

Birla Institute of Technology and Science Pilani

IS/SE/SS ZC444: Artificial Intelligence

Assignment-01: Custom AI Chatbot Using LLM

10% weightage, Deadline 27 Nov 2023

1 Introduction

In this assignment we will develop a custom conversational AI agent (Chatbot) using openAI APIs. You know such systems can provide replies to user's queries. By custom we mean that the answers will be based on domain specific knowledge provided to the AI agent using a PDF. In this assignment, we will only focus on text-based conversations. This assignment has four parts.

1. Develop a webapp, allowing user to chat with the AI agent by providing a place to enter his query and see the responses obtained by the system. This is similar to any instant messaging system where our responses are coming from the AI agent. To test the functionality of this step the Chatbot can generate random responses.

[Marks 1%]

2. Extend the webapp developed above to integrate openAI. Now the Chatbot will generate the responses using openAI API's similar to ChatGPT. You can get details of using openAI API's from <https://community.openai.com/>. You may have to create an account in openAI for this step. You can look on a short course on youtube "Building Systems with the ChatGPT API: A short course from OpenAI and DeepLearning.AI"¹. Also you can do a google search "How to Build an AI-Powered ChatBot with OpenAI, ChatGPT, Node.js, and React" and see the material available online².

[Marks 2%]

3. Further extend the above Chatbot by customising it to generate responses confined to a domain specific knowledge gathered by supplying a PDF to the system. You have to use embedding model API's of OpenAI to generate the embedding of a given PDF and use it as a database for providing domain specific responses. Search on google "Customizing an OpenAI Chatbot With Embeddings" and visit page ³.

[Marks 3%]

¹<https://www.youtube.com/watch?v=BunESRhYhec>

²<https://www.freecodecamp.org/news/how-to-build-a-chatbot-with-openai-chatgpt-nodejs-and-react/>

³<https://blog.bitsrc.io/customizing-an-openai-chatbot-with-embeddings-fdc9ec859bbb>

4. Integrate the uploading of PDF, generating embedding, and the AI agent into a single web application. The GUI of the app should allow users to browse and upload **multiple PDFs** and set the context for the conversation. Now the Chatbot should answer based on the supplied PDFs.
[Marks 3%]

API key will be provide to you by the instructor over email. Use it wisely for this project only and never distribute. Please note that same will be deactivated once submission date is over.

- You application should run on port `http://localhost:3000`
- Web stack should be restricted to
backend: nodejs,
frontend: react,
database to store embeddings: excel
- For embedding use `text-embedding-ada-002` and for chat completion `text-davinci-003` model.

2 Submission

Make a single zip file consisting of 1) source code, 2) readMe file containing installation and execution instructions.

- Upload zip file through the e-learn portal
`https://elearn.bits-pilani.ac.in/`
- Create a short video of less than 5 min, demonstrating the working of your app. Share it's link in the readMe file and fill the form
`https://forms.gle/dEAzpo38ULxejoRf7`
[Marks 1%].
- **Submission Deadline:** 27 Nov 2023

3 Honour Code

The code must be written independently. Plagiarisms will fetch negative marks.