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Department of Computer Engineering

Laboratory Practice-II Practical

Class: TE Computer A.Y. 24-25 Sem-II

Assignment – 5

Title - Developing an Elementary Chatbot for Customer Interaction

Objective - To design and document a simple chatbot capable of interacting with users in a customer service scenario using basic natural language processing (NLP) techniques.

Aim - To simulate automated customer support using a rule-based chatbot that can handle basic queries like greetings, product inquiries, and support issues.

Introduction

A chatbot is an AI-based software application designed to simulate human-like conversations with users via chat interfaces. They are widely used in customer service, e-commerce, healthcare, and education.

Elementary chatbots typically use:

- Rule-based logic (if-else responses)
- Pattern matching using keywords or intents
- Basic NLP techniques for understanding user input

This explores how a simple chatbot can improve user engagement and automate customer support for frequently asked questions (FAQs).

Use Case Selected: Customer Interaction for an Online Electronics Store

Functional Areas Covered:

- Greeting the user
- Answering FAQs (e.g., “What is the warranty period?”)
- Providing product category info (mobiles, laptops, etc.)
- Sharing contact/support details
- Ending the conversation politely

System Requirements

Hardware Requirements:

- A PC or laptop with minimum 4 GB RAM
- Basic internet connection (optional for enhancements)

Software Requirements:

- Python IDE (VS Code / Jupyter Notebook)
- Python 3.x installed
- Libraries (optional for enhancements): NLTK, regex, etc.

Methodology

Step 1: Define the Scope

Focus on answering a fixed set of customer queries with predefined answers using simple rules.

Step 2: Design the Interaction Flow

Create a conversation flowchart:

Start → Greeting → Ask Query → Match Input → Respond → Exit

Step 3: Develop Chat Logic

Use conditional logic (if-else) or a keyword-matching system for handling user inputs.

Step 4: Test the Bot

Manually test various user inputs to check how well the bot responds.

Step 5: Improve User Experience

Add polite replies, feedback options, and a way to escalate to human support if needed.

Expected Output

- The chatbot should be able to simulate a basic conversation with a user.
- It should correctly identify user intent for common queries.
- It should handle invalid or unexpected inputs gracefully.

Applications

- **Customer Service Automation**: Reduces the need for human agents for basic queries.
- **24/7 Support Availability**: Chatbots don't sleep.
- **Cost Saving**: Ideal for startups and small businesses.
- **Improved User Engagement**: Instant replies = happy customers.

Conclusion

An elementary chatbot is a foundational application of AI that offers immense value in automating customer interaction. Even a simple rule-based bot can make a huge impact by answering repetitive questions, improving response time, and increasing customer satisfaction.

With more advanced technologies like NLP and machine learning, such chatbots can evolve into intelligent virtual assistants capable of handling complex scenarios.