NAAN MUDHALVAN

PROJECT REPORT

HEART RISK Q&A CHATBOT

SUBMITTED BY

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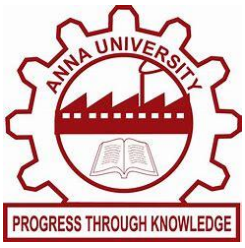

COLLEGE OF ENGINEERING,GUINDY

CHENNAI – 600025

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HEART RISK Q&A CHATBOT

1. Introduction

1.1 Project Overview:

- This project implements a command-line chatbot designed to answer user questions about heart disease and related risks.
- The chatbot leverages the Gemini 1.5 Pro language model to provide information.

1.2 Background and Motivation:

- Heart disease is a major global health concern.
- This chatbot aims to provide a readily accessible tool for users to get quick information about heart health.

1.3 Project Goals and Objectives:

- The primary goal is to create a chatbot that can accurately and informatively respond to user inquiries about heart disease.
- Objectives include:
  - Integrating the Gemini 1.5 Pro model.
  - Defining a system instruction to guide the model's responses.
  - Implementing a basic command-line interface for user interaction.

1.4 Scope:

- The chatbot focuses on providing information about heart disease.
- It is designed for informational purposes and does not provide medical diagnoses or treatment advice.

2. Methodology

2.1 Technology Stack:

- Python (programming language)
- google-generativeai library (for accessing the Gemini model)
- Google Gemini 1.5 Pro latest (language model)

2.2 Data Source and Knowledge Base:

- The chatbot's knowledge is derived from the Gemini 1.5 Pro model, which has been trained on a large dataset of text and code.

- The system instruction provided to the model guides it to provide accurate and concise medical information.

2.3 Model Selection and Configuration:

- The Gemini 1.5 Pro latest model was selected for its strong natural language processing capabilities.
- The model is configured with a system instruction to act as a helpful and knowledgeable AI assistant for heart disease information.

2.4 Development Process:

- The development process involved:
  - Installing the google-generativeai library.
  - Configuring the Gemini API key.
  - Initializing the Gemini 1.5 Pro model with a system instruction.
  - Creating a function (ask_medical_bot) to handle user input and chatbot responses.
  - Implementing a loop to maintain the chat session until the user exits.

3. Chatbot Functionality

3.1 User Interface:

- The chatbot uses a simple command-line interface.
- Users type their questions, and the chatbot displays the responses in the terminal.

3.2 Chatbot Capabilities:

- The chatbot can answer a range of questions related to heart disease, such as:
  - Symptoms of heart conditions
  - Risk factors
  - Prevention methods
  - General information about heart health

3.3 Limitations:

- The chatbot is limited to providing informational responses.
- It cannot provide medical diagnoses, treatment plans, or personalized medical advice.

- Users are advised to consult with a healthcare professional for specific medical concerns.

4. Evaluation

4.1 Testing and Validation:

- Testing was primarily done through manual interaction with the chatbot.
- Users provided various questions about heart disease to assess the chatbot's accuracy, relevance, and clarity of responses.

4.2 Results and Discussion:

- The chatbot demonstrated the ability to provide generally informative answers to common questions about heart disease.
- The Gemini 1.5 Pro model's system instruction effectively guided the chatbot to stay within its intended role.
- Further testing and refinement could improve the chatbot's ability to handle more complex or nuanced questions.

Potential improvements include:

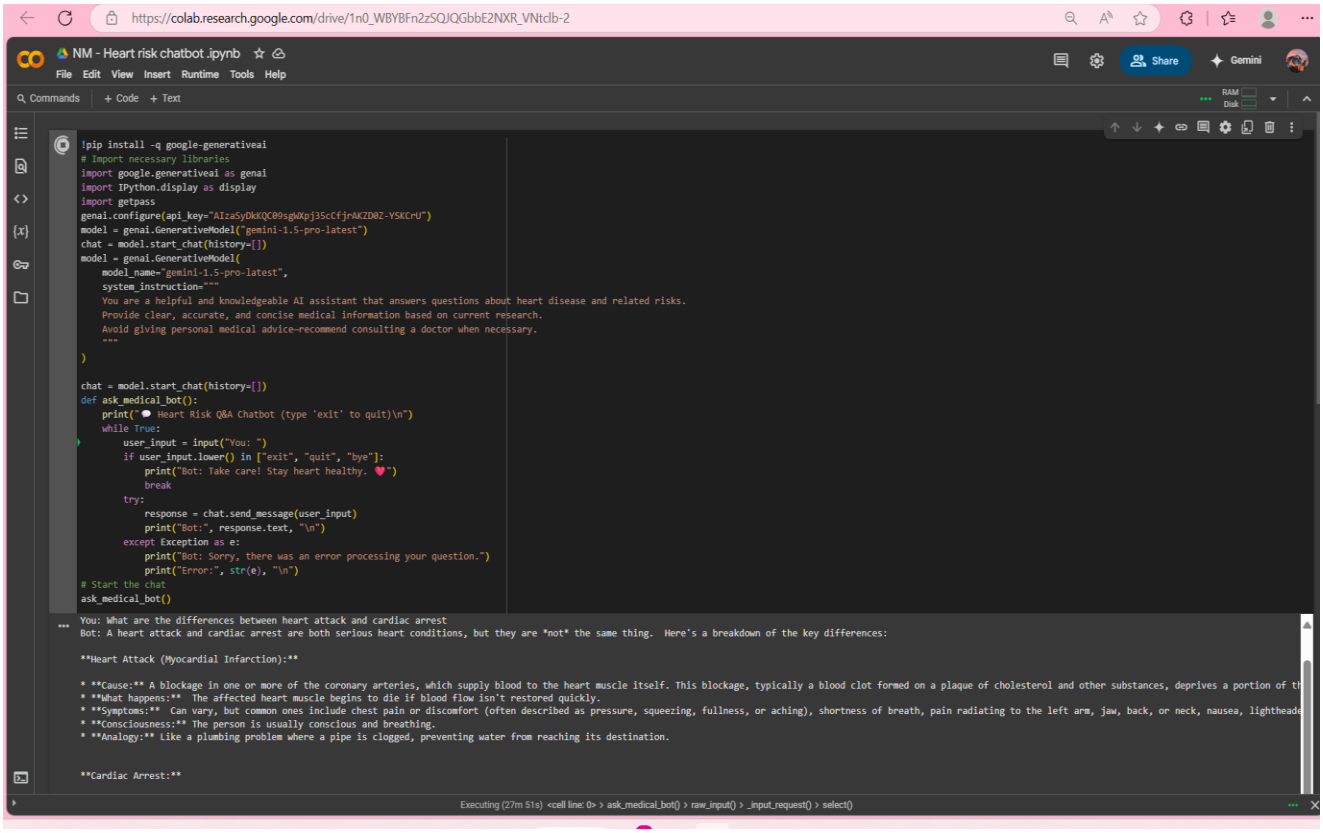
- Expanding the knowledge base with more specific medical information.
- Implementing a more user-friendly interface (e.g., a web-based interface using Streamlit).
- Adding features to provide links to reliable sources of medical information.
- Improving error handling and robustness.

5.3 Overall Impact:

- The chatbot has the potential to serve as a helpful tool for individuals seeking basic information about heart disease.
- It can contribute to raising awareness about heart health and promoting preventive measures.

This report provides a structured overview of the heart disease chatbot implemented in the provided Colab notebook.

Google colab link :
https://colab.research.google.com/drive/1n0_WBYBFn2zSQJQGbbE2NXR_VNtclb-2?usp=sharing



IMPROVEMENTS DONE:

Deploying this as app in streamlit through github repository:

Methodology:

Technology Stack:

- List the programming languages, libraries, and tools used:
  - Python
  - Streamlit (for the user interface)
  - Google Generative AI (for the language model)
- Explain why these technologies were chosen.

Data Source and Knowledge Base:

- Describe the sources of information used to train or inform the chatbot's responses.
  - Reliable medical websites (e.g., World Health Organization, CDC, Mayo Clinic)
  - Peer-reviewed research articles
  - Medical textbooks
- Emphasize the importance of using credible and up-to-date sources.

Model Selection and Configuration:

- Specify the Gemini model used (e.g., Gemini 1.5 Pro latest).
- Explain the rationale for choosing this model (e.g., its capabilities in natural language understanding and generation).
- Describe any specific configurations or prompt engineering techniques used to optimize the model's performance.

Development Process:

- Outline the steps involved in developing the chatbot:
  - Data gathering and preparation
  - Model integration
  - User interface design (using Streamlit)

        - Testing and refinement

Chatbot Functionality

User Interface:

- Describe the Streamlit application's layout and features.
    - Input area for user questions
    - Display area for chatbot responses
    - Chat history feature (if implemented)
    - Any other relevant UI elements
- Include screenshots of the application.

Chatbot Capabilities:

- Provide examples of the types of questions the chatbot can answer:
    - "What are the symptoms of a heart attack?"
    - "What are the risk factors for heart disease?"
    - "What are some healthy lifestyle changes to prevent heart disease?"
- Demonstrate the chatbot's ability to provide informative and relevant responses.

Github repository link: Abiraame03/Heart-risk-chatbot: It is the app which has a chatbot which can answer about the cardiac problems

Streamlit app developed: https://heart-risk-chatbot-ezuqrpdkxmqdgwhsjpwcwv.streamlit.app/

RESULT:

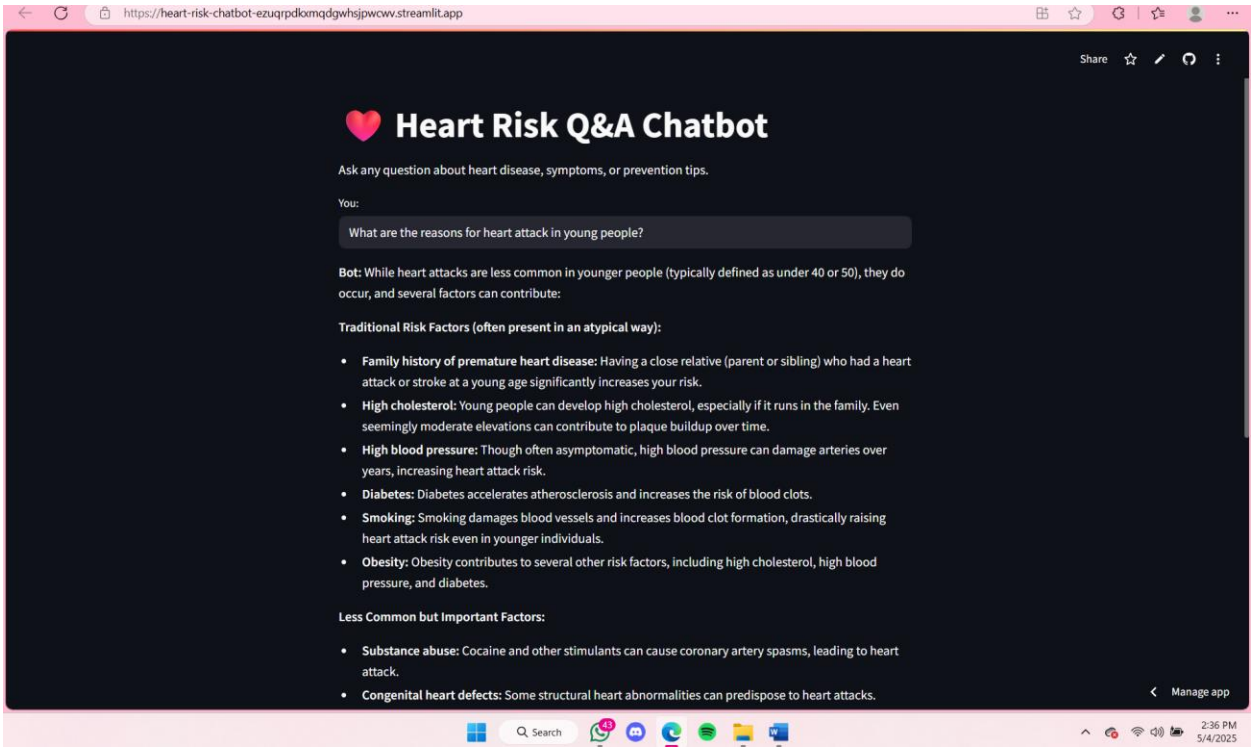


Figure showing the app developed through streamlit from the github repository

Thank you!