Workout Generator

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Chatbot
https://huggingface.co/spaces/KasparER/workout_generator

Dataset
https://huggingface.co/datasets/KasparER/completed_workouts

The problem

We wanted to create our own AI driven workout generator, with the end goal of having a personalized AI coach based on a real-world strength and conditioning coach's attitude and philosophy when it comes to training. Our demo does not imitate any one coach, but it should be able to act as a more general coach.

Our project aims to create a chatbot using ChatGPT that generates a customized workout based on user goals, experience level, and time commitment. While the chatbot could be useful for all fitness levels, we anticipate that beginners will benefit most, as they may have limited knowledge about effective exercises and workout structures.

The chatbot differs from OpenAI's ChatGPT by storing and accessing user workouts. After each session, completed workouts are saved, along with user feedback and optional demographic information. This stored data helps improve future recommendations, making them more personalized for repeat users. Our chatbot only generates single-session workouts, not long-term plans.

Differences to other products are that our chatbot is mostly based on personal experience and what we wanted to create, we have looked at some of the apps that already exists and linked to them as a reference. When it comes to the feasibility of our product, we believe that a simple AI coach will feel less intimidating than applications that make you choose your own workouts at first. The chatbot also can explain exercises and give feedback on them during the workout.

To measure success, we will track the number of completed workouts and analyze user feedback to understand their satisfaction.

Our chatbot and dataset are hosted on Hugging Face, where the bot interacts with the data. The system includes a system message defining the chatbot's behavior, tools for function calls, and assistant messages. Built using Gradio's ChatInterface, the UI allows quick and user-friendly interactions. The assistant message includes the dataset, which the chatbot uses for personalized recommendations.

Resources: We use Hugging Face for hosting (CPU-based) and OpenAI's API, with an initial budget of $10 for tokens, which has supported our project's token needs.

METRICS

We evaluate success based on the chatbot's ability to generate workouts that group members find usable, similar to what we would create manually for a given set of inputs.

Since this is a conversational AI, traditional metrics like accuracy or recall are less applicable. Instead, we focus on user experience, gauging feedback quality, completion rates, and chatbot response time as soft metrics connected to our business goal.

DATA

We save details about each completed workout, such as experience level, workout type, exercises, sets, repetitions, and user feedback. Users may also provide optional information on age and sex, which we believe could enhance recommendations over time.

As our dataset grows, we plan to embed it into the model for improved recommendations. Currently, we add completed workouts as assistant messages, which works for our small dataset but will eventually require embedding to improve efficiency without high token costs. Embeddings would also allow for more sophisticated future use cases, like transforming the chatbot into a personal AI coach.

MODELING

We use OpenAI's GPT-4o-mini model to keep token costs low while still delivering relevant workout recommendations. We base success on the quality of generated workouts and user interaction experience.

Our baseline is defined by group members' knowledge of workout planning, which allows us to evaluate the generated workouts based on whether we would follow or recommend them. The chatbot's completed workout data is fed back into the model, with the expectation of improving its recommendations through continuous feedback.

At the moment the bots' parameters are set to make it more random, we think this is a reasonable approach early in the projects lifetime, as we can get a more varied dataset for tuning.

DEPLOYMENT

The model is deployed on Hugging Face along with our dataset. It runs on a free basic CPU with 16gb of RAM. We have deployed a working prototype, and our initial focus for improvement is prompt engineering, as this has the most immediate impact on chatbot behavior. To test and refine prompts, we use OpenAI's Playground.

Next, we plan to streamline data access by connecting the chatbot directly to the dataset without manual assistant messages, either via function calls or embedding the data. Embeddings will likely offer the best long-term solution, allowing the chatbot to analyze user history dynamically for more refined recommendations.

We will also explore additional function calls to let the bot query the dataset for relevant information to incorporate in workout suggestions, enhancing personalized feedback.

UI is the last thing we want to improve, as the way our bot looks to a user is important. We want to make it stream its responses and add buttons the user can click for faster feedback and easier handling, especially on mobile devices.

REFERENCES

Some competing apps:
https://www.fitnessai.com/
https://planfit.ai/

Documentation used in the project:
https://platform.openai.com/docs/guides/text-generation
https://huggingface.co/docs
https://www.gradio.app/docs/gradio/interface