REPORT ON RESTAURANT INFOBOT

1. Introduction

With the growing demand for online food service support, an automated solution for handling common customer queries can improve customer satisfaction and efficiency. Restaurant InfoBot is a rule-based chatbot developed using Python Flask that provides essential information such as menu offerings, table reservations, operating hours, and contact details through a web interface.

The chatbot can be integrated into a restaurant's website, allowing customers to interact naturally and get answers to frequently asked questions.

2. Objectives

- To develop a lightweight restaurant information chatbot using Python and Flask.
- To simulate real-time customer interaction for restaurant-related queries.
- To provide quick access to information such as menu, hours, booking, and location.
- To serve as a base for future AI-based chatbot development.

3. System Architecture

Components

- **Frontend:** HTML page with JavaScript to handle user input and display bot responses.
- **Backend:** Flask application to process inputs and respond appropriately.
- **Data Source:** intents.json containing predefined patterns and responses.

4. Functionality and Working

Main Modules

- **home():** Loads the web page interface (index.html).
- **chat():** Handles user message requests through the /get endpoint.
- **get_response(user_input):** Matches user messages with predefined patterns and returns suitable responses.

Intent Matching Logic

- User input is normalized (lowercased).
- The bot iterates over each intent and its patterns.
- If any pattern is found within the user message, a random corresponding response is returned.
- If nothing matches, a fallback message is used.

5. Dataset (intents.json)

Each intent includes:

- tag: Intent name (e.g., menu, booking)
- patterns: Common customer phrases
- responses: Bot replies for that intent

Sample Intents

Tag	Patterns (Sample)	Responses (Sample)
Greeting	"hi", "hello", "is anyone there?"	"Welcome to Foodie Delight! How can I help you
menu	"show me the menu", "food items", "dishes"	"We serve pizzas, burgers, pasta, desserts, and beverages."
Booking	"book a table", "reserve a seat"	"You can reserve a table online at foodiedelight.com/book or call +1-800-FOOD-RES."
hours	"what are your hours?", "opening time"	"We are open from 11 AM to 11 PM, Monday to Sunday."
location	"where are you located?"	"We are located at 123 Flavor Street, Downtown City."

6. Testing and Evaluation

Manual testing was conducted with multiple user inputs related to restaurant services. The bot provided accurate responses for defined inputs and a fallback message for unknown ones.

Test Case Examples:

Input Message	Expected Output	Result
“what’s on the menu?”	Menu information	Pass
“book a table”	Booking instructions	Pass
“where are you located?”	Address response	Pass
“random query text”	Fallback response	Pass

7. Advantages

- Simple and effective for answering common queries
- Easy to modify by updating the JSON file
- No database or complex setup required
- Suitable for small and medium-sized restaurant websites

8. Limitations

- Only matches exact or close phrases (no understanding of meaning)
- Cannot process vague or incorrect inputs
- Not context-aware; each query is treated independently
- Does not integrate with real-time reservation systems or live menus

9. Future Enhancements

- Use NLP for more intelligent conversation handling
- Add intent classification with ML algorithms
- Include reservation and menu integration with restaurant's backend system
- Add voice support and a modern chat UI
- Deploy to a cloud host and enable multi-user session handling

10. Conclusion

Restaurant InfoBot is a lightweight, rule-based chatbot that effectively responds to typical customer queries about restaurant services. Its flexible structure makes it ideal for quick deployment and a strong foundation for more advanced, AI-powered conversational agents in the future.