HealthAI Intelligent Healthcare Assistant Using IBM Granite

Team Details

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- Team Members:
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1. Introduction

HealthAI is an AI-powered healthcare assistant designed to provide accessible, easy-to-understand healthcare help using IBM's Granite model from Hugging Face. This application supports patients and healthcare professionals by offering a Patient Chat, Disease Prediction, Treatment Plans, and Health Analytics in a unified interface.

2. Project Overview

Purpose

The purpose of HealthAI is to offer fast, secure, and accurate healthcare assistance leveraging generative AI. By enabling natural language interaction, disease prediction, and personalized medical suggestions, the project aims to empower patients and support better health decisions using AI technology.

Features

Feature	Key Point	Functionality
Patient Chat	Conversational Interface	Users can ask health-related questions and receive AI responses
Disease Prediction	Smart symptom analysis	Evaluates symptoms to suggest possible medical conditions
Treatment Plans	Personalized Recommendation	Provides general and personalized treatment suggestions
Health Analytics	Health trend visualization	Monitors and visualizes patient health metrics

3. Architecture

- Frontend: **Gradio web app (or Streamlit alternative for UI)**
- Backend: **Python with Transformers & Torch, IBM Granite model via Hugging Face**
- LLM Integration: **IBM Granite-3.2 2b-instruct for all natural language and medical guidance fea t ures.**
- Deployment: **Google Colab with T4 GPU (supports scalable and accessible model serving)**

4. Setup Instructions

Prerequisites:

- **Python 3.8**
- **pip package manager**
- **Hugging Face account (for model access)**
- **Google Colab or compatible PC with GPU**

Installation Process:

Clone the GitHub repository (after project upload)

Install dependencies:

```
pip install -r requirements.txt
```

Launch the app in Colab or Python environment:

```
python health_ai_app.py
```

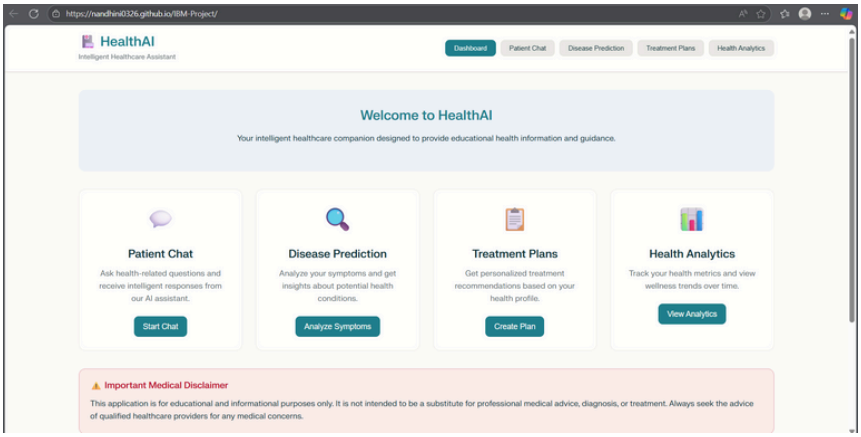
5. Folder Structure

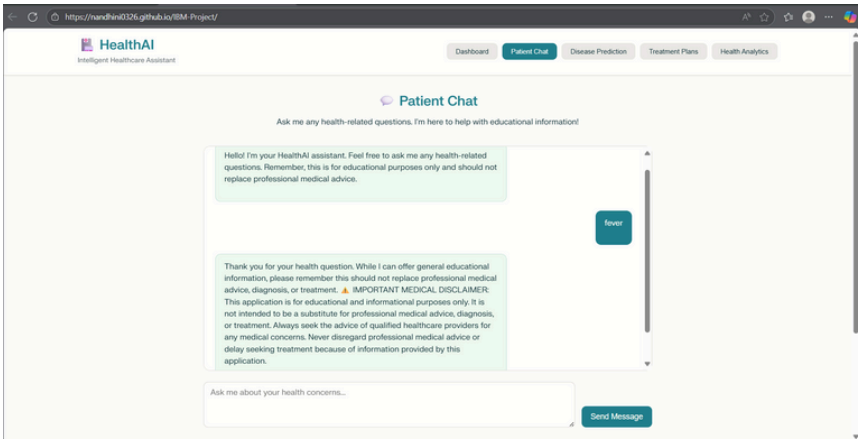
```
/healthai-project
 ├── health_ai_app.py      #Main application file
 ├── requirements.txt      # Dependencies
 └── README.md             #Project documentation
```

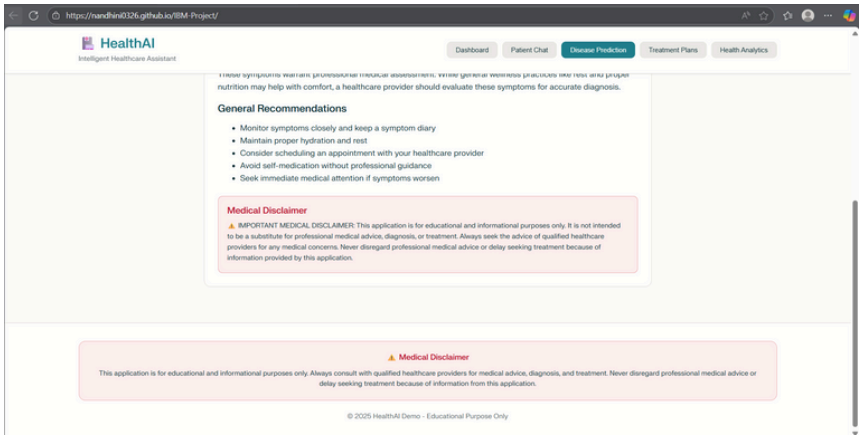
6. Running the Application

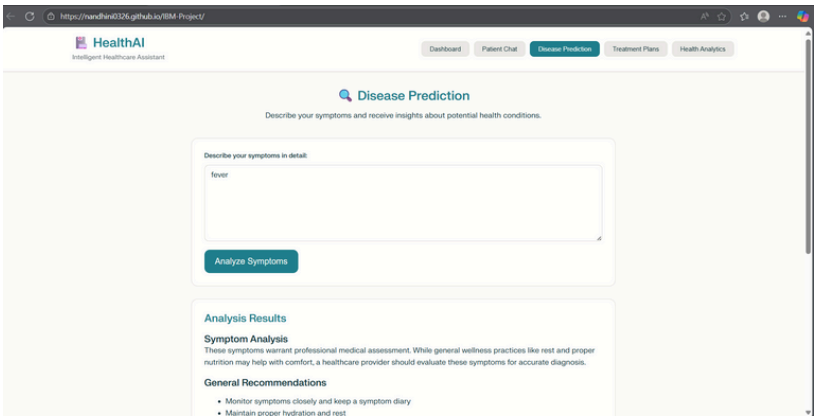
- **Launch the Python script or notebook as per instructions.**
- **Interact with the web interface for Patient Chat, Disease Prediction, Treatment, or Analytics tabs.**
- **Use the analysis and recommendations for informational/educational purposes only.**

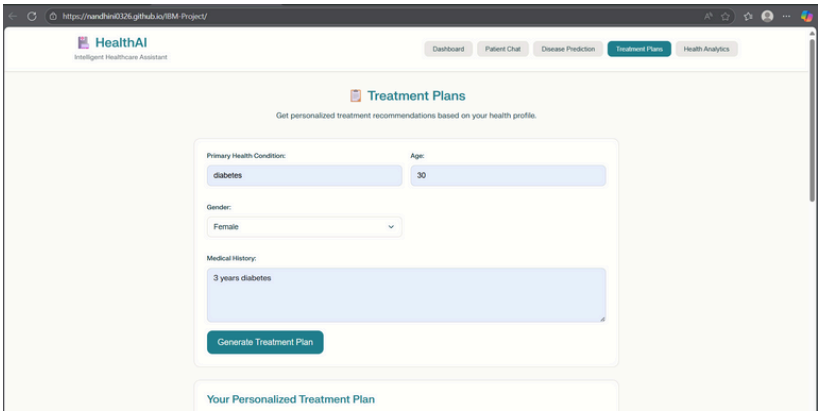
7. Screenshots








https://nandhini0326.github.io/IBM-Project/
HealthAI
Intelligent Healthcare Assistant
Dashboard
Patient Chat
Disease Prediction
Treatment Plans
Health Analytics
Disease Prediction
Describe your symptoms and receive insights about potential health conditions.
Describe your symptoms in detail:
fever
Analyze Symptoms
Analysis Results
Symptom Analysis
These symptoms warrant professional medical assessment. While general wellness practices like rest and proper nutrition may help with comfort, a healthcare provider should evaluate these symptoms for accurate diagnosis.
General Recommendations
Monitor symptoms closely and keep a symptom diary
Maintain proper hydration and rest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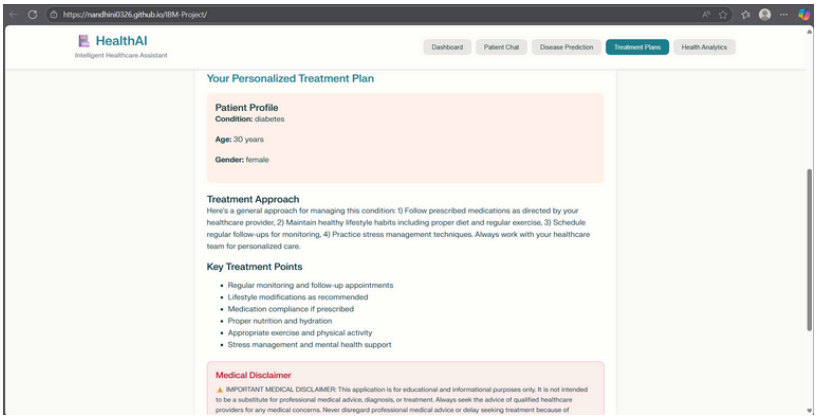
HealthAI
Intelligent Healthcare Assistant
Dashboard
Patient Chat
Disease Prediction
Treatment Plans
Health Analytics
Treatment Plans
Get personalized treatment recommendations based on your health profile.
Primary Health Condition:
diabetes
Age:
30
Gender:
Female
Medical History:
3 years diabetes
Generate Treatment Plan
Your Personalized Treatment Plan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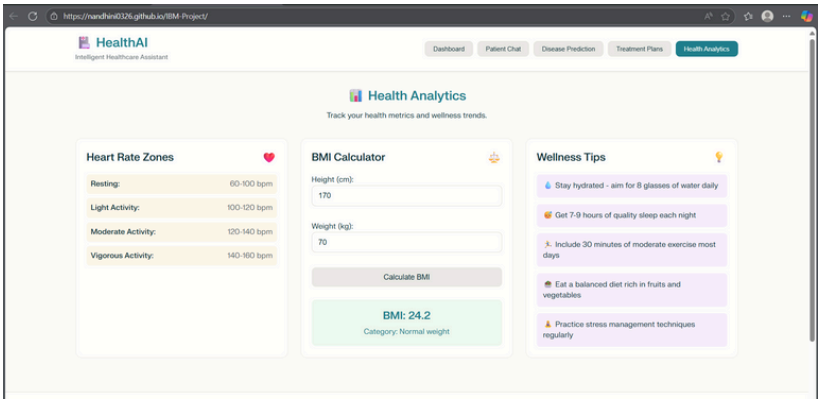
HealthAI
Intelligent Healthcare Assistant
Dashboard
Patient Chat
Disease Prediction
Treatment Plans
Health Analytics
Your Personalized Treatment Plan
Patient Profile
Condition: diabetes
Age: 30 years
Gender: female
Treatment Approach
Here's a general approach for managing this condition: 1) Follow prescribed medications as directed by your healthcare provider, 2) Maintain healthy lifestyle habits including proper diet and regular exercise, 3) Schedule regular follow-ups for monitoring, 4) Practice stress management techniques. Always work with your healthcare team for personalized care.
Key Treatment Points
Regular monitoring and follow-up appointments
Lifestyle modifications as recommended
Medication compliance if prescribed
Proper nutrition and hydration
Appropriate exercise and physical activity
Stress management and mental health support
Medical Disclaimer
IMPORTANT MEDICAL DISCLAIMER: This application is for educational and informational purposes only. It is not intended to be a substitute for professional medical advice, diagnosis, or treatment. Always seek the advice of qualified healthcare providers for any medical concerns. Never disregard professional medical advice or delay seeking treatment because of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HealthAI
Intelligent Healthcare Assistant
Dashboard
Patient Chat
Disease Prediction
Treatment Plans
Health Analytics
Health Analytics
Track your health metrics and wellness trends.
Heart Rate Zones
Resting: 60-100 bpm
Light Activity: 100-120 bpm
Moderate Activity: 120-140 bpm
Vigorous Activity: 140-160 bpm
BMI Calculator
Height (cm):
170
Weight (kg):
70
Calculate BMI
BMI: 24.2
Category: Normal weight
Wellness Tips
Stay hydrated - aim for 8 glasses of water daily
Get 7-9 hours of quality sleep each night
Include 30 minutes of moderate exercise most days
Eat a balanced diet rich in fruits and vegetables
Practice stress management techniques regularly

8. API Documentation

- The application uses Gradio for API exposure (click events, input/output handling for each tab).
- Main AI endpoints:
  - `POST /chat` - Health question queries
  - `POST /symptoms` - Disease prediction from user input
  - `POST /treatment` - General medical guidance

9. User Interface

- Minimalist, accessible dashboard with tabbed navigation
- Tabbed layout for features Patient Chat, Prediction, Treatment, Analytics)
- Prominent medical disclaimers and info banners

10. Testing

- Manual testing for all user input flows (chat, prediction, treatment)
- User input validation for empty or invalid data
- Load and UI tests using multiple browser/devices

11. Known Issues & Future Enhancement

- Dependence on internet and Hugging Face for model access
- Analytics dashboard has limited visualization in current version; future upgrades can include detailed metrics, reminders, user history, secure login, and more interactive charts.

12. Conclusion

HealthAI provides a scalable, accessible foundation for AI-powered healthcare assistants using IBM's Granite models, demonstrating the power of generative AI in health information and patient support.