Integration of Gemini AI Model for Negotiation Chatbot

INTRODUCTION

The negotiation chatbot is designed to facilitate interactions between customers and suppliers, allowing users to negotiate prices for products. The key workflow includes:

- **Initiation:** The chatbot prompts the user to propose a price for a specific product.
- **User Input:** The user responds with a desired price.
- **Response Generation:** The chatbot evaluates the user's input against predefined pricing logic and generates an appropriate response using the Gemini AI model.

OBJECTIVE

To develop a chatbot that simulates negotiation processes between customers and suppliers using the Gemini AI model

1. Overview of the Chatbot Workflow

The negotiation chatbot is designed to facilitate interactions between customers and suppliers, allowing users to negotiate prices for products. The key workflow includes:

- **Initiation:** The chatbot prompts the user to propose a price for a specific product.
- **User Input:** The user responds with a desired price.
- **Response Generation:** The chatbot evaluates the user's input against predefined pricing logic and generates an appropriate response using the Gemini AI model.

2. Technologies Used

- **Programming Language:** Python, chosen for its versatility and support for AI integrations.
- **Framework:** Flask, used to create a lightweight web server to handle API requests and responses.
- **AI Model:** Gemini, utilized for natural language understanding and response generation.
- **Libraries:**
  - FuzzyWuzzy: For fuzzy matching of product names based on user input.
  - TextBlob: For sentiment analysis to gauge user emotion during negotiations.
- **Data Format:** JSON, for sending and receiving structured data between the client and server.

3. Core Concepts and Logic

3.1 Pricing Logic

- Each product has associated **minimum** and **initial prices** stored in a dictionary.
- When the user proposes a price:
    - **Acceptance Logic:** If the proposed price is within the range of minimum and initial prices, the chatbot accepts the offer.
    - **Counteroffer Logic:** If the proposed price is lower than the minimum price, the chatbot generates a higher counteroffer.
    - **Rejection Logic:** If the proposed price exceeds the initial price, the chatbot politely rejects the offer.

3.2 Model Integration

- **API Configuration:**
    - The Gemini AI model is initialized using an API key, allowing communication between the chatbot and the AI service.
    - The chatbot sends user queries to the Gemini model and retrieves generated responses, maintaining context for seamless conversation flow.
- **Response Generation:**
    - The user input is combined with conversation memory and sent to the Gemini model to generate responses that simulate realistic negotiation dialogue based on context and pricing logic.

3.3 Sentiment Analysis

- **Emotional Detection:** User input is analyzed using TextBlob to determine sentiment polarity (e.g., happy, neutral, angry).
- **Adaptive Responses:** Based on detected sentiment, the chatbot adjusts its negotiation strategy. For instance, if the user is detected to be in a positive mood, the chatbot may offer better deals.

4. Workflow Integration

- **Product Switching Logic:** The bot detects when a user wants to switch products through fuzzy matching of user input against the product list.
- **Memory Management:**
    - The chatbot maintains a conversation memory to keep track of previous interactions and context.
    - This memory is updated with each user response and AI reply, enabling coherent and contextually relevant exchanges.

5. SAMPLE DEMOs