

Artificial Intelligence Support Desk

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Abstract: Human-computer support desk plays an important role in dynamic trading online, especially in B2C ecommerce. Further scientific investigations about designing the software agent that can deal with the human's random and inconsistent offer are in need, which is crucially useful for the online merchants to achieve better trading outcomes and save vast trading cost. The lack of such studies has decelerated the process of applying automated support desk to real world applications. To address the critical issue, this paper develops a strategy model. To demonstrate the effectiveness of this model, we develop a prototype and conduct human-computer support desk experiments over 121 participants. The experimental result shows that the agent with our newly designed strategy model can significantly increase the agreement rate and joint outcome of the both sides, and even can outperform human negotiators. In order to develop a negotiating agent that has the ability to negotiate with human, it is of vital importance to elucidate how to design a negotiation strategy model to guide the agent's concession in the process of negotiation. A negotiation strategy is a decision-making model used by the participants to persuade the opponent towards the outcome they desire. There are two major approaches to design the strategy, the heuristic-based approach and the machine learning approach. However, several important dimensions have received limited attention in existing research of negotiation strategies. Firstly, past studies primarily focus on computer-computer automated negotiation, while relatively few studies have been carried out in assessing the potential of human-computer support desk. None can ignore the fact that the computer simulating negotiation environment is quite different with the negotiation that has human participating in, but systematic design and evaluation of agent strategies that incorporate a human counterpart's perspective is lacking. Secondly, a negotiation strategy is essentially a concession model that defines the utility decreasing sequence of offers.

Index Term: Chabot, Artificial Intelligence Mark-up Language (AIML), Latent Semantic Analysis (LSA).

I. INTRODUCTION

1.1 Basic of Chatbot

Chatbots (also known as Chatterbots or chatter robots) are software agents that simulate an entity, usually a human counterpart of vague or specifically defined characteristics, with whom the user can interact in a conversation (either written, oral, or mixed). One of the first and main goals of chatbots has always been to resemble an intelligent human person and make it hard or impossible for the other party of the conversation to understand their real nature (as in artificial). With the development of more and more chatbots of various architecture and capabilities the purposes for their usage has widely broadened. These chatbots can prove sufficient to fool the user into believing they are "talking" to a human being, but are very limited in improving their knowledge base at runtime, and have usually little to no means of keeping track of all the conversation data. Chatbots, which are software agents with an artificial intelligence that allows them to understand the user input and provide a meaningful response according to pre-compiled knowledge. The chatbots can be pedagogical agents or personifications of historical figures who will be able to talk about their life and work. The chatbots are developed with the Artificial Intelligence Mark-up Language (AIML2) since the group has previous experience with that. Project mainly consists of single software which will be made up using Artificial

Intelligence and will enable user to chat with system. A Chatbot is a conversational agent that interacts with users using natural language. Numerous applications of Chat-bots such as Customer Service, call centres etc.

II. RELATED WORK

Md. Shahriare Satu and Md. Hasnat Parvez [1] showed a review of integrated applications with AIML based chatbot. The paper explains applications using AIML chatbot instead of human beings to interact with customers and give solution of their problems. They also said about the low cost and configuration of AIML based chatbots. Many times we go for shopping and to a mall to watch a movie. We have so much of time and we waste our time to decide to buy from which shop. Our application works as a virtual robot. As soon as we enter the shop name we come to know which shop has the most discounts and it utilizes our time. we can do shopping according to the latest or biggest sale and can save our money and time. We can also do chatting with robot in verbal and textual form. It will help us to give navigation of the shop and we can reach to the shop without wasting our time. The robot will guide us with the perfect direction and we can reach the shop easily. Thus it saves our time and money [2].

III. PROPOSED SOLUTION

The work flow of the system is shown in the figure, the user queries will be first handled by AIML check block. It will check if the entered user query or text is an AIML script or not. Mostly, a user starts conversation by greetings or general questions. AIML is defined with templates of greetings and general queries. Greeting messages by customers like hi, hello, good morning etc will be answered by using AIML templates. It also handles general questions. Here, we have two types of answers like pattern based answers by AIML and semantic based answers by LSA. System will automatically route to LSA block if AIML is not able to give answer for the particular user input. User can ask any questions. We used the template data of ALICE [3] to run our AIML model. It's a difficult task for the developer to give all questions user could possibly ask to the chatbot. This is the major drawback of AIML. The unanswered questions from AIML will be automatically routed to the LSA block. The frequently answered questions (FAQs) in the particular e-business domain are used for training the model. The FAQ is made using online data from the internet for various domains. The FAQ corpus is first tokenized and then the stop words are removed. Next, stemming of words are done using Porter Stemmer algorithm. A word by document matrix is formed where word presence is denoted by 1 and word absence by 0. The Word by Doc matrix gives relation between a set of concepts arranged as documents and terms.

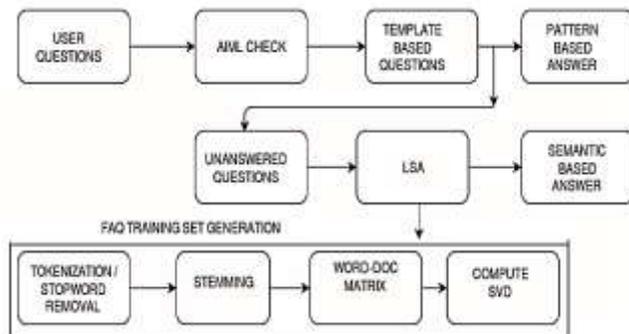


Figure1. Workflow of System

Then singular value decomposition is applied to the word vectors to remove the noise from the dataset. Now, the cosine similarity between user input and FAQ dataset for each questions are checked. The answer from the dataset which is having the minimum distance will be shown to the customer. Here we check the semantic similarity of each word.

IV. APPLICATION

- Education
- Information retrieval

- Business
- E-commerce

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V. CONCLUSION & FUTURE SCOPE:-

The chatbot is a combination of AIML and LSA. The combination of technique will help customers to get correct responses. The templates and patterns for general user queries using AIML has to show improvement. The chatbot will be designed in such a way that for single template, it gives random responses. LSA based questions are giving correct responses. In future, the chatbot will be able to answer more general questions by defining more templates and patterns. In general, the aim of chatbot designers is to build tools that help people, facilitate their work, and their interaction with computers using natural language; but not to replace the human role totally, or imitate human conversation perfectly. "We need not take human-human conversation as the gold standard for conversational exchanges. If one had a perfect simulation of a human conversant, then it would be human conversation and not human-computer conversation with its sometimes odd but pertinent properties.

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