

SFBU Customer Support System - Speech to Text to Speech

Using openAI API,
Whisper

Table of content

1. Introduction
2. Design
3. Implementation
4. Test
5. Enhancement
6. Conclusion
7. Github repository Link:
8. Bibliography / References

Introduction

- It creates a sophisticated voice-activated conversational system for customer support system.
- Question-answers are based on the customer given Document.
- This project brings together advanced technologies in audio processing, speech recognition, conversational AI, and document context processing.
- The system operates by listening for a specific wake word, processing spoken queries or commands, and generating responses that make sense in the context of information from a loaded document.
- It is well-suited for applications such as interactive voice assistants, automated customer support, or educational tools where accessing document-based information through voice commands is valuable.

Design

- Step 1: Implemented separately SFBU Customer Support System - text using Vector store and Embedding
- Step 2: Implement separately Real-time Speech to Text to Speech : Building Your AI-Based Alexa (speech to text conversion) using OpenAI- whisper and API
- Step 3: Enhance Step 2 by adding the features of the project implemented in Step 1.
 - Two approaches to add the features
 - **Option 1: Hard-coding the features on Step 2 [Used for my application]**
 - Option 2: Using a library
 - Instead of hard-coding the features on Step 2, a better idea is to implement the features as libraries which can be used for both Step 1 and Step 2

Implementation

- Install the following supported packages

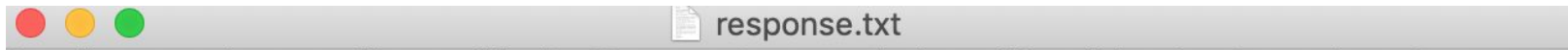
`pip install pydub pyaudio speechrecognition whisper torch numpy gtts openai click`

- Run the Script

`Python3 my_app.py`

- Ask Question based on University SFBU Catalog. It continuously listening and awake the system using “hey Computer ” wake word
- If you want to stop running say “stop”
- It gives output in response.txt and .mp3 (speech) file

Test



```
User's question: tell me all the Masters Program being offered by San Francisco Bay University
AI's response: San Francisco Bay University offers Masters programs in two disciplinary areas: Computer Science and Electrical Engineering. These programs are offered through the School of Engineering and the School of Business. The School of Business also offers an academic Graduate Certificate in Business Management. For more information on the specific courses offered in each program, please refer to the SFBU catalog.
```

Enhancement

- Used for Automated call center of any application where customer ask questions using speech and it replies in speech after processing manual to find the correct ans.

Conclusion

The project concludes with an advanced voice-activated system designed for customer support, incorporating cutting-edge technologies in audio processing, speech recognition, and document context processing. This seamless system, suitable for interactive voice assistants and automated customer support, adopts a library-based strategy to enhance real-time speech-to-text conversion with features from the SFBU Customer Support System for flexibility and reusability.

Github link

[https://github.com/DKruti/Machine-Learning/tree/master/Generative%20AI/SFB
U%20Voice%20Assistance%20AI%20supported](https://github.com/DKruti/Machine-Learning/tree/master/Generative%20AI/SFB%20U%20Voice%20Assistance%20AI%20supported)

References

[https://hc.labnet.sfbu.edu/~henry/sfbu/course/generative ai/Building Your AI Based Alexa/slide/exercise Building Your AI Based Alexa.html](https://hc.labnet.sfbu.edu/~henry/sfbu/course/generative%20ai/Building%20Your%20AI%20Based%20Alexa/slide/exercise%20Building%20Your%20AI%20Based%20Alexa.html)