HEALTH-AI

HEALTH CARE ASSISTANT USING IBM GRANITE

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| NAME OF TEAMMEMBER | CONTRIBUTION IN PROJECT |
| PRASANNA | lead developer,Model integrator,documentation |
| JYOTHI | prompt design,requirnment writing |
| SHUBHAM | PPT&screenshots,testing support |
| CHINNA | Github upload |

TEAM ID:LTVIP2025TMID29464

INTRODUCTION

**1.1 Project Overview**

The healthcare industry is constantly evolving, with artificial intelligence (AI) playing an increasingly vital role in diagnosis, consultation, and patient interaction. The **HEALTH-AI** project is a chatbot-based virtual assistant that allows users to inquire about symptoms, diseases, remedies, and treatment options through a natural language interface. It is built using **IBM’s Granite 3.3 2B Instruct model**, accessed via **Hugging Face’s API** and integrated through a Python environment (Google colab). The system provides both **textual answers** and **data visualizations** like bar or pie charts to improve understanding.

The chatbot enables users to:

* Enter **health-related symptoms** in plain language.
* Receive **probable disease names**, based on known medical correlations.
* Get suggestions for **natural remedies**, general treatments, and care routines.
* View **probability charts** showing likely diagnoses.
* Ask follow-up questions in an ongoing conversation.

This system was developed as part of a **Generative AI internship project with Smart Bridge**, aiming to demonstrate how generative language models can enhance accessibility in healthcare without replacing certified medical professionals.

Key technologies used include:

* **IBM Granite 3.3 2B Instruct Model**
* **Hugging Face Transformers and API**
* **Python Libraries** (Matplotlib, Transformers, Requests)
* **Google Colab** for development/testing

📌 **Note:** HEALTH-AI does not replace professional medical consultation. It is designed to assist users with preliminary guidance only.

**1.2 Purpose**

The primary goal of this project is to develop a user-friendly, AI-powered chatbot that simplifies health information access. The traditional method of searching symptoms online often results in misinformation, anxiety, and confusion due to scattered or non-personalized content. HEALTH-AI addresses these issues by providing **tailored, conversational feedback** to users.

**🎯 Specific Objectives:**

* **Simplify diagnosis suggestions** for common symptoms using a trusted LLM.
* **Educate users** about possible remedies, treatments, and red-flag conditions.
* **Visualize information** clearly with charts that make data easy to digest.
* Provide a **safe environment** to explore health-related questions.
* Build a **modular and scalable codebase** using Python and AI APIs.

**💡 Why This Matters:**

1. **Accessibility:** HEALTH-AI reduces the dependency on expert consultations for initial understanding, especially in rural or under-served regions.
2. **Speed & Convenience:** Users can get quick insights at any time without waiting for appointments.
3. **Trust via Clarity:** Visual charts and clearly separated advice help users trust the output more than ambiguous search engine results.

**🧠 Project Relevance to Generative AI**

HEALTH-AI uses the **generative capabilities** of LLMs (Large Language Models) like IBM Granite to **generate medical advice**, summarize remedies, and respond to varied user inputs. Unlike rule-based systems, the model adapts to:

* Synonyms (e.g., “stomach pain” vs. “abdominal discomfort”)
* Conversational context (e.g., follow-up questions like “what if I also have fever?”)
* Personalized phrasing (“What’s a natural cure for dry cough?”)

This shows how **generative AI can be applied responsibly** to empower users with health knowledge in a conversational, empathetic manner.

**📊 Visual Suggestion for This Section:**

You can include a diagram such as this (to be generated separately):

**System Block Diagram**

User Input ➝ Python Chat UI ➝ Hugging Face API ➝ IBM Granite Model

⬇ ⬇

Text Parser Visualization Generator

⬇ ⬇

AI Response + Bar Chart ➝ Final Output

simple mock chat session screenshot like:

User: I have a sore throat and fever.

AI: Based on symptoms, possible conditions include:

- Common Cold (40%)

- Influenza (35%)

- Strep Throat (25%)

Suggested Remedies:

- Warm saline gargles

- Honey + ginger tea

- Paracetamol for fever