**A REPORT ON THE INTEGRATION OF A CHATBOT FOR A WEB-BASED**

**FOOD ORDERING SYSTEM**

**BY**

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**PROBLEM STATEMENT**

Integration of an online food ordering system to your restaurant’s website is one of the best ways to increase your sales, provide better customer support and improve user engagement. Although, restaurants owners can reap various benefits from an online ordering and service system, it might be troublesome for some customers. Problems that customers face while ordering includes timeliness, lack of customer support, accessibility, etc., most of these problems can be solved through chatbots. Chatbots are a form of conversational AI designed to simplify human interaction with computers. Using chatbots, computers can understand and respond to human input through spoken language. They are programmed to simulate human conversation and exhibit intelligent behavior of human. Many industries use chatbots to improve or streamline customer service that provide in-depth responses and tailored suggestions based on previous conversations. Chatbots communicate through speech or text. Both rely on artificial intelligence technologies like machine learning and natural language processing. Natural language processing is a branch of artificial intelligence that teaches machines to read, analyze and interpret human language. This technology gives chatbots a baseline for understanding language structure and meaning. NLP in essence allows the computer to understand what you are asking and how to appropriately respond.

Chatbot applications streamline interactions between people and services, enhancing customer experience. Chatbots reach your customers where they want to be reached. “People are now spending more time on their messaging apps than their social media apps” says Ilkovich. At the same time, they offer companies new opportunities to improve the customers’ engagement process and operational efficiency by reducing the typical cost of customer service. Chatbots are not only good for the restaurant staff in reducing work and pain but can provide a better user experience for the customers. Other benefits of chatbots include:

1. Chatbots essentially changes the way we order; it makes the entire ordering process easier and something that is more likely to be repeated by the customer.
2. Chatbots makes ordering more enjoyable for customers. Chatbots don’t just stop at receiving orders but also keep the conversation interesting by sharing trivia, asking questions, cracking occasional jokes, etc.
3. Chatbots can even recommend a meal according to the mentioned limits by the customer.

**REPORT OF THE APPLICATION OF CHATBOT TO AI**

To begin with, Artificial Intelligence (AI) is the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision making, and also, translation between languages.

A Chabot is a piece of software that conducts a conversation via auditory or textual methods. It can also be defined as a computer program that stimulates and processes human conversation, allowing humans to interact with digital devices as though they were communicating with a real human. Chatbots can be divided into two:

* **Task-oriented (declarative) chatbots:** These are single-purpose programs that focus on performing one function. They generate automated and conversational response to user inquiries. In this form, the chatbot has a repository of responses that it uses to solve/respond to the inquiries. Interactions with this chatbots are highly specific and structured and are most applicable to support and service various functions. These types of chatbots are built using Natural Language Processing (NLP) and Machine Learning (ML). They use NLP so that end users can experience them in a conversational way. These chatbots are currently the most used.
* **Data-driven and predictive chatbots:** These are often referred to as virtual or digital assistants. They are more sophisticated, more interactive and more personalized than task-oriented chatbots. They leverage Natural Language Understanding (NLU), Natural Language Processing (NLP) and Machine Learning (ML) to learn as they go. They also apply predictive intelligence and analytics to enable personalization based on past user behavior. They can also initiate conversations. Examples of data-driven chatbots include Amazon’s Alexa, Apple’s Siri, and Google Assistant.

Our chatbot, **Foodie** is a task-oriented chatbot that was built with **DialogFlow**. DialogFlow is a Google service that runs on Google Cloud Platform. It gives users new ways to interact with products by building engaging voice and text-based conversational interfaces, such as voice apps and chatbots that are powered by AI.

DialogFlow leverages on Natural Language Processing and also incorporates Google’s Machine Learning expertise and products.

**ASPECTS OF ARTIFICIAL INTELLIGENCE FOODIE FALLS INTO:**

1. MACHINE LEARNING:

ML is the science of getting machines to interpret, process and analyze data in order to solve real life problems. It is also defined as an application of Artificial Intelligence that provides systems the ability to automatically learn and improve from experience without being explicitly programmed. Machine Learning focuses on developing computer programs that can access data and use it to learn for themselves.

Machine learning is an algorithm that helps the chatbot learn from queries and data provided by the programmer during the bot training.

1. NATURAL LANGUAGE PROCESSING:

Natural Language Processing is the process of explaining a structure or a command to a machine in the natural language as used by humans; translating it into a format that a machine can understand and process it back to the user. Using NLP in development is like building a system that can understand human language. The ability of the computer to deal with the human language consists of the following aspects:

* **Natural language understanding:** The main part of the machine’s interaction with a human language is the ability to understand it.In order for the machine to work and understand such data, the human language should be converted into a logical form understandable to the computer algorithms.
* **Natural language generation:** After data is structured and its meaning analyzed, the machine turns it into a written narrative by generating readable text.
* **Natural language interaction:** This is the resultof thestages mentioned above. In order to be understood by a computer, we do not need to give them commands using programming algorithms; it is sufficient just to input the data in our language. In turn, the computer will give the response in the same way that is understandable for us.

With the use of NLP, the intelligent bots are able to correctly interpret informal speech, misspelling, and omission of punctuation in order to provide the relevant answer to the client’s inquiry.

References:

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