

DATA-606 (Capstone project)

Team-A:

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Food court Fun-Chatbot on the run

Overview: Our project aims to develop a chatbot that enhances the food ordering experience for customers through structured and automated interactions.



Fig: Chatbot workflow diagram

Technologies:

1. Chatbot Development: We are utilizing Dialog flow for developing the rule-based chatbot for understanding and fulfilling user intents related to food ordering. Dialog flow helps in natural language processing and conversational flows.

Intents- Order-food, Open-hours, Track-order, and so on.

Fulfillment- Web hook. It assists in connecting Dialog flow with FastAPI back end.

2. Backend Integration: We have chosen to use FastAPI for backend integration to handle business logic and integrate with web hook for real time processing. FastAPI is a modern, fast web framework for building APIs with python that handles requests, business logic and other operations.

3. Database Management: We decided to use MySQL to store menu items, order history, order status. MySQL assists in persistent storage of data.

Dataset: We planned to web scrape data from <https://dineoncampus.com/umbc/>

4. Web Interface: A webpage to be created for users to interact with chatbot for viewing menu items, place a order, know order history and track orders.

Expected outcomes:

A fully functional chatbot that improves customer satisfaction by fast responses, greater efficiency in handling multiple user requests simultaneously, reduced operational costs for the restaurant.

Metrics to evaluate Chatbot:

1. Task Success Rate: Measures how often the chatbot successfully completes the task.

- **Formula:**

$$\text{Task Success Rate} = \frac{\text{Number of Successfully Completed Tasks}}{\text{Total Number of Tasks}} \times 100$$

2. Intent classification Accuracy: Evaluates how well the chatbot understands the intent/ query of the customer.

- **Formula:**

$$\text{Intent Classification Accuracy} = \frac{\text{Correctly Classified Intents}}{\text{Total Number of Intents}} \times 100$$

3. Fallback Rate: Tracks how often the the chatbot fails to understand a query and triggers fallback response in dialog flow.

- **Formula:**

$$\text{Fallback Rate} = \frac{\text{Number of Fallbacks}}{\text{Total Number of Interactions}} \times 100$$

4. Response Time: Measures how quickly the chatbot responds to user queries.

- **Formula:**

$$\text{Average Response Time} = \frac{\text{Total Time Taken to Respond}}{\text{Total Number of Responses}} \text{ (in seconds)}$$