**Homework II: Conversational AI Strategies**

**Text Analytics and NLP**

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The continuous advancements in cutting-edge technologies have essentially changed the way organizations associate and speak with clients. Organizations leverage precise and adaptive technologies like Artificial Intelligence, Natural Language Processing, and Machine Learning to foster conversational and response-based chatbots. These AI-based conversational bots associate with clients progressively and empower human-like cooperation among frameworks and people. In many businesses, AI conversational bots continue to be a quicker method of correspondence with their clients as it conveys a more noteworthy client experience. A chatbot is a text or voice-based interface that is constructed and sent on the site or applications to recreate a discussion with clients and consistently support clients. These are self-learning bots and are modified with AI, NLP, and ML advancements.

**Industry-wise use cases for AI chatbots -**

*Medical care*: Healthcare service providers are utilizing AI chatbots to give quicker reactions to patient inquiries and help patients in booking meetings with specialists. These bots can give clinical data, gather patient information, oversee clinical protection inquiries, guarantee processes, and more.

*Telecom*: Telecom organizations are utilizing conversational bots to determine specialized issues consistently and give quicker reactions to support-related inquiries. These bots can likewise accumulate client data and can assist telecoms with offering customized plans and administrations to clients considering their profiles.

*Retail and E-Commerce*: Conversational bots help the clients in tracking down the right item, answer client inquiries, offer customized shopping guidance considering pre-recorded client records, and aid exchanges and that's only the tip of the iceberg.

*Media and Entertainment*: Artificial intelligence conversational specialists are utilized by media and diversion organizations to assemble client bits of knowledge, offer customized and remarkable substance, help watchers in exploring through the substance list, and pick the right satisfied.

*Deals and Marketing*: The deals and marketing area are utilizing AI-based intelligent bots to associate with clients, increment brand mindfulness, pitch administrations, produce leads, get clients, and that's only the tip of the iceberg.

**Chatbot functions to be tested -**

*Response time*: The AI conversational bot should answer quickly when it gets inputs from the client.

*Response exactness*: Reactions that conversational bots give against inputs should be tried with real interactions with humans.

*Character*: It is fundamental to ensure that the conversational style of the chatbot fits with the clients and with continuous discussion to convey an extraordinary user experience.

*Adaptation*: The chatbot must have the option to acknowledge all solicitations, casual discussion, phrases, emoticons sent by the client to approach proper solutions.

*Reducing errors*: Chatbot's capacity to manage the mistakes and its capacity to recuperate from those miscalculations should be tested. If a bot fails to comprehend client inputs, it should adroitly pose additional detail-seeking inquiries to the client or present aid to the client with a live specialist.

The implications of AI have revolutionized the way corporations handle customer service problems. Major players of the e-commerce industry such as Amazon, Walmart, Apple, and Best Buy have all adopted the use of AI chatbots in their organizations.

Customer service issues such as order tracking, returns/refunds, payment errors, delivery disputes, and delivery instructions can all now be handled using only AI without the need for any human interaction.

A customer can type or choose from a variety of predefined issues and get immediate responses based on their requirements and begin a series of questions and answers until the chatbot can successfully resolve the issue or redirect the customer to a real representative.

Other than this AI is also used along the shopping process of a customer on e-commerce websites. These AI assistants are capable of using Natural Language Processing (NLP) to study a customer's searches and views and offer recommendations for products that may interest the user the most. Along with recommendations, they can also offer suggestions for products related to past/recent purchases made by a customer.

Online retailers should utilize chatbots to draw in their clients all through the client-2-customer timeline. They can utilize these chatbots to respond to inquiries concerning their items directly on the site or even on other social media channels.

AI chatbots are utilized for conversational advertising and handling any concerns that clients might have concerning the item before they make the purchase. These bots are utilized for conversational business as well as providing after-sales support quickly and efficiently, without expecting to include a physical person as the customer service agent.

AI has also been used in the backend of e-commerce and retail for companies like IBM who in 2009 proposed a combination of sensors, RFID tags, GPS, scanners, and an AI software to tie it all together and successfully be able to predict and adjust inventory needs based on demand and supply of their goods. The implications of this system would revolutionize the logistics industry. Artificial Intelligence and deep learning algorithms have made the challenging task of forecasting inventory into something a lot easier and are now able to accurately determine the factors of an order cycle while calculating the impact it has on turnover and changing demand trends.

Furthermore, for any successful retail business to survive in the market, pricing is very crucial. These e-commerce giants have also been able to use AI to their advantage and solve the problem of optimal pricing. AI can process big data and past product ratings, logistic pricing as well as competitors' pricing and use a combination of this data to calculate the optimal pricing for products.

For our analysis, we tested chatbots for various e-commerce giants such as Amazon, Apple, and Walmart. We experienced very different experiences interacting with the AI chatbots for each of these companies.

Walmart’s AI chatbot offered a good selection of pre-defined issues that are the most common reasons for which a user may contact customer service. The AI then either offers links on the company’s website that redirect the user to a page with solutions to their problem and if that is not sufficient, a real customer service representative joins the chat and can handle the situation further from there.

Amazon had a far more intuitive and user-friendly chatbot system where the bot can hold a conversation for longer and guide the customer through more options before having to connect him/her to a real person. Amazon’s AI chatbot is also capable of issuing refunds and exchanges without the presence of a customer service representative whereas the other companies we tested required a representative to handle financial queries.

Apple has integrated their customer service AI into their ecosystem in a manner where anyone using an apple product can simply text apple from a supported device like they would a friend or a colleague. The AI system is capable of understanding full sentences and accurately responds to the queries the user may have. Their system stood out amongst the rest as they were the only major retailer whose AI system does not offer a selection of predefined user issues but in fact, lets the user type whatever issue he/she is contacting Apple about. The accuracy with which Apple’s AI can accurately understand sentences and give suggestions is commendable and positively highlights the capabilities and implications of AI in the e-commerce industry.

In our initial testing, we tested the performance of chatbots in the following sites: IBM Watson Care, Walmart, Amazon, Best Buy, etc. it was observed that some of the chatbots had great user and computer interfaces. That helped address or recommend solutions based on the user inputs, solving both customer and business needs. Among the few tested, IBM had the best chatbot experience, we had to define our problem or issue in short and the bot was able to recommend resources with an option to click on help to connect with any available agent or continue chatting. Other bots were designed to work based on a few predefined sets of questions in the form of a survey, where users had to select the most suitable option.

**Benefits of testing Chatbots:**

*Records live user interaction*: Man-made intelligence chatbots empower eCommerce organizations to get involved in continuous client connections. This data can be examined to work on the administrations according to the client input.

*Customer service gets more time for solving substantial issues*: As chatbots can deal with a greater part of the dreary basic inquiries of the clients, they can assist clients with adjusting chiefs to keep the locus of help to tackle complex questions. By tending to complex inquiries with need, you can win more clients while decreasing the activity cost.

*User curated service*: Man-made intelligence chatbots in eCommerce recollect the previous cooperation of the clients and use them further to tweak future discussions. Furthermore, by customizing the administrations, you support the commitment

**Common Challenges while testing Chatbots:**

*Area explicit approvals*: Chatbots are intended to take care of explicit questions from people. In any case, approving the chatbot's capacity to deal with area explicit questions is a difficult task for a person.

*Multi-channel client experience:* Conversational bots should preferably convey an extraordinary multi-channel user experience. Checking the similarity of the bot with different accessible stages and channels is a difficult undertaking.

*Vulnerability of client discussion:* Enabling a complete audience test inclusion is a difficult undertaking as there are different vulnerabilities connected with the manners in which clients associate with these bots. It may logically seem that providing valuable feedback to every user-defined query is unachievable.

**Our strategy for the Conversational AI for ECOM industry:**

Diagram

Description automatically generated

NLP has been one of the most popularly used tools to build chatbots. NLP converts the user speech or input into structured data that can then be used to give a suitable response. It includes the steps outlined in the below chart:

Diagram

Description automatically generated

The NLP isolates a progression of words into tokens or pieces that are semantically delegated, with an alternate value in the application. It will study and become familiar with the client's insight and move the request to a human when the bot is not able to process the tokens submitted in the form of words.

The normalization model cycles the text to figure out the typographical blunders and normal spelling botches that could modify the expected significance of the client's solicitation. The next step is when the chatbot searches for various classifications of words, like the name of the specific item, the client's location or name, whichever data is required. The Chatbot then looks for the subjects, action words, objects, normal expressions, and things in the client's text to find related phrases that customers need to convey.

Diagram

Description automatically generated

**Dataset Requirements:**

Diagram

Description automatically generated

Interactive FAQs are one of the commonly used resources when setting up a conversational AI in organizations. Instead of having the customers go through a large set of pre-defined question and answer guides, it is convenient to build a conversational AI with preloaded FAQ’s that helps understand the most relevant answer to the query entered by a customer.

Survey answers that generally help load the most frequently asked questions in our Dataset that is used to source by the chatbot. Having any form-based survey answers is a crucial source of information before setting up a conversational AI chatbot.

Interfaces are framework, packages or functions that are used for working together with customers or various applications.

Artificial intelligence Planning is an Artificial Intelligence way to deal with keen critical thinking. In an exchange arranging model, we will regard discussion as an arranging issue with an underlying state and a last objective state. The AI organizer's assignment is then to observe an ideal succession of steps from the underlying to the objective state. In a discussion, these means will incorporate - asking the customer for replies to explicit inquiries, getting or refreshing information from/to a back-end framework, and so on

As per Applied AI's report, eCommerce organizations need to watch out for these measurements:

* Messages that start a discussion
* Continuous bot messages
* Retention rate
* Objective consummation rates
* Customer Satisfaction
* Registered users
* New users
* Potential users

An AI chatbot can assist with associating brands with clients. This eventually improves the commitment rate once AI chatbots ace the discussions by gaining from client inputs.

In eCommerce, there isn't anything more important than intrigued customers. These customers mark their interested items on the site. It is possible that a large number of items don't arrive at the clients. A bot can comprehend the prerequisites of the customer by examining the items in their cart. Further, bots can prescribe better items to clients. This can bring about the development of the client base.

AI bots can communicate with clients with the assistance of mechanized trigger messages and moment reactions. eCommerce and retail organizations can exploit chatbots for convincing clients to give out details and gather the information.

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