IMPLEMENTION OF NLP CHATBOT ON ONLINE FOOD ORDERING SYSTEM

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ABSTRACT

An algorithm, code, or methodology that enables machines to imitate, develop, and exhibit human intellect or behavior is known as artificial intelligence, or AI. Artificial Intelligence (AI) is a data product used in real life that can perform jobs and solve problems in a manner similar to that of humans in the commercial sector. Since technology has made it easier for customers to access and purchase meals from their favourite restaurants without leaving their homes, the convenience of online food ordering has grown in popularity quickly. NLP Chatbots make customer service efficient and interesting by taking care of things like order taking, updating users in real time. Customers can order food conveniently online thanks to the system. This online application enhances meal takeout compared to visitor numbers. By giving recommendations, helping with orders, and instantly responding to client inquiries, a chatbot AI is integrated to improve user engagement. This virtual assistant improves the ordering process as a whole. It gets over the drawback of the conventional queuing mechanism. AI chatbots have the potential to greatly improve consumer interactions and expedite operations in the food delivery sector.

Keywords: AI Chat bot, complaint system, Python Django, Database, User experience, NLP, SVM.

1.INTRODUCTION

The convenience and efficiency of online shopping has enhanced consumer pleasure. Food delivery via digital apps has gained a lot of traction in the nation's rapidly expanding restaurant business. The emergence of digital tools has given the food business a new perspective. Nowadays, customers have the option to choose from a variety of cuisines from a variety of food providers listed in the e-commerce sector, wherever they are, at any time. An AI chatbot acts as a virtual assistant in a meal delivery service, expediting the ordering procedure for customers. By giving users personalized recommendations based on past orders or dietary restrictions, navigating menu selections, and promptly responding to concerns, this chatbot is intended to improve the overall customer experience. It produces a user-friendly and aesthetically pleasing meal delivery website. Include real-time delivery tracking as well. Include an AI chatbot to assist with customer service. By learning about your preferences and recommending meals that customers are likely to enjoy, an AI chatbot takes the guesswork out of ordering. An AI-powered system provides you with real-time order status information so you never have to worry about missing your food. We are committed to giving you a seamless and happy experience from the time you place your order until it reaches your door. By combining intelligent AI technology with a user-friendly interface, it seeks to create a seamless, joyful, and efficient meal delivery experience that responds to the specific preferences and needs of every customer. When a user engages with the app, the

chatbot can recommend well-liked foods, draw attention to current specials, and even assist them in tailoring their orders to accommodate particular dietary needs. The device will be accessible on Android devices in addition to being available as an online application. It will have both a buyer and a seller interface. The consumer interface will record order booking and online confirmation, while the provider interface will provide users with the option to accept or decline orders for the day. NLP chatbots, with their advanced algorithms, are essential for improving the user experience. These algorithms leverage data from previous encounters and current trends to analyze and forecast user preferences. Natural language processing, or NLP, is used by the chatbot to comprehend customer inquiries and deliver pertinent answers. Recommendation algorithms customize choices based on user location, popular cuisine, and ongoing specials. By using these algorithms, AI chatbots can increase customer happiness, expedite the ordering process, shorten wait times, and enhance overall efficiency to create a more individualized and effective meal delivery experience. Because of the ease with which customers may report issues or offer comments, our complaint system is very user-friendly. Consumer complaints are a way for a buyer to voice their displeasure with a product they have purchased that does not live up to their expectations. As per the legal provisions, a consumer has the right to file a complaint after purchasing a defective product. Customer complaint is the customer way to inform the seller that the quality of the purchased product or service is wrong. The Food Related Lifestyles (FRL) tool was used to conduct the study. Even if they agree that a specific food item is expensive and that they should file a complaint about it in the same manner as they would for other products, consumers do not often file complaints about food products.

2.RELATED WORKS

2.1 Online food ordering system

The way consumers place orders and enjoy meals from their favorite restaurants has been completely transformed by online food delivery apps. Before, patrons at the grocery store had to stand in line or use staff, pens, and paper to place their orders. It takes time, especially during busy times, for consumers to physically visit the cafeteria, wait in line, and place their orders with staff when ordering meals manually. Customers using manual meal ordering systems must visit or call the restaurant during designated hours and are limited to using the system during working hours. Order customization options are usually restricted in manual meal ordering systems. Numerous benefits provided by online meal ordering platforms have revolutionized the food sector and improved dining experiences. It overcomes the disadvantage of the traditional queuing system. Customers may find this to be time-consuming and inconvenient. Customers can purchase food online conveniently thanks to these services. It gets over the drawback of the conventional queuing mechanism. connects visitors to a variety of nearby eateries so they can peruse menus, place orders, and have meals delivered right to their door. Additionally, customers may track the status of their order in real-time rather than having to deal with the inconvenience of standing in line or on the phone. They make it simple for customers to discover something to sate their cravings by providing a large variety of culinary options, such as fast food, ethnic foods, and gourmet dinners. Additionally, they have been crucial in helping neighborhood businesses thrive in uncertain economic times by expanding the consumer base and boosting revenue for eateries. Additionally, these technologies give restaurants access to insightful data and analytics that facilitate easy operational improvement, menu optimization, and understanding of client preferences.

2.2 NLP Chatbot and SVM Algorithm

NLP is a dynamic technology that uses different methodologies to translate complex human language for machines. Many language-based apps, including chatbots, text translation, voice recognition, and text summarization, are powered by natural language processing (NLP). NLP also helps businesses become more efficient, productive, and perform better by simplifying challenging language-related activities. A chatbot is a computer software or artificial intelligence (AI) system created to mimic voice or text-based communication with a human. The chatbot deciphers user inputs, recognizes the variety of ways that users may convey their preferences, and reliably retrieves pertinent information like dish names and delivery addresses. The chatbot, which is equipped with sophisticated natural language processing (NLP) skills, converses in a way that seems intuitive and natural. NLP is used by the chatbot to comprehend and analyze human input. For problems involving regression and classification, Support Vector Machines (SVM) are a kind of supervised machine learning

method. SVM is a potent machine learning method that is frequently applied to the creation of chatbots. Their proficiency in categorizing textual input makes them perfect for applications like chatbot sentiment analysis and intent recognition. Support Vector Machines (SVM) are typically used in chatbots for tasks like sentiment analysis, entity recognition, and intent categorization. SVM has several benefits, not the least of which is its excellent accuracy and robustness, particularly in high-dimensional spaces. It provides a customized and interactive experience by utilizing natural language processing (NLP) and artificial intelligence (AI) to comprehend and react to user inputs. The design, data structure, and APIs of an existing food delivery platform must be carefully taken into account when integrating an AI chatbot with it. All the platform's main features, such as order administration, payment processing, and delivery, ought to work in unison with the chatbot. Here Some steps include in NLP is the following

Preprocess text:
Organize and standardize the data.

Tokenization:
To make the input text acceptable for NLP processing, it is divided into smaller forms.

Text to numeric conversion:
Apply strategies such as word embeddings.

Utilize analysis of languages:
Determine sentence structure, components of speech, etc.

Apply models for machine learning:
Utilize data to train for targeted activities.

Produce a result:
generate output such as generated text, translations, or classifications.

Assess and improve:
Evaluate functionality and enhance the model.

2.3 Features and Benefits

a.   Custom suggestions Customized advice

b.   It provides a list of the products that fall under the chosen category.

c.   It allows clients to increase the number of things they order.

d.   It requests their address, phone number, and name.

e.   It offers updates on delivery status.

f.   Customers can select from a variety of food categories, including Starters, Main Course, Dessert & Drinks, etc., using the ordering bot.

g.   It makes it simple and quick for your customers to place orders.

h.   It responds quickly, raising client satisfaction levels.

i.   It raises your lead conversion rate, which increases sales.

j.   Finding and searching for restaurants.

k.   It makes your employees more efficient

by helping them

2.4 Chatbot in Customer Service

AI chatbots have completely changed customer service by offering consumers round-the-clock, timely, and effective help. The user's profile can be integrated with the chatbot, giving it access to dietary restrictions, preferences, and other pertinent data for tailored conversations. They offer the added benefit of uniformity in responses, ensuring that every consumer receives precise and uniform information. Chatbots are efficient at handling repetitive and routine jobs, but when they work with human agents, they produce a different kind of customer service. A human representative can be easily contacted when a chatbot is unable to answer a question or when it needs emotional nuance. This ensures that complicated problems are handled with the right amount of knowledge and empathy. The chatbot can deliver a smooth and customized experience by comprehending the context of the discussion, recalling past exchanges, and reacting appropriately. Moreover, the incorporation of AI chatbots enables a more customized consumer experience. Chatbots can make discussions feel more relevant and engaging by personalizing their responses to user preferences and past interactions by examining user data.
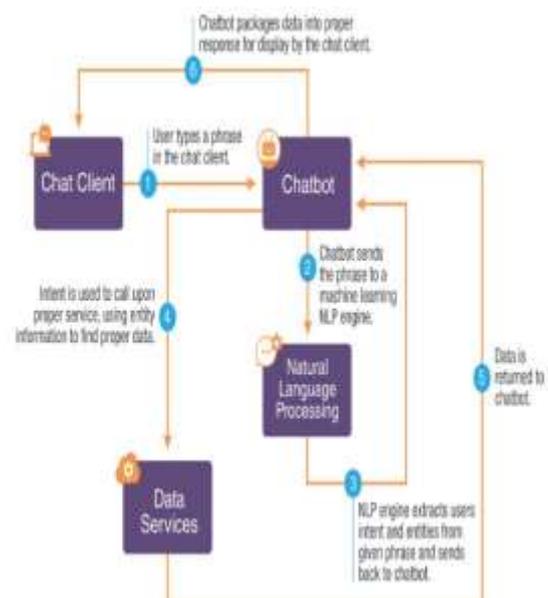

Figure 1

2.5 Chatbot and User Experience in Food Delivery

AI Chatbot allowing users to quickly browse menus, customize orders, and receive real-time updates on their delivery status. They enhance convenience through natural language processing (NLP), enabling users to place the orders and solve issues using conversational commands. The user experience with chatbots in online food delivery has undergone a remarkable evolution, reshaping how customers interact with these services. chatbots can handle a variety of tasks, from providing estimated delivery times to addressing common issues like order modifications or cancellations. Chatbots can access past order data to personalize suggestions, offer customized promotions, and suggest things based on past preferences. The major function of chatbots is to analyze user data and advise on new restaurants, dishes, and discounts based on the user's tastes. The chatbot can deliver a smooth and customized experience by comprehending the context of the discussion, recalling past exchanges, and reacting appropriately. It can compile important information about user interactions, tastes, and conduct. Businesses can better understand client wants, hone their offers, and make wise decisions with the use of this information. Chatbots reduce the possibility of human error by answering regular questions and tasks, guaranteeing that users receive accurate information.
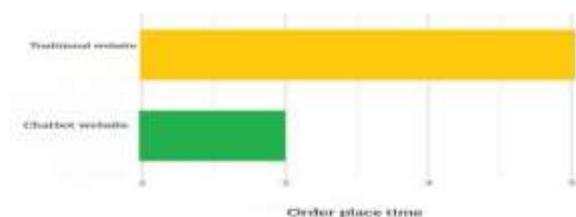

Figure 2

3.PROPOSED SYSTEM

An innovative online meal ordering platform that integrates AI chatbot technology is a noteworthy development in the digital revolution of the restaurant business. Using artificial intelligence, this system simulates human-like interactions through a conversational interface,

improving user experience and expediting the ordering process. In addition to alleviating human staff workload, the chatbot can instantly respond to often requested questions about menu items, ingredients, allergens, and restaurant policies. In order to help businesses improve their inventory and personnel, the AI component may also evaluate customer data to give customized discounts, recommend complimentary items, and forecast ordering patterns. This intelligent system not only improves customer satisfaction through 24/7 availability and quick response times but also enhances operational efficiency for restaurants by automating routine tasks and providing valuable insights. The AI chatbot serves as the primary interface for users to interact with the system, place orders, get recommendations, and handle inquiries.

- **System Purpose:**
Utilize an AI chatbot to simplify and enhance the online food ordering experience by providing an intuitive, interactive

- **Conversational interface**:
AI chatbot provides a human-like interaction experience for the online food delivery app. Enhance and streamline the food ordering experience using the AI-driven conversational technology.

- **Personalized recommendations**
Suggests menu items based on user preferences and past orders. Provide personalized recommendations based on user preferences

- **Natural language processing:**
Understands and responds to customer queries in everyday language. Identifies the user's purpose like ordering, inquiring about menu items, checking order status.

- **Order management:**
Handles complex orders, modifications, and special requests. Customize and place orders through the chatbot and Track order status in real-time.

- **Instant responses:**
Quickly answers questions about menu, ingredients, allergens, and policies. It Provides immediate responses to user queries, typically within milliseconds.

- **Automated routine tasks:**
Reduces workload on human staff by handling common queries and orders. Guides users through menu categories and items efficiently. Allows quick reordering of previous meals with minimal user input.

- **Complaint system:**

Customer complains is an expression of the buyer dissatisfaction on the purchased product which does not meet his or her expectations.

4.ARCHITECTURE

The design of a restaurant chatbot is determined by the quantity of fundamental components meant to provide seamless and successful user-restaurant service interactions. A chatbot's architecture and system flow usually consist of a number of essential elements that cooperate to facilitate efficient interaction and communication. A chatbot's fundamental components are a backend system, a natural language processing engine, and an interface.

4.1 User Interface (UI)

This is where users interact with the chatbot, providing input and receiving responses. This is where users interact with the chatbot, often through a chat window on a website or a messaging app. It captures the user's input and displays the chatbot's responses.

4.2 Natural Language Processing (NLP) Engine

This component interprets the user's input. It breaks down the text or speech into understandable parts, identifies the user's intent, and extracts relevant information. The NLP module processes user input, understanding its meaning and intent.

4.3 Backend System

The logic and flow of a communication are managed by the backend. It creates a response after processing the interpreted input from the NLP engine and managing operations like database or API access.

4.4 Dialogue Management System

This part controls the course of the discussion by deciding what to do next depending on user input and chatbot condition. In order to guarantee seamless and logical user-chatbot interactions, dialogue management is an essential part of chatbot systems. It entails controlling the dialogue's state, preserving context, and directing its flow.
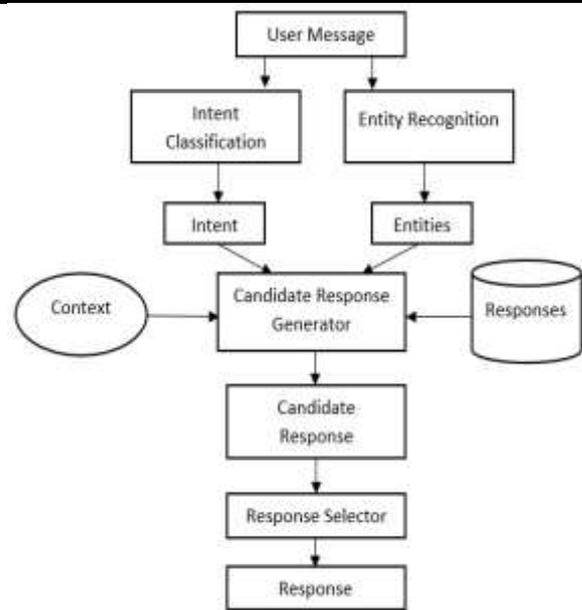

Figure 3

5. METHODLOGY

The methodology for developing an online food delivery system with an AI chatbot at its core involves a multifaceted approach that integrates cutting-edge technologies with user-centric design principles. At the heart of the system is a sophisticated AI-powered chatbot serving as the primary user interface, designed to handle all aspects of the food ordering process through natural language interactions. This chatbot utilizes advanced Natural Language Processing (NLP) algorithms to accurately interpret user queries, discern intent, and provide contextually relevant responses. The app integrates an AI-powered chatbot as the primary user interface. Upon opening, users interact with the chatbot to browse restaurants, view menus, place orders, and track deliveries. The chatbot utilizes natural language processing to understand user queries and intent. To deliver precise answers, it consults a database containing menus, real-time order process, and restaurant details. Utilizing machine learning methods, the AI customizes recommendations according to the user's order history and preferences. Subsequently, a comprehensive system architecture is presented, encompassing frontend and backend development to guarantee an intuitive user experience and a sturdy backend infrastructure. Integrating NLP technology into the AI chatbot is essential for efficiently managing customer inquiries, processing orders, and making recommendations. The chatbot assists users with menu selection, personalization choices, and payment processing while placing an order. It can handle complex queries about ingredients,

dietary restrictions, and order modifications. For order relay and delivery tracking, the system interfaces with mapping services and restaurant management software. Integration makes ensuring that the chatbot, other app elements, and outside services like payment gateways all work together seamlessly. Respecting data privacy and security guidelines at every stage of the process is essential, as is updating app features and AI capabilities often to meet changing user demands and technology breakthroughs. Lastly, robust analytics and reporting capabilities are combined to offer insightful business information to app administrators and restaurant partners, supporting data-driven decision-making and ongoing service enhancement.

6. CONCLUSION

This study investigated the creation and assessment of a chatbot for food delivery that made use of a modular system architecture and a cutting-edge NLP platform. The integration of AI chatbots in food delivery apps represents a significant leap forward in the evolution of online ordering systems. This innovative approach streamlines the user experience, making it more intuitive, personalized, and efficient. By leveraging natural language processing, machine learning, and real-time data integration, the AI-powered chatbot system revolutionizes how customers interact with food delivery services. The AI chatbot not only automates routine tasks but also adapts to user interactions, continually learning and improving its performance. The AI chatbot-driven food delivery app sets a new standard for efficiency, customer satisfaction, and adaptability in the competitive landscape of online food ordering.

7. ACKNOWLEDGEMENT

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