models, designed to provide AI-driven support in healthcare settings. It helps users with symptom checks, health inquiries, medication guidance, appointment scheduling, and more through natural language interaction.

🧠 Built With

IBM Granite Foundation Models (LLM, NLP)

Watsonx.ai – IBM’s AI Studio

Watsonx.data – Data lakehouse for healthcare datasets

Python – Backend logic

Flask/FastAPI – API endpoint (optional)

React.js/HTML – Frontend (if applicable)

IBM Cloud Object Storage – Store patient records or data securely

MongoDB/Cloudant – For storing conversations or metadata

🚀 Features

Symptom checking with natural language prompts

Personalized health advice based on user input

Conversational interface for patient interaction

Secure and privacy-compliant (HIPAA-ready architecture)

Integration with EHRs or scheduling systems (optional)

Custom prompt engineering using IBM Granite LLMs

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🔧 Installation

Prerequisites

Python 3.8+

IBM Cloud account

ibm-watsonx, ibm-cloud-sdk, or appropriate SDKs

(Optional) Node.js (if using frontend)

Clone the repository

git clone https://github.com/your-username/intelligent-healthcare-assistant.git

cd intelligent-healthcare-assistant

Install dependencies

pip install -r requirements.txt

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🛠 Configuration

1. Set up IBM Watsonx.ai

Create a project in IBM Watsonx.ai

Add the Granite Foundation Model (e.g., granite-13b-chat-v1)

Generate an API key

2. Environment Variables

Create a .env file with:

IBM\_API\_KEY=your\_ibm\_api\_key

IBM\_WATSONX\_PROJECT\_ID=your\_project\_id

IBM\_REGION=your\_region

3. Model Initialization

Use the IBM SDK to load the Granite model and send prompts. Example:

from ibm\_watsonx\_ai.foundation\_models import Model

model = Model(model\_id="granite-13b-chat-v1", api\_key=API\_KEY, project\_id=PROJECT\_ID)

response = model.generate(prompt="What are symptoms of flu?")

print(response.generated\_text)

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🧪 Usage

Run the backend:

python app.py

(Optional) Run the frontend:

npm install

npm start

Access the assistant in the browser or via API endpoints.

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📦 Example Use Cases

Symptom Checker: "I have a headache and sore throat. What could it be?"

Medication Guidance: "Can I take ibuprofen with paracetamol?"

General Health Questions: "What are the side effects of metformin?"

Appointment Scheduling (optional integration)

Multilingual Support (Granite supports multilingual prompts)

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🛡 Security & Compliance

All data encrypted in transit and at rest

IBM Watsonx services are designed for enterprise and regulated workloads

Potential for HIPAA/GDPR-aligned implementation

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📚 Resources

IBM Watsonx Documentation

Granite Foundation Model Overview

Watsonx.ai Studio

Watsonx Python SDK

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🤝 Contributing

Contributions are welcome! Please open an issue or submit a pull request.

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