Amerikas Restaurant Chatbot Report

Name: Vansh Sethi

TRU ID: T00713670

Aim:

To create an efficient and user-friendly chatbot for Amerikas Restaurant that supports its operations and enhances the customer experience.

Problem Definition:

As the restaurant industry adapts to new ways of operating, particularly during the COVID-19 pandemic, there is a need for a seamless food ordering process for customers. This includes providing support for table reservations, food recommendations, and answering customer inquiries.

Solution:

An intelligent chatbot designed to cater to the needs of Amerikas Restaurant's customers. It emulates human-like conversation to make the food ordering and dining process more convenient. It supports customers by offering menu recommendations, handling reservations, and responding to frequently asked questions.

Chatbot Capabilities:

1. **Greeting**: Welcomes customers and introduces the chatbot's services.

2. **Menu**: Provides customers with menu options, including starters, lunch, dinner, and dietary restrictions.

3. **Food Recommendations**: Offers popular dishes and chef's specials based on the customer's preferences.

4. **Reservations**: Assists customers in booking tables for specific dates, times, and party sizes.

5. **Reservation Confirmation**: Confirms table reservations for customers.

6. **Opening Hours**: Informs customers about the restaurant's operating hours.

7. **Location**: Provides the restaurant's address and directions to customers.

8. **Special Requests**: Handles customer inquiries about specials, discounts, and promotions.

9. **Order Placement**: Guides customers through the process of placing orders for takeout or delivery.

10. **Order Tracking**: Provides real-time updates on order status and wait times.

11. **Event Booking**: Assists customers with planning and booking events at the restaurant.

12. **Loyalty Program**: Explains the restaurant's loyalty program and how to earn and redeem rewards.

13. **Gift Cards**: Informs customers about gift card options and guides them through the purchase process.

14. **Feedback**: Collects and acknowledges customer feedback on the restaurant's food and services.

15. **Payment Options**: Informs customers about accepted payment methods and contactless payment options.

16. **Goodbye**: Provides a courteous farewell to customers at the end of the conversation.

Implementation:

The chatbot has been implemented using Dialogflow, a natural language processing platform that enables easy integration with various messaging apps and voice assistants. It works by receiving input from the customer, categorizing the input according to predefined intents, and responding with the appropriate information or action.

PEAS Table: -

Agent Type	Performance Measure	Environment	Actuators	Sensors
Chatbot	User satisfaction, response time, accuracy of answers	User interactions via chat An individual looking to enjoy a meal from a specific restaurant.	Screen display (questions, user inputs, recommendations, support)	User interaction through keyboard input and mouse or touch screen selection allows the user to specify their meal preferences and make choices on the recommended dishes.

Environment Characteristics Table for Restaurant Support Chat Bot:

Characteristic	Details
Fully Observable/Partially Observable	Partially Observable: Chatbot may not know the complete context or mood of the user without extended interaction. User inputs provide clues but are not a complete picture.
Deterministic/Stochastic	Stochastic: User questions and responses may vary widely, affecting the flow of conversation. Chatbot responses must be adaptive to different inputs.
Episodic/Sequential	Sequential: Conversations are continuous and may carry context from earlier interactions. Chatbot needs to remember past interactions to provide context-aware responses.
Static/Dynamic	Dynamic: Chatbot must adapt to real-time inputs and provide appropriate responses.
Discrete/Continuous	Discrete: Conversation progresses in discrete steps (messages and responses). Chatbot follows a series of predefined interactions but may need to branch out based on user inputs.
Single Agent/Multiple Agents	Multiple Agents: Different functionalities such as information retrieval, task execution, and conversation management may require different agents working together.

Working of an AI Chatbot for Amerikas Restaurant

In this section, we discuss the development and deployment of an AI-powered chatbot for Amerikas Restaurant. The chatbot is designed to enhance customer interactions by providing real-time responses to inquiries about the restaurant's menu, services, and other features.

Data Preparation

To train the chatbot, a data set containing different intents was organized in a JSON file (**intents.json**). These intents represent common customer queries and requests such as greetings, menu options, reservations, ordering, and special requests.

- **Intents:** Each intent includes patterns (phrases or questions customers might ask) and responses (appropriate replies from the chatbot).

- **Organization:** The data set includes a variety of categories to capture the diverse range of customer queries.

Model Training

The AI chatbot model was built and trained using the TensorFlow Keras library. The process involved the following steps:

- **Data Loading:** The intents JSON file was loaded, and patterns and responses were extracted for training.

- **Label Encoding:** Categorical labels were encoded into numerical format using the **LabelEncoder** from scikit-learn.

- **Text Tokenization:** Sentences were tokenized and converted into sequences using Keras's **Tokenizer**.

- **Model Architecture:** A Sequential model was created with an embedding layer, GlobalAveragePooling1D layer, and dense layers.

- **Model Training:** The model was trained on the tokenized sequences and encoded labels over 500 epochs.

Upon completion, the trained model, tokenizer, and label encoder were saved for later use.

Chatbot Interaction

The AI chatbot interacts with customers by processing their input and providing responses based on the detected intent:

- **User Input:** Customers enter their queries into the chatbot.

- **Intent Detection:** The model processes the input and predicts the intent using the trained tokenizer and model.

- **Response Generation:** Based on the detected intent, the chatbot selects an appropriate response from the data set.

The chatbot can handle various tasks, including greeting customers, providing information about the menu, taking reservations, and answering questions about special requests and promotions.

Customization for Amerikas Restaurant

The chatbot has been customized to meet the specific needs of Amerikas Restaurant:

- **Menu Options:** The chatbot can provide information about different dishes, including starters, lunch, dinner, and special requests.

- **Reservation Management:** The chatbot assists with booking tables, providing information on available dates and times, and confirming reservations.

- **Special Requests:** Customers can inquire about dietary restrictions, loyalty programs, gift cards, and more, receiving personalized responses.

- **Order Placement:** The chatbot supports order placement, including delivery and takeout options, as well as tracking orders.

Conclusion:

The Amerikas Restaurant chatbot enhances the customer experience by providing quick and accurate responses to common inquiries and facilitating seamless food ordering and reservation processes. It serves as an efficient and effective tool for supporting the restaurant's operations and building customer satisfaction.

Future Recommendations:

- Continuously update the chatbot's knowledge base to include new menu items, promotions, and services.

- Monitor customer feedback and interactions to improve the chatbot's responses and performance.

- Explore advanced AI features such as sentiment analysis and personalized recommendations for a more tailored customer experience.

Screenshots:

Screenshot 1

Amerikas Restaurant bot

/start 10:09 PM

Hello! The chat bot is now active. How can I assist you? 10:09 PM

Hello 10:09 PM

Welcome to Amerikas Restaurant! How can I assist you today? 10:09 PM

What's on the menu 10:10 PM

Certainly! Are you looking for starters, lunch, or dinner? 10:10 PM

Starters 10:10 PM

For starters, we have: Spring Rolls, Buffalo Wings, Shrimp Cocktail, and Spinach Artichoke Dip. 10:10 PM

Can I book a table? 10:10 PM

Certainly! When would you like to dine with us and for how many guests ? 10:10 PM

6 people 10:10 PM

Great! And for what date and time would you like to make the reservation? 10:10 PM

date- 20 April 2024 time- 1pm 10:12 PM

Screenshot 2

Amerikas Restaurant bot

Certainly! When would you like to dine with us and for how many guests ? 10:10 PM

6 people 10:10 PM

Great! And for what date and time would you like to make the reservation? 10:10 PM

date- 20 April 2024 time- 1pm 10:12 PM

Thank you for providing the details! Your reservation is confirmed. We look forward to welcoming you. 10:12 PM

Where are you located? 10:12 PM

We have parking available for our customers. Here's how to find us: 123 Main Street, City, State, ZIP:- https://maps.app.goo.gl/Mf7uitzhannfjNFZ7

Amerikas Restaurant · 734 Lake St, Oak Park, IL 60301, United S... ★★★★★ · Nuevo Latino restaurant 10:12 PM

What are your opening hours? 10:13 PM

Our opening hours are from 11:00 AM to 10:00 PM daily. Feel free to drop by! 10:14 PM

Are there any discounts availabl 10:14 P

Screenshot 3

Amerikas Restaurant bot

Are there any discounts available 10:39 PM

Wine Wednesdays: Get 50% off select bottles of wine every Wednesday. Perfect for a midweek treat! 10:39 PM

I want to place an order 10:40 PM

You can place your order here! What would you like to order? 10:40 PM

I want to order 2 medium ham pizzas 10:40 PM

Absolutely, let's start your order. Are you looking for delivery or pickup? 10:40 PM

delivery 10:41 PM

OK what's your delivery address? 10:41 PM

My address is 482 Columbia street, Kamloops 10:41 PM

And what's your phone number? 10:41 PM

My phone number is (250) 879-5330 10:41 PM

Ok your order is confirmed, You can pay using debit/credit card or cash at your door. We will arrive within 30 mins 10:42 PM

Screenshot 4

Amerikas Restaurant bot

10:44 PM

What's the current wait time ? 10:45 PM

Currently, the wait time is about 30 mins.Sorry for the inconvinience 10:45 PM

Do you have gluten-free options? 10:46 PM

Yes, we have gluten-free/vegan options for all dishes. We will take care that your food orded is as per your requirements 10:46 PM

I have feedback - your customer service was outstanding 10:47 PM

Thank you for your feedback! We appreciate your comments about our food and will take them into account. 10:47 PM

I I want to leave a review - your foods was awesome 10:47 PM

Your feedback on our food is appreciated! Thank you for taking the time to let us know your thoughts. 10:47 PM

See you later 10:48 PM

Thank you for dining with us! Have a great day. 10:48 PM

Screenshot 5

Amerikas Restaurant bot

What's your chef's special? 10:43 PM

Our most popular dishes are Shai panner, dal makhani and chicken tikka . Would you like to try one? 10:43 PM

Can I book a party 10:43 PM

Yes, we can help you book a party or event on our website i.e www.AmerikasRestaurant.com 10:43 PM

Do you have a loyalty program? 10:44 PM

You can redeem your points for discounts or free items. 10:44 PM

What payment methods do you accept? 10:44 PM

We accept cash, credit/debit cards, and digital wallets such as phone pay, paytm . 10:44 PM

What's the current wait time ? 10:45 PM

Currently, the wait time is about 30 mins.Sorry for the inconvinience 10:45 PM

Do you have gluten-free options? 10:46 PM

Yes, we have gluten-free/vegan options for all dishes. We will take care that your