

ShopAssist- AI 2.0

1. Background

In today's internet age, online shopping has become the go-to option for many customers. However, the overwhelming number of choices and the lack of personalized assistance can make the shopping experience daunting. To address this, we have developed ShopAssist AI 2.0, a chatbot that combines the power of LLMs and rule-based functions to ensure accurate and reliable information delivery.

2. Problem Statement

Given a dataset containing information about laptops (product names, processor, display, RAM Size, descriptions, etc.), build a chatbot that parses the dataset and provides accurate laptop recommendations based on user requirements.

3. Approach

1. **Conversation and Information Gathering:** The chatbot will utilize language models to understand and generate natural responses. Through a conversational flow, it will ask relevant questions to gather information about the user's requirements.
2. **Information Extraction:** Once the essential information is collected, rule-based functions come into play, extracting the top 3 laptops that best match the user's needs.
3. **Personalized Recommendation:** Leveraging this extracted information, the chatbot engages in further dialogue with the user, efficiently addressing their queries and aiding them in finding the perfect laptop solution.

4. System Functionalities

- **User Interface:** ShopAssist AI 2.0 provides a user-friendly web interface where users can interact with the conversational AI assistant.
- **Conversational AI:** The core of ShopAssist AI 2.0 is the conversational AI powered by OpenAI's chat model. It guides the user through the process by asking relevant questions and understanding their needs.
- **User Input Moderation:** User input is moderated using OpenAI's moderation API to ensure a safe and secure conversation.
- **User Profile Extraction:** The AI assistant extracts key information from the conversation to build a user profile that reflects their laptop preferences (budget, screen size, processing power, etc.) using OpenAI's function calling mechanism to convert a user requirement string into a JSON object.

We have a dataset [laptop_data.csv](#) where each row describes the features of a single laptop and also has a small description at the end. The chatbot will leverage large language models to parse this [Description](#) column and provide recommendations.

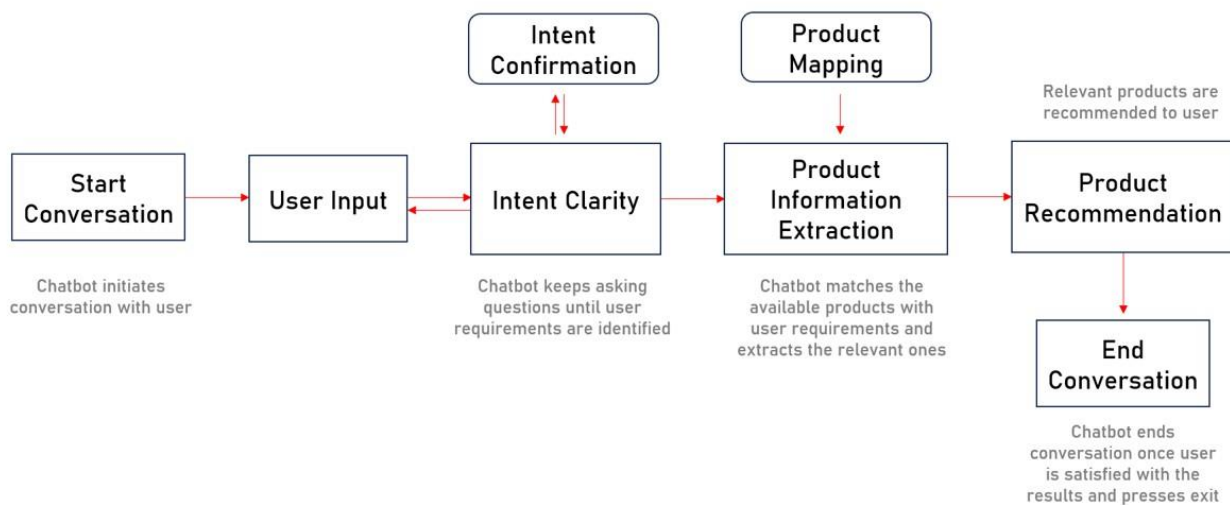
5. System Architecture

ShopAssist AI 2.0 follows a client-server architecture. Users interact with the web interface hosted on a server running the Flask application. The application interacts with OpenAI's API for conversation generation and

moderation and retrieves and compares laptop data from an external database.



CHATBOT SYSTEM DESIGN



6. Implementation Details

The Flask application utilizes various functionalities:

- **Routing:** Maps user requests to appropriate functions based on URLs.
- **Conversation Management:** Handles conversation initiation, response generation through OpenAI's chat model, and conversation history maintenance.
- **User Input Processing:** Captures user input, performs moderation checks, and extracts user profiles from conversation history (converting user input string to JSON using OpenAI Function calling).
- **Recommendation Logic:** Compares user profiles with laptop data, validates recommendations, and generates recommendation text.

Major Functions

- `initialize_conversation()`: Initializes the variable conversation with the system message.
- `get_chat_completions()`: Takes the ongoing conversation as the input and returns the response by the assistant.

- `moderation_check()`: Checks if the user's or the assistant's message is inappropriate. If any of these is inappropriate, it ends the conversation.
- `intent_confirmation_layer()`: Evaluates if the chatbot has captured the user's problem clearly.
- `dictionary_present()`: Checks if the final understanding of the user's problem is returned by the chatbot as a Python dictionary.
- `compare_laptops_with_user()`: Compares the user's problem with the different laptops and comes back with the top 3 recommendations.
- `initialize_conv_reco()`: Initializes the recommendations conversation.

Prerequisites

- Python 3.9+
- OpenAI API Key (you have to add openai api key in the empty txt file (OpenAI_API_Key))

Getting Started

To get started with ShopAssist AI 2.0, follow these steps:

1. Clone the repository:

```
git clone https://github.com/NitinNag24/ShopAssist-AI-2.0.git
cd ShopAssist-AI-2.0
```

2. Launch VS Code from Anaconda

- In VS Code go to **File > Open Folder...** and select the **ShopAssist-AI-2.0** folder.
- Open a terminal in VS Code (go to **Terminal > New Terminal**).

3. Install dependencies:

```
pip install -r requirements.txt
```

3. Run the ShopAssist AI 2.0 Chatbot:

```
python app.py
```

Note: This version includes steps to create and activate the Conda environment with Python 3.11.9 or above, ensuring users set up python environment correctly before installing dependencies and running the application.

7. Appendix - B

ShopAssist AI (ShopAssist 2.0)

Hello! Welcome to the laptop selection assistance. Please share your requirements and preferences so that I can help you find the best laptop that suits your needs.

Suggest me a business laptop

Great! To assist you better, could you please share with me your specific requirements for the business laptop? This will help me understand your needs and recommend the most suitable options for you.

I need a good business laptop under 100,000 INR budget

Send

End Conversation

ShopAssist AI (ShopAssist 2.0)

I need a good business laptop under 100,000 INR budget

Great! To suggest the best business laptop for you, I need to understand your preferences for different features. Do you prioritize having a high GPU intensity for tasks like graphics or video editing on your business laptop?

No

Do you prioritize having a high display quality for tasks like detailed data analysis or presentation creation on your business laptop?

Yes

Type your message...

Send

End Conversation

ShopAssist AI (ShopAssist 2.0)

Do you prioritize having a high level of portability for easy transportation of your business laptop?

Yes

Do you prioritize the ability to handle multiple tasks simultaneously, such as running multiple applications and browser tabs at the same time, on your business laptop?

Yes

Do you prioritize having a high processing speed for quick loading times and smooth performance on your business laptop?

Type your message...

Send

End Conversation

ShopAssist AI (ShopAssist 2.0)

Do you prioritize having a high processing speed for quick loading times and smooth performance on your business laptop?

Yes

Great! Based on your responses, I have a better understanding of your requirements. I will now update the values for 'Display quality', 'Portability', 'Multitasking', and 'Processing speed' in the final string. Do you want me to proceed with updating these values?

Yes

Type your message...

Send

End Conversation

ShopAssist AI (ShopAssist 2.0)

Yes

Fetching product recommendations...

Sure, here is a summary of the laptops in the catalogue in decreasing order of price: 1. Apple MacBook Air: M1 chip, 16GB RAM, 13.3" Retina display, macOS, Touch ID, 14 hours battery life, 100,000 Rs 2. Lenovo ThinkPad: Ryzen 7, 16GB RAM, 14" IPS display, Linux, NVIDIA GTX, Backlit Keyboard, 6 hours battery life, 60,000 Rs 3. Acer Predator: i7, 16GB RAM, 17.3" IPS display, Windows 10, NVIDIA GTX, Dual Cooling Fans, 5 hours battery life, 80,000 Rs How can I assist you further with this information?

Type your message...

Send

End Conversation