AI-Powered Health Assistant

A Project Report

submitted in partial fulfillment of the requirements

of

AICTE Internship on AI: Transformative Learning

with

TechSaksham – A joint CSR initiative of Microsoft & SAP

by

Rohith Reddy.G. K, gkrohithreddy@gmail.com

Under the Guidance of

Adharsh.P and Jay Rathod

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This Internship has allowed me choose my interested project called: **"AI-Powered Health Assistant"**. And helped me to gain knowledge in my enthusiast field AI.

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Finally, I thank everybody from the bottom of my heart for giving this opportunity and make me excel with good knowledge on AI fields and project completion.

ABSTRACT

The **AI-Powered Health Assistant** is a cutting-edge application that leverages artificial intelligence to provide **medical assistance and user-friendly healthcare interactions**. This project utilizes the **Falcon-7B-Instruct** model from **Hugging Face**, a powerful instruction-based large language model (LLM), to deliver **accurate and context-aware medical responses**. The system is designed to **answer health-related queries** and **facilitate medical services such as appointment scheduling**.

The project is built with **Streamlit**, offering an intuitive and interactive Chatbot interface that ensures seamless user experience. The methodology includes **model integration using Hugging Face APIs** and **dynamic conversation handling**. The Chatbot is capable of processing natural language queries, analysing symptoms, providing health-related insights, and responding appropriately to user prompts. Additionally, the assistant recognizes specific keywords like *"appointment"* and facilitates **appointment booking functionalities** by displaying relevant messages or guidance.

Key results from testing show that the **Falcon-7B-Instruct model** effectively generates **relevant, informative, and coherent medical responses**, making the AI-powered Chatbot a **valuable tool for healthcare accessibility**. The **appointment scheduling feature** further enhances user engagement, providing a **personalized and interactive healthcare assistant** experience.

In conclusion, the **AI-Powered Health Assistant** demonstrates the potential of **AI-driven healthcare solutions** and its **scalability,** thereby bridging the gap between medical expertise and users seeking reliable health information.

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CHAPTER 1 – INTRODUCTION

1.1 PROBLEM STATEMENT

- Many individuals seek **quick and accessible** health-related information online, but the abundance of **unverified and misleading sources** makes it difficult to obtain **accurate, reliable, and user-friendly guidance**. Traditional healthcare consultations often involve **long wait times, high costs, and accessibility barriers**, preventing users from receiving **immediate basic medical advice**.
- While AI-driven assistants exist, many struggle with **understanding and structuring medical responses effectively**, often providing **irrelevant or overly complex answers** that are difficult for users to interpret. There is a need for an **AI-powered solution that can assist users with basic healthcare inquiries**, such as **identifying symptoms, suggesting possible solutions,** and **providing precautionary measures to prevent diseases**, in a **clear, conversational, and user-friendly manner**.

The significance of the above problem states that, misinformation from **unverified sources** and **limited access to immediate healthcare** make it difficult for users to obtain **reliable and understandable** medical guidance. Traditional consultations involve **long wait times and high costs**, while existing AI assistants often fail to provide **structured, relevant, and user-friendly responses** for basic health concerns.

AI-Powered Health Assistant, leveraging **Falcon-7B-Instruct via API**, provides **accurate, structured, and conversational** responses to **symptom-based queries, solutions, and disease prevention tips**. Built with **Streamlit**, it ensures an **interactive, user-friendly experience**, addressing the **need for quick, accessible, and responsible health assistance** while also **enabling seamless appointment scheduling** when needed.

1.2 MOTIVATION

With a **deep passion for AI** and a strong enthusiasm for its **real-world applications**, I chose this project to **gain hands-on experience** in AI-driven healthcare solutions during my internship. Many individuals struggle to find **reliable and user-friendly** health information due to **misleading sources and accessibility barriers**. Traditional healthcare involves **long wait times and high costs**, making quick medical guidance difficult. So, this became my motivation to chose this project.

Potential Applications & Impact.

- **Quick & Reliable Health Guidance** – AI-generated responses for **symptoms, solutions, and prevention**.
- **Misinformation Reduction** – Ensures users receive **structured and informative** responses.
- **Appointment Booking Support** – Assists in **scheduling medical consultations**.
- **Scalable & Cost-Effective** – A **low-cost, AI-powered** alternative for healthcare inquiries.

By combining **AI expertise with healthcare accessibility**, this project enhances **digital health interactions**, making medical guidance **more structured, convenient, and widely available**.

1.3 OBJECTIVES

The primary objective of this project is to develop an **AI-Powered Health Assistant** that provides **user-friendly, structured,** and **interactive medical guidance** using the **Falcon-7B-Instruct model via API**. The specific objectives include:

- **Gain Practical Experience in AI Deployment** – Apply **AI knowledge and API integration** in a real-world healthcare context, enhancing technical expertise in **AI-driven solutions**.
- **Develop an AI Chatbot for Basic Health Assistance** – Implement a **Streamlit-based Chatbot** to provide users with **symptom explanations, possible solutions, and preventive measures**.
- **Ensure Reliable and Structured Health Information** – Utilize **AI-generated responses** to offer **clear and well-structured** medical guidance, reducing reliance on **unverified online sources**.
- **Enhance User Experience with an Interactive Interface** – Create an **intuitive and accessible** UI using **Streamlit**, ensuring a **smooth user interaction** for health-related queries.
- **Improve Accessibility to Health Information** – Provide an **AI-driven, cost-effective, and scalable** solution for individuals who may face **barriers to professional healthcare access**.
- **Enable Appointment Scheduling** – Integrate a **basic appointment booking feature**, allowing users to initiate consultations when necessary.

These objectives collectively aim to **bridge the gap** between users and basic healthcare assistance, making medical guidance **more structured, accessible, and user-friendly**.

1.4 SCOPE OF THE PROJECT

This project focuses on developing an **AI-Powered Health Assistant** that provides **basic medical guidance** through an **interactive Chatbot interface**.

Scope of the project

- **Educational and Advisory Role** – Designed for **basic health awareness**, reducing reliance on unverified online sources.
- **AI-Powered Medical Assistance** – Offers **symptom-based guidance, preventive measures, and possible solutions** in a structured, user-friendly manner.
- **User-Friendly Chatbot Interface** – Built with **Streamlit**, ensuring a **smooth and interactive** experience for health-related queries.
- **Real-Time AI Model Integration** – Utilizes **Hugging Face API** to fetch model-generated responses dynamically.
- **Appointment Scheduling Support** – Recognizes **appointment requests** and provides a response for further medical consultation.

Limitations

- **Simulated Appointment Booking** – When a user types **"appointment"**, the Chatbot responds with **"Appointment booked"**, but **actual booking functionality is not implemented** in this version.
- **Not a Replacement for Professional Medical Advice** – The AI provides **basic health guidance** but does **not diagnose, treat, or handle medical emergencies**. Users should always consult a **qualified healthcare professional** for serious health concerns.
- **Limited to Pre-Trained Knowledge** – The model's responses are based on **pre-existing training data** and **do not include real-time medical updates, personalized recommendations, or access to public health databases**. This **AI-powered health assistant** aims to **enhance accessibility to basic health information**, but it is **"not a replacement for professional medical consultation"** and should be used as an **"informative tool"** rather than a diagnostic solution.

CHAPTER 2 – LITERATURE SURVEY

Sl. No	Title	Journal	Year	Gaps Identified.	Project Contribution.
1	AI-Powered Virtual Health Assistants.	ResearchGate	2023	Lacks real-time, personalized interaction.	Implements an interactive Chatbot using Falcon-7B-Instruct.
2	AI-Based Health Assistants for Patient Support.	IJCRT	2023	Limited conversational flow.	Enhances Chatbot interaction via Streamlit.
3	Virtual Health Assistants for Behavior Change.	NCBI	2023	Complex responses, low user engagement.	Provides clear, user-friendly symptom guidance.
4	Bridging Gaps in Patient Care with AI Assistants.	Journal of Engineering Sciences.	2023	Poor accessibility and adoption.	Improves ease of use and accessibility.

CHAPTER 3 - PROPOSED METHODOLOGY

3.1 SYSTEM DESIGN

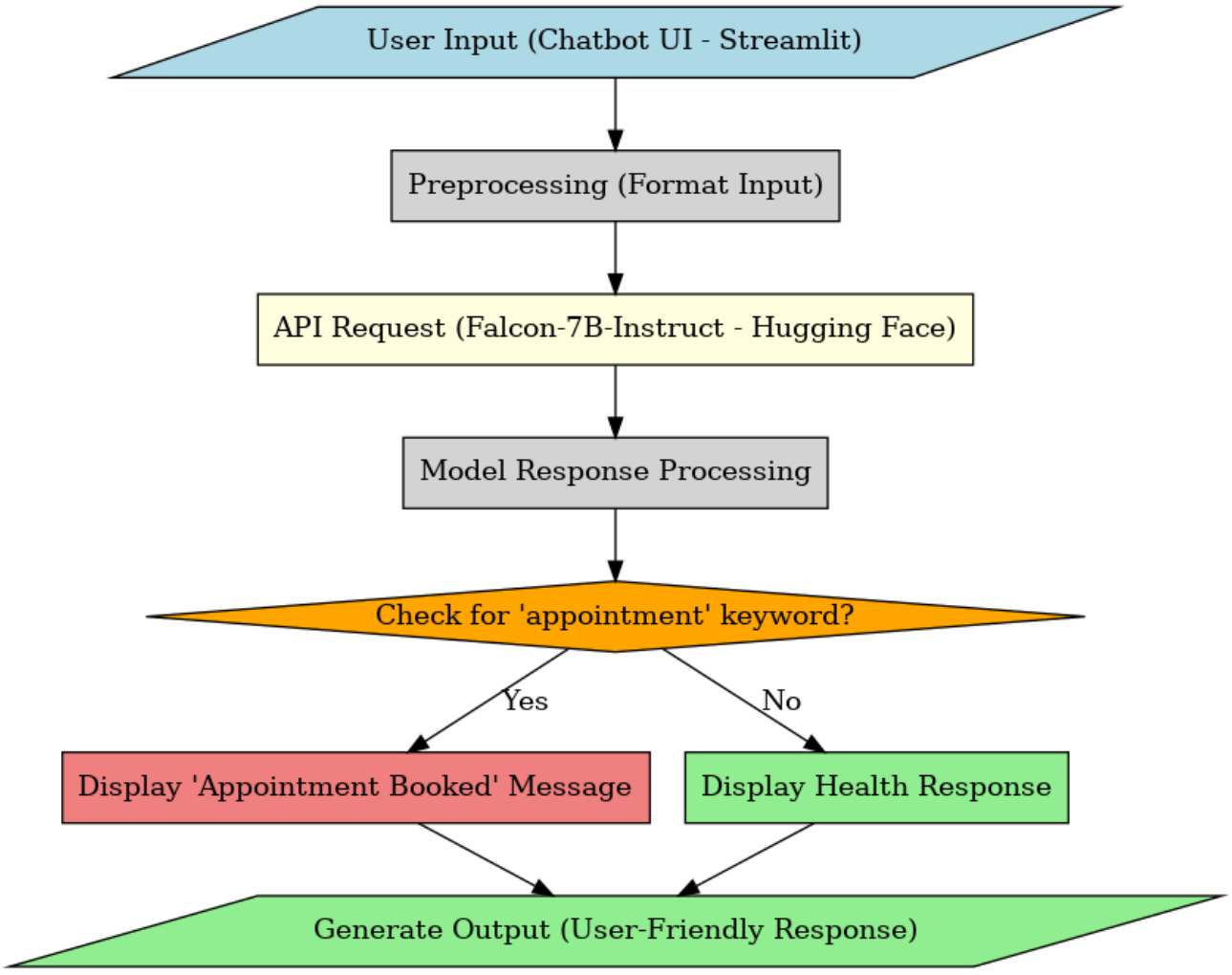

Fig.3.1 System Design Flowchart for AI-Powered Health Assistant.

The **flowchart** represents the working of your AI-Powered Health Assistant, which uses **Falcon-7B-Instruct** from Hugging Face to provide **basic medical assistance** in a user-friendly Chatbot interface.

- **User Input (Chatbot UI - Streamlit).**
  - The user interacts with the Chatbot through a **Streamlit-based UI**.
  - The user may ask for **symptoms, precautions, or health guidance**.
- **Pre-processing (Format Input).**
  - The Chatbot processes and formats the user's **natural language query** into a suitable form for API consumption.
- **API Request (Falcon-7B-Instruct - Hugging Face).**
  - The processed text is **sent via API** to the **Falcon-7B-Instruct** model hosted on Hugging Face.
  - The model generates a **medical response** based on its training data.
- **Model Response Processing.**
  - The response from the model is **received** and further formatted for user-friendliness.
- **Check for 'Appointment' Keyword?**
  - The system checks if the **user has typed "appointment"** in the message.
  - If "appointment" is detected, a **predefined response** is triggered.
- **If "Appointment" is Detected → Display "Appointment Booked" Message.**
  - The Chatbot **simulates** booking an appointment by displaying the message: *"Your appointment has been successfully booked!! You will receive further details via Email".*
  - However, **actual implementation of appointment booking is not carried out**.
- **Else → Display Health Response.**
  - If "appointment" is **not** detected, the Chatbot simply **displays the health-related answer** based on the Falcon-7B model's output.
- **Generate Output (User-Friendly Response).**
  - Finally, the **processed medical response** is displayed in a **clear and concise format** to the user.

3.2 REQUIREMENT SPECIFICATION

3.2.1 HARDWARE REQUIREMENTS:

Components	Specifications
Processor	Minimum: Intel Core i5 or equivalent.
RAM	Minimum: 8GB.
Storage	Minimum: 20GB free space.
GPU	Required only for local AI model execution.
Internet Connection	Required for accessing Hugging Face API.

3.2.2 SOFTWARE REQUIREMENTS:

Category	Software/Tools
Operating System	Windows 10/11, macOS or Linux.
Programming Language	Python 3.8+
Framework	Streamlit(For UI).
Model API	Hugging Face Inference API(Falcon-7B-Instruct).
Libraries/Dependencies	Streamlit, requests, transformers, json, os
Development Environment	VS Code.
Version Control	Git & GitHub(For code management).

CHAPTER 4 – IMPLEMENTATION AND RESULT

4.1 SNAPSHOTS OF RESULTS

1)

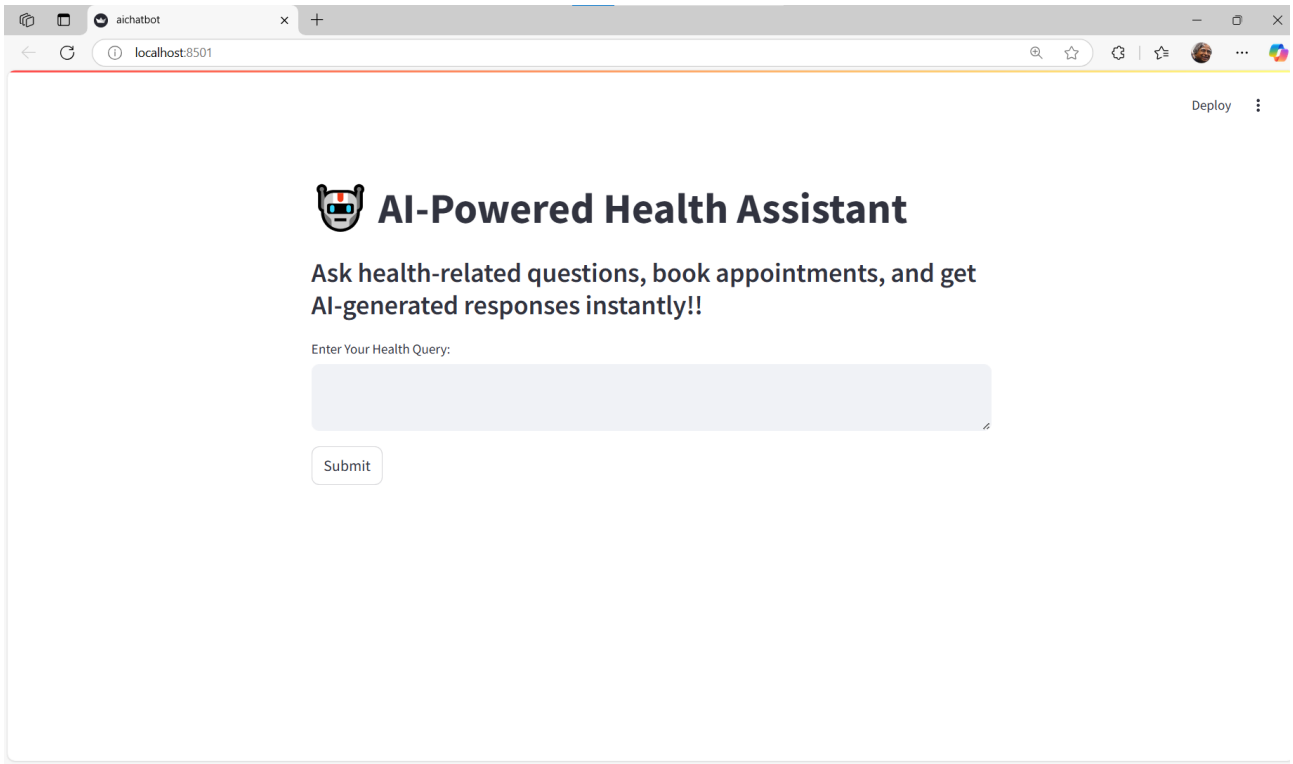

Fig.4.1 User-Interface of AI-Chabot Using Streamlit.

The above snapshot describes about the "User-Interface" that has been for AI-Chatbot, using "Streamlit". A large title, a context telling about the operations of Chatbot as a sub-section, a text-area for query and a submit button.

Streamlit - Streamlit is an open-source Python framework used to build interactive and user-friendly web applications for machine learning and data science projects with minimal coding effort. It allows developers to quickly create and deploy data-driven applications without requiring extensive knowledge of front-end development.

Some snapshots on Query and Response on Healthcare:

2)

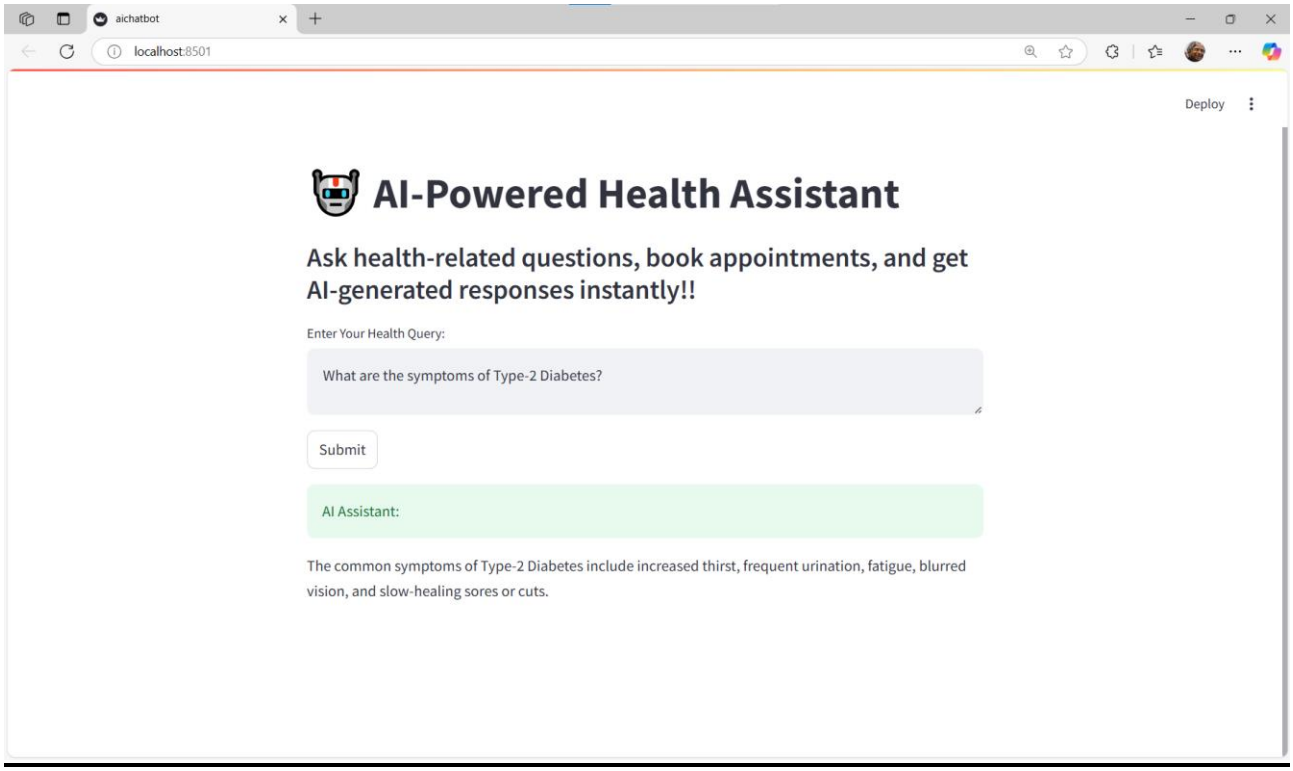

Fig.4.2 First Query On Type-2 Diabetes.

A query, "What are the symptoms of Type-2 Diabetes?", was asked for the AI-Chatbot, so that the user has received an appropriate response by generating symptoms of the specified disease. So, here we can observe that the Chatbot has understood the specified query through the keywords like: "*symptoms and Type-2 Diabetes"* and generated the short and accurate response.

3)

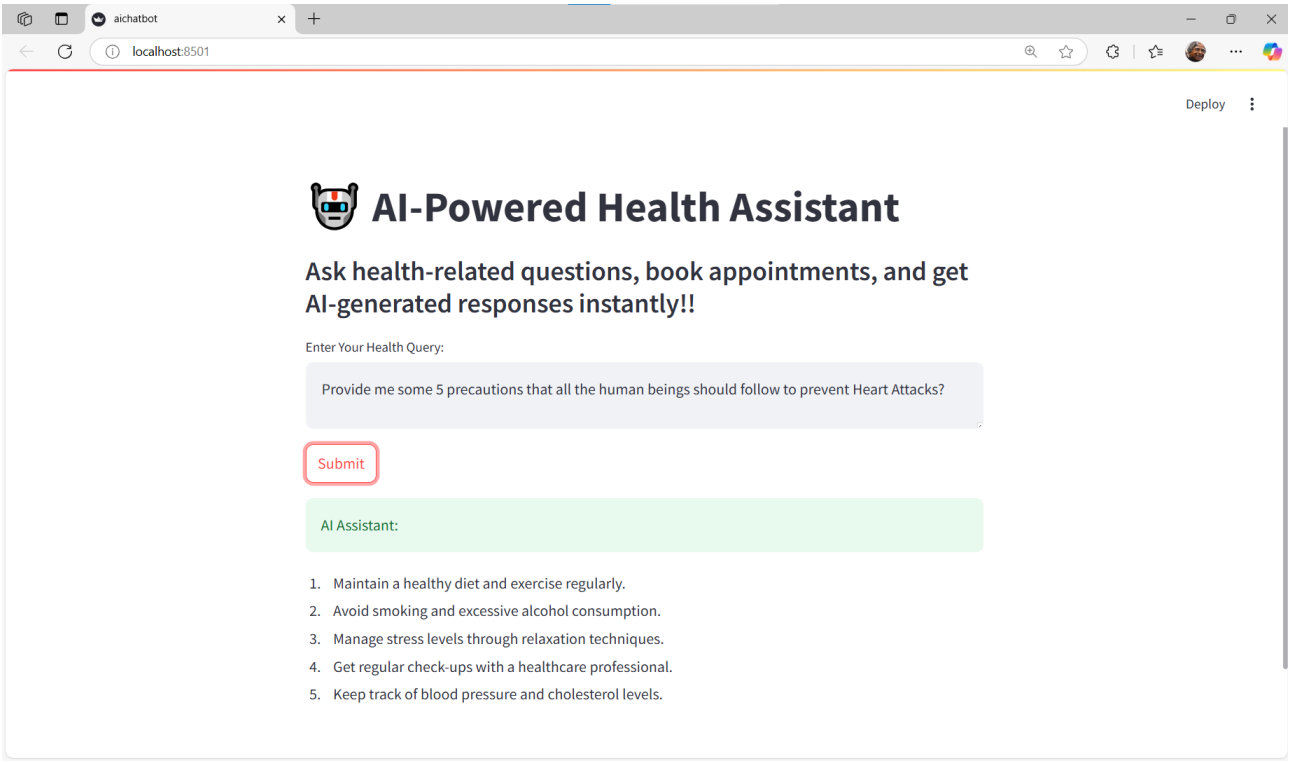

Fig.4.3 Second Query On Precautions for Heart Attack.

The above snapshot describes about the response generated by the healthcare model on Heart Attack. Here, we can observe that the user has specified the number of precautions that he/she needed to know about precautions for Heart Attack, and even the model is capable of understanding the specified request and had generated the appropriate and concise response.

4)

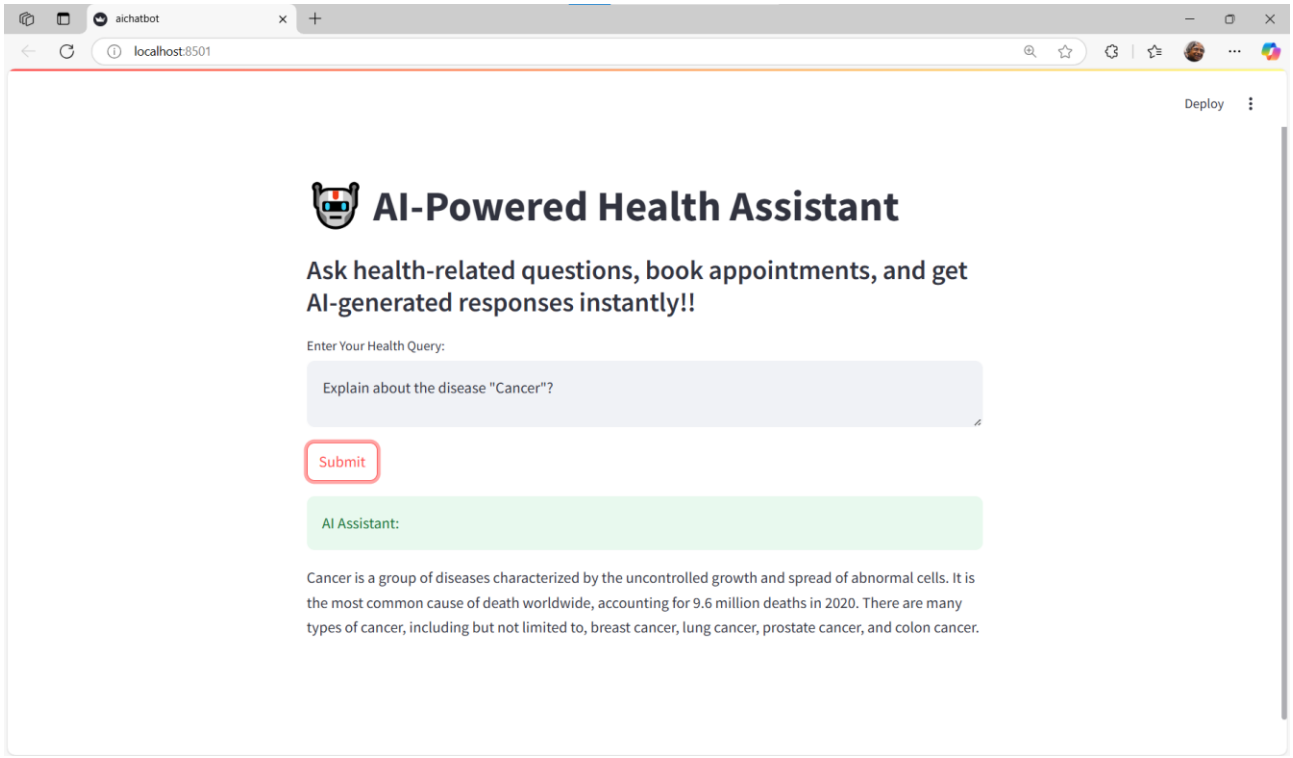

Fig.4.4 Third Query On Knowing About Cancer Disease.

Here, the demonstration has been shown on “How the model can even describe about specified disease?”. The query on human disease cancer has been asked and the appropriate, precise and easy-to-understandable response has been generated.

5)

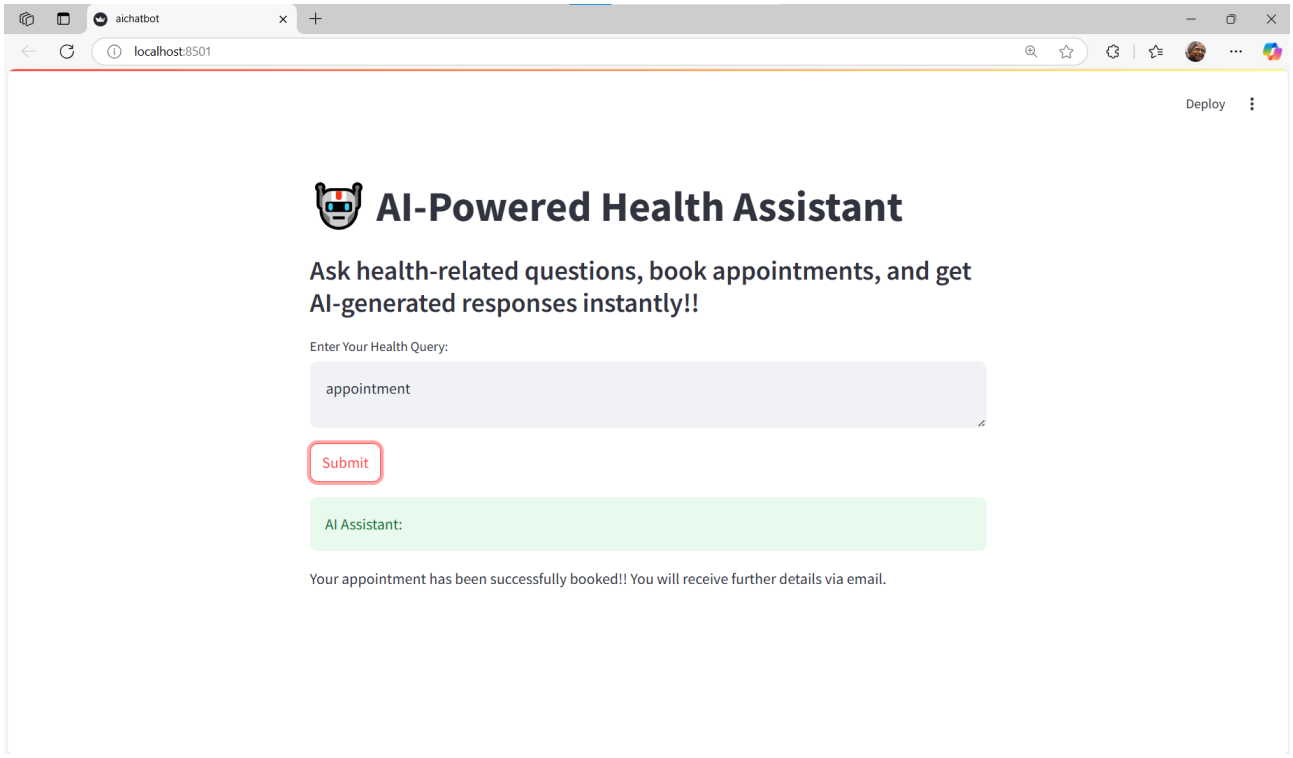

Fig.4.5 Appointment Booking Query.

The above figure tells about, how the code is implemented to handle appointment booking. Here, if a user enters the word “appointment”, the response as above in figure will be received. But this is a demo showing that, how even this kind of options can be handled and also implemented in future.

Note: In this project the complete or actual appointment booking is not implemented.

4.2 GitHub LINK FOR CODE

GitHub Repository Link: Direct URL to the project-

https://github.com/RohithReddyGK/AI-Powered-Health-Assistant

Repository Overview:

This GitHub repository contains the complete source code for the **AI-Powered Health Assistant** project. It includes:

`requirements.txt`: List of required dependencies.

`aichatbot.py`: The main script for Chatbot interaction using Falcon-7B-Instruct Model.

`. gitignore`: It is used to specify which files and directories Git should ignore when tracking changes in our repository.

CHAPTER 5 – DISCUSSION AND CONCLUSION

5.1 FUTURE WORK

While the **AI-Powered Health Assistant** provides basic health-related guidance using the **Falcon-7B-Instruct** model, several areas can be improved in future iterations:

- **Enhanced Medical Accuracy** – Integrate domain-specific healthcare models for more precise and medically verified responses.
- **Actual Appointment Booking System** – Move beyond placeholder responses and integrate a real scheduling system with healthcare providers.
- **Real-Time Data Integration** – Incorporate APIs from reliable medical sources like **WHO, CDC, or MedPaLM** to provide up-to-date health recommendations.
- **Multilingual Support** – Expand language capabilities to cater to non-English speakers, improving accessibility.
- **Voice Interaction** – Enable voice-based Chatbot interaction to enhance user engagement and accessibility.

5.2 CONCLUSION

The **AI-Powered Health Assistant** successfully demonstrates the potential of **AI-driven healthcare assistance** by providing users with **basic medical guidance**, **symptom identification**, **precautionary measures**, and **interactive Chatbot responses**.

Using **Streamlit** for UI and the **Falcon-7B-Instruct Model** for natural language processing, the assistant delivers conversational responses to medical queries. The project highlights how AI can enhance healthcare accessibility while acknowledging limitations that can be addressed in future work.

This project serves as a **Foundational Step** towards developing AI-driven virtual health assistants with **more advanced functionalities** in future versions.

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Technical Reference:

[5]. +TII UAE, "Falcon-7B-Instruct," *Hugging Face*, 2023. [Online]. Available: https://huggingface.co/tiiuae/falcon-7b-instruct.

@article{falcon40b,

title={{Falcon-40B}: an open large language model with state-of-the-art performance},

author={Almazrouei, Ebtesam and Alobeidli, Hamza and Alshamsi, Abdulaziz and Cappelli, Alessandro and Cojocaru, Ruxandra and Debbah, Merouane and Goffinet, Etienne and Heslow, Daniel and Launay, Julien and Malartic, Quentin and Noune, Badreddine and Pannier, Baptiste and Penedo, Guilherme},

year={2023}