Using ChatGPT API in Applications

Understanding Large language Models (LLM)

# Cover

Hello everyone. My name is Konstantin Voloshenko, and I am a BA from St. Petersburg. One of my hobbies is neural networks. Today, I will talk about how you can integrate ChatGPT into your application.

# Agenda

I will provide an overview of what ChatGPT is and how it works, and then I will explain how you can use the ChatGPT API to incorporate it into your software.

# Overview. What is and how ChatGPT works

ChatGPT is a language model developed by OpenAI. It uses a technique called Generative Pre-trained Transformer (GPT) to generate text responses that resemble human speech. This model has been trained on a large amount of text from the internet, allowing it to learn patterns, grammar, and even some understanding of various topics. It operates in a conversational way, where users can input prompts or questions, and ChatGPT generates a relevant response. However, it's important to note that while ChatGPT is generally helpful, clever, and friendly, there are times when it may provide incorrect or nonsensical information. Therefore, it's always a good idea to verify the responses from reliable sources.

# Step 1: Simple Request. Using ChatGPT API in Applications

Let me explain how you can interact with GPT through the API. First, we will send a message to the model and ask for a response. ChatGPT uses the concept of "roles" to represent different participants in the conversation. Each message in the messages list is like a dictionary with two parts: role and content. Role can be one of three values: "system", "user", or "assistant", which tells us who is speaking the message. Content contains the actual message. In a typical chat, there are three main roles: • "system": The system role is used to set the context of the conversation. It gives general instructions to the model, telling it how to behave during the conversation. System messages are usually placed at the beginning and may provide information on how the model should act as an assistant. • "user": This role represents the human user interacting with the model. Your requests to the model will be under this role. • "assistant": This role represents the AI model that responds to the user. When you create a chat with the model, you provide a list of messages. Each message in the list is like a dictionary with two parts: "role" and "content". "Role" indicates the role (either "system", "user", or "assistant" as mentioned before), and "content" contains the actual text of the message.

# Step 2: Guidance and Knowledge base

Guidelines for creating prompts for the ChatGPT model:

1. Be specific: The more specific your instructions, the more precise answer you will receive. Make sure your instructions are clear and explicit. If the instructions are too general or unclear, the model may struggle to understand what you want from it.
2. System message: You can use a system message to outline the behavior of the model. For instance, you can specify in the system message: "You are an assistant with expertise in art history, always striving to provide detailed and accurate answers." This message helps set the context for the model. The system message allows you to assign tasks or give instructions to the model. The model sees this message, but it is not considered part of the conversation with the user.
3. Instructions in the user message: You can also include a brief instruction within the user message. For example: "Answer the customer's question based on the information provided to you."

## Knowledge base

The structure of the company's knowledge base plays a vital role in providing responses to client inquiries in written form. It is essential to maintain the original meaning while adapting the text for non-native English speakers. The primary goal of the knowledge base structure is to ensure its effective functioning. Here are some important principles to consider when organizing the structure:

1. Categorization and classification: The knowledge base should be divided into clearly defined and logically organized sections that correspond to different knowledge areas or types of client questions. For instance, there can be sections related to products, services, support, payment inquiries, and more. Each section can contain subsections for better organization and detail. This way, LangChain can easily locate relevant information corresponding to the query.
2. Hierarchy: It is helpful to arrange the knowledge base in a hierarchical structure, with broader topics at the top level and more specific questions and answers at lower levels. This simplifies the management of information relevance and allows for easy updates when necessary.

By adhering to these principles, we can ensure that the knowledge base is designed to be organized, logical, and user-friendly. This way, the information provided will be maximally useful and complete for analysis purposes.

# Step 3: TG bot and all together

Integrating a Telegram Bot and ChatGPT to offer responses to user inquiries is depicted in the diagram. The diagram demonstrates how information flows and interacts among various components.

1. The Application downloads two files from Google Drive: one file contains prompt, and the other contains a knowledge base.
2. The Application splits the knowledge base into chunks using a CharacterTextSplitter component.
3. The Application creates an index database and converts the knowledge base fragments into embeddings.
4. The diagram shows a group labeled "async text(update, context) # TG bot function for text messages" which represents the asynchronous process of handling text messages in the Telegram Bot. Within this group, the following steps occur:

* The User sends a question to the Telegram Bot.
* The Application receives the user's question.
* The Application searches for relevant chunks in the knowledge base based on the user's question.
* The Application sends a request to ChatGPT, including the prompt, message content (question and relevant chunks), and a temperature parameter controlling the randomness of the response.
* ChatGPT generates a response and sends it back to the Application.

1. The response from ChatGPT is then sent back

# Summary

Summary

1. The ChatGPT API is a crucial aspect of the integrated application.
2. It is necessary to have your own Knowledge Base.
3. Integrating a Telegram bot is the most straightforward approach.
4. Apart from ChatGPT, there are other Language Model (LLM) options available, with the most well-known being the Llama models family, consisting of Llama-cpp, Alpaca, Saiga, and Vicuna.