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Ai Based Shopping System for Price Negotiation Using Chatbot System and Artificial Intelligence

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ABSTRACT

Today life of humans are fully engaged in their busy schedule. With their busy days, people are in need of a system that brings the product at their door step in order to simple their purchase. Thus e- commerce websites has been developed and act as an emerging technique in this current world. People make their purchasing after the introduction of e commerce websites in an efficient manner. But while making an online purchase the quality and price of the product is very important. Even though things we want are getting easier, all people are very conscious in quality and rate of the particular product. Having a best price which is not a fixed one will increase the payoff among sellers and buyers. Thus an automated agent for negotiation has been designed in order to maintain a flexible and considerable price instead of fixed price. This Automated agent will help the organization or shops to have their selling in online fully automated. It also helps the customers to negotiate with the AI Bot based on price of every product. Once after the negotiation of price, the link for payment will be sent to mail in order to make online credit card payments. Finally successful payment can be intimated through mail.

Keywords : Online Shopping, Artificial Intelligence, Chatbot

I. INTRODUCTION

Shopping has long been considered as a refreshment by many. Shopping online became a recreational activity of life. The reason of developing web based online shopping system are many everyone walking down the street for shopping has some difficulties. Also some people are so much busy and not able to go out for shopping, Some don't like to shop in crowd. There is another reason that it is not possible to see all the product of a store, also its hazardous for both the customer and the seller. Online shopping system is a virtual store on Internet where customer can browse the product and select the product of interest. The selected product may be collected in shopping cart. At checkout time the items in the shopping cart will be presented as an order. At that time shipping information andpayment method have to selected by the customer. Finally by confirming the order we complete the shopping and the productwill be delivered to customer via courier, post or by direct agent of company.

In this paper a chatterbot or chatbot aims to make a conversation between both human and machine and design and development of an intelligent voice

recognition chat bot. The machine has embedded knowledge to identify the sentences and making a decision itself as response to answer a question. By introducing an artificial brain, the web-based bot generates customized user responses, aligned to the desired character. Questions asked to the bot, which is not understood is further processed using a third-party expert system (an online intelligent research assistant), and the response is archived, improving the artificial brain capabilities for future generation of responses.We point out that the automated negotiation is still in its infant stage, because there are still some difficulties in this field. The first is the ontology issue, the second is agents' strategies and third is Communication protocol. Electronic negotiations are becoming an important research subject in the area of electronic commerce.Decision analysis and especially multi attributive utility theory play an important role for the support of electronic negotiations. The preferences are usually represented as a utility function on the set of alternatives such that the user prefers an alternative exactly when it has higher utility.With the rapid expansion of the Internet, the implementation of agent technology in electronic commerce (e-commerce) becomes very popular, which provides a promising field for the approach of agent and Artificial Intelligence technology.

Artificial Intelligence (AI) is a commonly employed appellation to refer to the field of science aimed at providing machines with the capacity of performing functions such as logic, reasoning, planning, learning, and perception. Despite the reference to "machines" in this definition, the latter could be applied to "any type of living intelligence". Likewise, the meaning of intelligence, as it is found in primates and other exceptional animals for example, it can be extended to include an interleaved set of capacities, including creativity, emotional knowledge, and self-awareness. Nowadays, the term AI encompasses the whole conceptualization of a machine that is intelligent in terms of both operational and social consequences. A practical definition used is one proposed by Russell and Norvig: "Artificial Intelligence is the study of human intelligence and actions replicated artificially, such that the resultant bears to its design a reasonable level of rationality".

In this article, we have discussed about scheduling in cloud computing environment. The introduction is summarized into Section 1. Literature survey is shown in Section 2. Methods and materials are formulated in Section 3. Methodology is shown in Section 4. The results and discussion are explained in Section 5 and section 5 and 6 sums up the paper.

II. LITERATURE SURVEY

Solomon, 1998 in his study "Consumer behavior is the study of the processes involved when an individual selects, purchases, uses or disposes of products, services, ideas, or experiences to satisfy needs and desires". In view for the Internet to spread out as a retail channel, it is imperative to realize the consumer's mind-set, intention and conduct in light of the online buying practice: i.e., why they employ or falter to use it for purchasing? Consumer attitudes seem to have a significant influence on this decision.

Schiffman, Scherman, & Long, 2003 inhis study researched that "yet individual attitudes do not, by themselves, influence one's intention and/or behavior. Instead that intention or behavior is a result of a variety of attitudes that the consumer has about a variety of issues relevant to the situation at hand, in this case online buying. Over time the Internet buyer, once considered the innovator or early adopter, has changed. While once young, professional males with higher educational levels, incomes, tolerance for risk, social status and a lower dependence on the mass media or the need to patronize established retail channels

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Vijay, Sai. T. &Balaji, M. S. (May 2009), revealed that Consumers, all over the world, are increasingly shifting from the crowded stores to the one-click online shopping format. However, in spite of the convenience

offered, online shopping is far from being the most preferred form of shopping in India. A survey among 150 internet users, including both users and non-users of online shopping, was carried out to understand why some purchase online while others do not. The results suggested that convenience and saving of time drive Indian consumers to shop online; while security and privacy concerns dissuade them from doing so.

The work of Kim and Park (2005) using U.S. samples suggests that their positive attitudes as well as willingness to search for pre-purchase information leads to a strong likelihood that they will buy online. Online shoppers, are required to have computer skills in order to use the Internet for shopping. Hence, those who are not comfortable with using the computer, will likely do their shopping at the traditional store, modern shop, or discount store because it will be faster shopping there than in the Internet shop.

Goldsmith and Flynn (2004) state that the home catalog is another traditional selling channel where people can shop at home because of the varieties of products offered in the catalog. They can order through the phone or by mail. It is convenient except that they are not able to touch and feel products before purchasing.

According to Zhou et al. (2007) it is the customer's probability that shopping online would increase his/her efficiency and this positively affect the entire purchase process. Bhattacherjee, (2001) says that customer prefer to acquire a product when such usage is perceived to be useful.

According to Dr. Wallace, perhaps, the biggest market of chatbot is Enter- tainment Markets, in which, we can imagine that chatbots can act as a talking book for children and provide foreign language instruction or can be a tutor in Intelligent Tutoring system. One such study used an ALICE system to help Chinese university students practice their conversational English skills. The study was qualitative in nature and used pre-existing conversational English skills . The study focused more on user attitudes rather than on chatterbot efficiency. It was discovered that 62% of users chatted for 10 lines or less, and that 8.5% of the time ALICEbot has no specific pattern to match the given input and had to rely on root-level generic responses.

III. METHODS AND MATERIALS

Our proposed method is the artificial intelligence based online shopping system. With over 80% of global consumers trying online shopping at least once, the greatest opportunity for e-commerce companies is to build a long lasting and profitable relationship with this already existing audience. Such a strong relationship requires utmost focus on the customer as a whole and making sense of a flood of real time information that goes well beyond demographics or shopping behaviour. There are two entities who will access the system.One is the admin and another one will be the registered user. User can select the desired product and view its details and add to cart if he/she wishes to buy the product . User can also ask queries to AI Bot for bargaining related to price and regarding any product details and bot will return the query result in form of text to speech.

- The goal of the agent system is to expand the range of the online business module.
- This agent system differs from common ones. Since the current e-commerce systems often have strict requirements on the price, the number of buyers and the number of transactions, they are lack of real time interactivity between the users and the system.
- The agent-based model for intelligent shopping assistant, solves the problem. There are three different contents: multi-agent model system, system semantic protocol and natural language process base text.

a.Chatbot

Before entering design process, it needs to know global architecture of the chatbot. The scheme of the chatbot design shown in Figure:1

The chatbot consists of core and interface accessing that core. The core is in RDBMS being database. The database consists of tables to store knowledge, while the interpreter is a stored program of function and procedure sets for requiring of pattern matching.

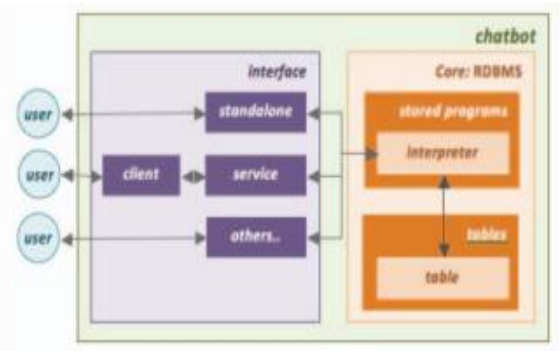

Figure1: Global Design of Chatbot

The interface could be a standalone application that can be employed by user for chatting or conversation. It can also be employed by service that needs additional client application to converse with the user. This application in the interface side can be expanded more over as user needs it and can also be written using other programming languages.

The boundaries of chatbot in this method have some requirements:

1. Chatbot should be able to differ each conversation session that is running, so it has to store data due to the conversation session such as session of identity (sessionid), user name on the session. The sessionid must always be sent together with user input by application in the interface side along conversation process.
2. Chatbot must store knowledge in the pattern-template form.
3. All user inputs must be free of misspellings, punctuation, and must be in lower case, so to anticipate these cases the chatbot should be able to do normalization of the input that doesn't fit.
4. For the purposes of misspellings correction, the chatbot should have a list of misspelled words and the correction stored in the tables of database.
5. The chatbot should be able to pick up the keywords from the user input, so the chatbot should have a list of keywords which is stored in the tables of database.
6. The chatbot should be able to do a search template using a sentence-similarity measurement scores between both pattern and input. The searching of pattern is narrowed based on the result identification as described at point 4.
7. The chatbot should keep a conversation log containing sessionid, time, input, and response.

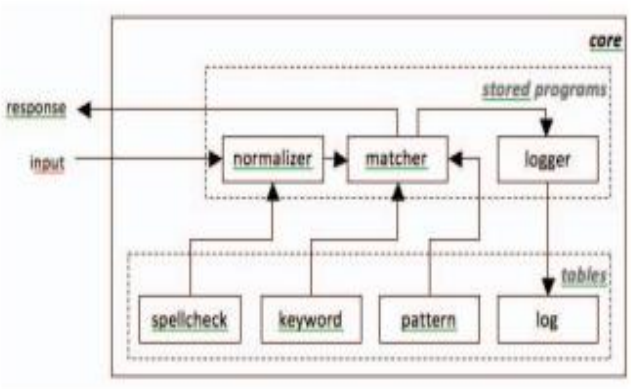

Figure 2: Chatbot Core Scheme

b. Natural language processing (NLP)

A natural language processing (NLP) gives capability of computer allows communication to happen between user-to-computer or human-to-machine and computer-to-computer or machine-to-machine using human natural languages. There are three analyses to understand natural language i.e. parsing, semantic interpretation, and knowledge-based structures. The parsing is an analysis of sentence syntax structures. In this step, identification of main linguistic relations is done to parse into subject, predicate, and object of the sentences. The semantic interpretation step yields meaning representation of the texts. The semantic interpretation uses knowledge of word meaning and linguistic structure such as noun or verb transitivity.

Actually, processing focus in NLP is a sentence. A sentence could be meant as biggest syntaxes consist of two or more words. A structural relationship between inter-word and inter-sentence is a different. Between both sentence and word, there are two media syntax units i.e. clause and phrase. The clause is a syntax unit that consists of two or more predicate elements. The predicate elements are a subject, predicate, object, complement, and adverb. The phrase is a syntax that consists of two or more words which does not include predicate elements.

c. Decision Tree Classification (DT)

Decision Tree (DT) is a simple and easy way to implement classifier. Decision tree builds classification or regression models in the structure of a tree making. It is simple to debug and handle. Decision trees can handle both categorical and numerical data. The algorithm works by finding the information gain of the attributes and taking out the attributes for splitting the branches in trees. A DT is a flowchart like structure having internal node that represents a test on an attribute, branch that represents the outcome of the test and leaf node that represents a class label (decision taken after computing all attributes). The paths from root to leaf represents classification rules. The extracted features are provided as input to DT classifier.

IV.METHODOLOGY

System Design develops the architectural details required to build system or product. The system design process encompasses the following activities:

- Partition the analysis model into subsystems.
- Identify concurrency that is dictated by the problem.
- Develop design for the user interface.
- Choose a basic strategy or implementing data management.
- Identify global resources and the control mechanisms required to access them.

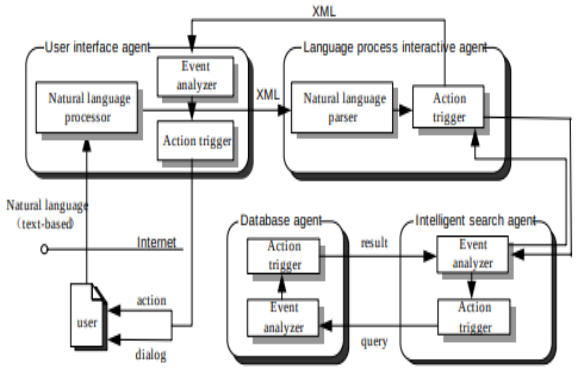

Figure 3 : design of the system

V. RESULTS AND DISCUSSION

The combination of chatbot and voice output allows for a simpler experience which makes a clientmore user friendly. By introducing an artificial brain, the web-based bot generates customized user responses, aligned to the desired character. Here admin will add the product with its details such as product name, product description, features, warranty, add on product and delivery date. User need to register with basic registration details to generate a valid username and password. After login, user can view all the recommended products on the homepage compiled by system based on users information. User can also ask queries to AI bot regarding any product details and AI bot will return the query result in form of text to speech.

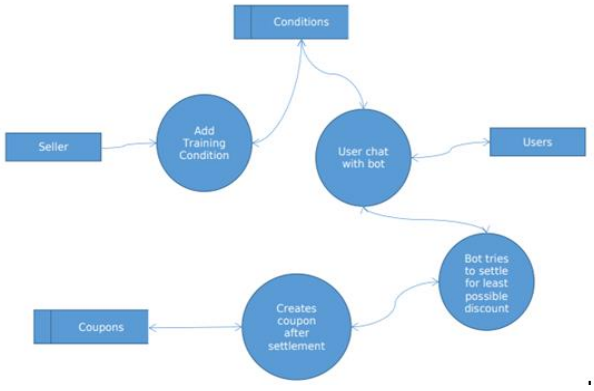

Figure 4:Bot training

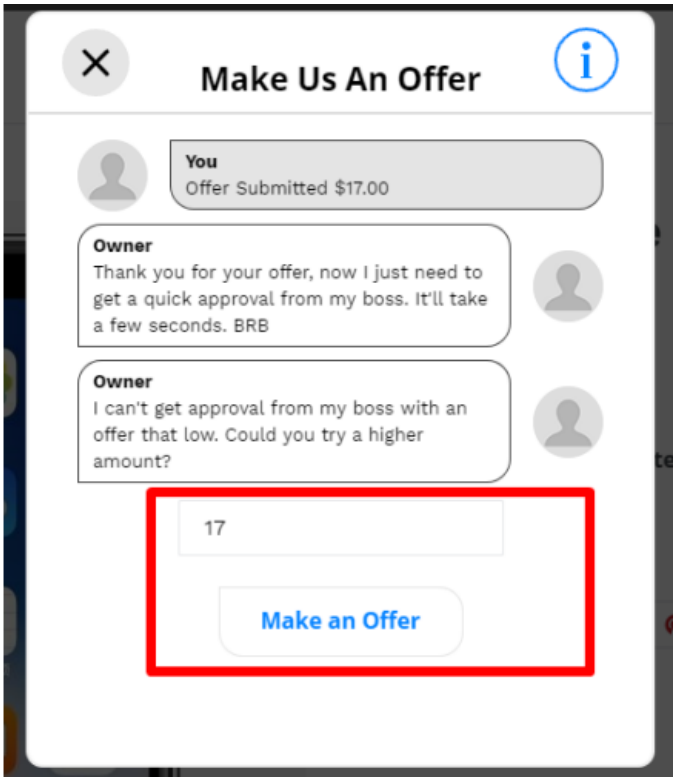

Figure 5:chatbot GUI

As this negotiation may happen back and forth, the store admin can propose a final offer himself at any stage if he feels that the customer is nowhere close to the least price after repeated attempts. At this moment, the customer has to accept or decline the deal to break the loop.

- What if we tell you that the site owner was not even online when the negotiation took place.
- What if we tell you that the entire conversation with the customer was being handled by a chatbot.

VI.CONCLUSION

The overall results prove that the respondents have perceived online shopping in a positive manner. This clearly justifies the project growth of online shopping . The frequency of online shopping is relatively less in the country. Online shopping organizations can apply the relevant variables and factors, identified from the research , to create their strategies and tactics. The organizations can prioritize the consumer inherent andunequivocal requirements in online shopping environment. The results can also be used byvarious organizations to identify their target customer segments.

Conventionally web-bots exist; web-bots were created as text based web-friends, an entertainer for a user. Furthermore, and separately there already exists enhanced rich site summary (RSS) feeds and expert content processing systems that are accessible to web users. Text-based web-bots can be linked to function beyond an entertainer as an informer, if linked with, amongst others, RSS feeds and or expert systems. Such a friendly bot could, hence, also function as a trainer providing realistic and up-to-date responses. The convenience could be improved if the system is not only text based but also voice-based & voice trained.

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