Project Document – Medical AI Assistant

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1. Project Title

Medical AI Assistant using IBM Granite Model & Gradio

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2. Project Overview

The Medical AI Assistant is an AI-powered application that helps users analyze symptoms and generate possible medical conditions with general treatment suggestions. It is built with Hugging Face Transformers, IBM Granite 3.2 instruct model, and Gradio UI.
 # Disclaimer: This project is for informational purposes only and not a replacement for professional medical advice.

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3. Objectives

- **To provide an easy-to-use AI assistant for symptom analysis.**
- **To suggest possible conditions and general treatment plans based on user input.**
- **To integrate a safe disclaimer emphasizing medical consultation.**
- **To demonstrate the use of LLMs in healthcare applications.**

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4. System Architecture

1. **User Interface → Built with Gradio.**
   - **Disease Prediction Tab**
   - **Treatment Plan Tab**
2. **Backend Model → IBM Granite 3.2 Instruct (transformers-based).**
3. **Processing Flow:**
   - **User enters symptoms or condition details.**
   - **Input is tokenized and passed to the model.**
   - **Model generates a structured response.**
   - **Output is displayed in the Gradio app.**

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5. Features

- **Symptom-based Disease Prediction**

User provides symptoms → AI suggests possible conditions & general recommendations.

- **Personalized Treatment Plans**
  AI generates home remedies and general medication guidelines based on condition, age, gender, and history.
- **Gradio UI with Tabs**
  Interactive, user-friendly layout with input fields and results panel.
- **Safe Use Disclaimer**
  Every output stresses the importance of consulting healthcare professionals.

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6. Technologies Used

- **Programming Language: Python**
- **Libraries:**
  - **transformers (Hugging Face)**
  - **torch (PyTorch)**
  - **gradio (for frontend UI)**
- **Model: IBM Granite 3.2B Instruct**

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7. Setup Instructions

1. **Install dependencies:**
2. **pip install gradio torch transformers**
3. **Save the code as healthai.py.**
4. **Run the app:**
5. **python healthai.py**
6. **Open the Gradio link in your browser (http://127.0.0.1:7860 or public share link).**

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8. Folder Structure

healthai_project/

healthai.py

requirements.txt

README.md

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9. Usage

- **Disease Prediction Tab: Enter symptoms → Click Analyze Symptoms → View results.**
- **Treatment Plans Tab: Enter condition, age, gender, medical history → Click Generate Treatment Plan → View personalized suggestions.**

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10. Testing

- **Tested on sample symptoms like fever, cough, headache.**
- **Tested treatment plans for conditions like diabetes, hypertension.**
- **Verified responses always include disclaimer.**

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11. Limitations

- **AI predictions are not medically verified.**
- **Model may generate generic suggestions.**
- **Cannot replace a licensed doctor's diagnosis.**

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12. Future Enhancements

- **Add voice input/output for accessibility.**
- **Integrate with medical databases for verified results.**
- **Support multi-language responses.**
- **Implement user authentication for secure access.**
- **Store patient logs for long-term tracking.**