Home Recommendation Chatbot Documentation

1. **Objectives**

The primary objective of the Home Recommendation Chatbot is to simplify the home search process for users by providing personalized home recommendations based on their preferences. The specific objectives are:

- Personalized Recommendations: Allow users to input their desired number of bedrooms, balconies, flat size, and budget to receive a curated list of homes that meet their criteria.
- User-Friendly Interface: Ensure the chatbot is intuitive and easy to use, making the home search experience seamless and enjoyable.
- Comprehensive Database Access: Utilize a wide-ranging database of property listings to provide users with the best match for their needs.
- Efficiency and Speed: Deliver instant recommendations to save users time and effort in their home search journey.

2. **Implementation**

The implementation of the Home Recommendation Chatbot involves several key stages and utilizes the ChatGPT 3.5 Turbo APIs. The chatbot is designed to read a Bangalore home recommendation dataset and follow a structured process to gather user inputs and suggest homes. The implementation details are as follows:

Stage 1: Intent Clarity and Confirmation

Intent Clarity Layer:

- Objective: Understand the user's initial query and determine their intent.
- Process: The chatbot interacts with the user to clarify their home search requirements.
- Example Interaction: "How many bedrooms are you looking for?"

Intent Confirmation Layer:

- Objective: Confirm the user's preferences to ensure accurate recommendations.
- Process: The chatbot asks follow-up questions to confirm the details provided by the user.
- Example Interaction: "You mentioned you need a 3-bedroom flat with 2 balconies, is that correct?"

Stage 2: Product Mapping and Information Extraction

Product Mapping Layer:

- Objective: Map the user's preferences to the available properties in the database.
- Process: The chatbot searches the database for properties that match the user's specified criteria.
- Example Interaction: "I found several 3-bedroom flats with 2 balconies within your budget."

Product Information Extraction Layer:

- Objective: Extract detailed information about the matched properties.
- Process: The chatbot retrieves and compiles comprehensive details about each property, such as location, size, amenities, and price.
- Example Interaction: "Here are the details for the top three properties that match your preferences."

Stage 3: Product Recommendation

Product Recommendation Layer:

- Objective: Present the user with the best property options based on their preferences.
- Process: The chatbot provides a curated list of recommended properties, highlighting key features and benefits.
- Example Interaction: "Based on your criteria, I recommend these three properties. Property 1 is a 3-bedroom flat with a beautiful view, priced at your budget."

3. **Challenges**

The development and deployment of the Home Recommendation Chatbot faced several challenges:

- Results were coming incorrect for top homes due to int & string errors and then dictionary and string errors.
- Long processing: needed too many iterations to get to correct result and some of the functions too long time to execute
- Data Integration: Ensuring seamless integration of the Bangalore home recommendation dataset with the chatbot for real-time recommendations.

- User Intent Understanding: Accurately interpreting user inputs to understand their preferences and requirements.
- Recommendation Accuracy: Providing precise and relevant home recommendations based on user criteria.

4. **Lessons Learned**

Throughout the development process, several key lessons were learned:

- Importance of User Feedback: Regular feedback from users is crucial for refining the chatbot's accuracy and improving its interaction capabilities.
- Data Quality: High-quality, up-to-date property data is essential for providing accurate recommendations.
- Flexibility in Design: The chatbot should be designed to handle a wide range of user queries and preferences, ensuring flexibility in its recommendation logic.
- Performance Optimization: Continuous performance monitoring and optimization are necessary to maintain the chatbot's efficiency and speed.
- User Education: Educating users on how to interact with the chatbot effectively can enhance their overall experience and satisfaction.

By addressing these objectives, implementing a structured process, overcoming challenges, and learning from the development journey, the Home Recommendation Chatbot is poised to provide a valuable and efficient solution for home searchers in Bangalore.