PRICE NEGOTIATING CHAT BOT WITH TEXT&VOICE ON E-COMMERCE WEBSITE

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ABSTRACT

In recent years online shopping has gained a huge boom. With this increase, most of the features of online shopping are developed but some features like negotiating with shopkeepers are not available which is sometimes possible in offline purchasing. We have implemented a chatbot for negotiating on the products. The chatbot interacts with customers and assists them to get a satisfactory price on product(s). With such a system, which impacts on major areas of online shopping there are possibilities in which either the seller of the product or customer's budget gets compromised. To avoid such situations, we have developed an algorithm which works along with prediction of old available data to provide a price. Price prediction has less accuracy at times because either irrelevant features/attributes of data are used or some algorithms are not suitable for a particular dataset. Due to this, Ecommerce business does not directly rely on price prediction systems since even a wrong prediction of a single product can result in business losses. Some models also fail when data scales or some feature is unavailable after time on which model prediction was dependent. Then those changes are to be managed to maintain the accuracy and reliability of the model. In our chatbot system we have tried to resolve some of such issues.

Key Words: Price negotiation, E-commerce negotiation, Chatbot, Machine Learning, Neural Network, Natural Language Processing.

1.INTRODUCTION

E-commerce websites today apply various AI techniques to determine most liked products or most sold products which eventually are calculated to provide an effortless search for customers shopping on their website. But at times when the best products are sold at high prices, customers have to compromise on their product. There are also some other problems that customers may face on low cost products. These problems can be eliminated by giving them an opportunity to negotiate on the products. Negotiation is a combination of both linguistic and reasoning problems. Negotiation is the process of exchanging the highest likelihood of satisfying the needs of both parties . The first party i.e. product seller will provide a minimum price along with the product data that he/she can afford to sell the product at. This price and the product price before negotiation (original price) are the limits for our algorithm. The chatbot is implemented on the website which uses flask APIs to connect to UI so that we can depict real life implementation of our model. A chat bot is an artificial intelligence (AI) software that can simulate a natural language conversation (or chat) with a user via messaging applications, websites and mobile apps or by telephone. Chatbots can solve most of the customer queries without need for a customer executive. The chatbot uses NLP techniques to identify the user intent and replies accordingly. Besides all these practices, chatbot will also automate the process of negotiation on E-commerce websites. Such a system will help the users to freely interact with the software and upload their product related queries and budget to get the response related to the query. Just like retail and logistics companies use data to plot the most efficient route to deliver goods . It will bring a huge impact on sales and number of customers on the website. The customers will most likely increase due to getting online products at their fair prices.

2. LITERATURE SURVEY

A. Porselvi Pradeep Kumar et al, the features of online shopping are developed but some features like negotiating with shopkeepers are not available which is sometimes possible in offline purchasing. We have implemented a chatbot for negotiating on the products. The chatbot interacts with customers and assists them to get a satisfactory price on product(s). With such a system, which impacts on major areas of online shopping there are possibilities in which either the seller of the

product or customer's budget gets compromised. To avoid such situations we have developed an algorithm which works along with prediction of old available data to provide a price. Price prediction has less accuracy at times because either irrelevant features/attributes of data are used or some algorithms are not suitable for a particular dataset. Due to this, E commerce business does not directly rely on price prediction systems since even a wrong prediction of a single product can result in business losses.

Tingwei Liu et al, Artificial intelligence (AI) has been used to develop and advance numerous fields and industries, including finance, healthcare, education, transportation and more. However, in the business negotiation field, such as bargain, the AI has not yet exerted its power. In order to explore the application of AI into business negotiation, we have built an intelligent robot that can help customers that lack negotiation skills when bargaining in their shopping scenarios. This bot can make decision by itself via price prediction function implemented by machine learning algorithms and the tool of decision tree. As a result, our bot has got a positive performance during a used car trade. Although the algorithm of the project is relatively simple, its main contribution is to show the potential application of AI in the business negotiation. We believe that it can provide ideas and directions for the future development of business negotiation robot

3. PROPOSED SYSTEM

the dataset of e-commerce items containing the price of products and their minimum prices i.e min price which will be used for negotiating. The website for demonstrating the working is made upon HTML, CSS, JavaScript for front end while the backend uses Flask. Database is made by mariadb. In an E-commerce website the customers select the product(s) that they wish to buy, then they proceed with ordering the product(s). On our website we have added the chatbot where they purchase the product by placing a button to negotiate. The offer price will be then stored when they are satisfied. They can select whether they want to buy that product or add the product to cart and see for another product(s). Customers judge the products on E-commerce websites by various factors such as ratings, price, reviews, etc. But for some customers, price plays a crucial role in the decision for purchasing a product advantages of proposed system. When the customer asks for the negotiation, then the first negotiated price will be given by Machine Learning

algorithms on the available dataset which contains data for products with their price and discount. It will consider the different parameters in the database and accordingly predict the price of the product which will be used for negotiating. The machine learning algorithms used are SVM, KNN. Different dataset attributes(like minimum price, category, likes, etc) are used in the SVM and KNN for prediction of price and then finally the ensembled result of both algorithms is considered and this price is the initial negotiated price. If the customers agreed to buy, they can buy the product at this negotiated price or else they can go for further negotiating the price of that product with the chatbot. If the customer is not satisfied with the first price, for further negotiation we have created the algorithm which will be using the present product price and the minimum price at which the seller can sell the product. The chatbot negotiates the price of the product with the customer by the price given by them (if they have provided) and the threshold price (min price).

4. IMPLEMENTATION

In this project we have designed E-commerce application where user can browse products list and then select Chatbot as Text or Voice and then negotiate with Chatbot. Chatbot will understand two types of voice command such as ‘first price’ which will give reasonable price to the customer and if customer not satisfy then it will ask for ‘final price’ and then Chatbot will add another 10% discount as final price and then serve to customer.

If say another word other than ‘first price’ or ‘final price’ then Chatbot will give error.

To display list of products we are using below dataset which contains list of products and prices

we have list of products and its images and in last column we have Actual Price and negotiable price and using this list we will serve products to customers and Chatbot will use above dataset to get actual price and negotiable prices.

4.1 TECHNOLOGIES USED

Support Vector Machine (SVM) is a powerful machine learning algorithm used for linear or nonlinear classification, regression, and even outlier detection tasks. SVMs can be used for a variety of tasks, such as text classification, image classification, spam detection, handwriting identification, gene expression analysis, face detection and more. SVM is a supervised machine learning algorithm used for both classification and regression1.

It works by finding the best hyperplane that separates data into different classes. The hyperplane is chosen such that it maximizes the margin between the two classes.

Random forest is a commonly-used machine learning algorithm that combines the output of multiple decision trees to reach a single result. It handles both classification and regression problems. The random forest algorithm is made up of a collection of decision trees, and each tree in the ensemble is comprised of a data sample drawn from a training set with replacement, called the bootstrap sample. Of that training sample, one-third of it is set aside as test data, known as the out-of-bag (oob) sample.

Natural Language Processing (NLP) is an interdisciplinary subfield of linguistics, computer science, and artificial intelligence concerned with the interactions between computers and human language, in particular how to program computers to process and analyze large amounts of natural language data. NLP refers to the branch of computer science—and more specifically, the branch of artificial intelligence or AI—concerned with giving computers the ability to understand text and spoken words in much the same way human beings can.

4.2 SYSTEM ARCHITECTUE:

The application's design phase is covered in this chapter. We created this application with the goal of making it simple enough for anyone to use. This system comprises of various image processing methods, and each method is thoroughly illustrated using UML diagrams.The Unified Modeling Language (UML) is a general- purpose, developmental, modeling language in the field of software engineering that is intended to provide a standard way to visualize the design of a system.

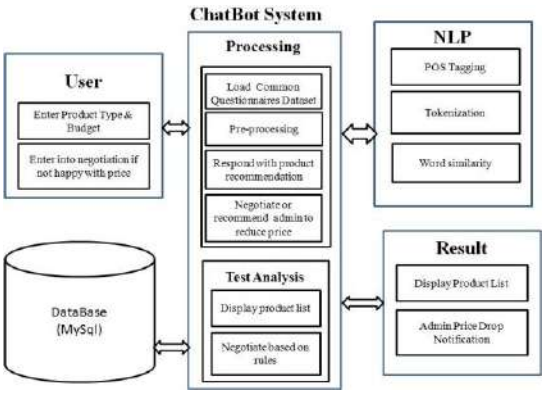

Fig1: system architecture

5. RESULT

The performance given by selected algorithms in past for chatbot communication using svm(support vector machine),word matching algorithm is shown in below graph.

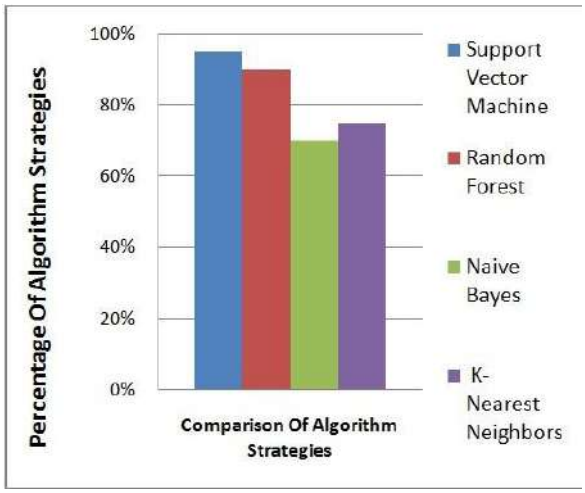

Chart -1: Algorithm accuracy comparison In the above figure we compare different algorithms on the basis of there performance, accuracy. We are using support vector machine technique for classification which give better result then the others. Which is also accurate and also execution time of machine learning algorithm is better as compare to other.

6. CONCLUSION

The negotiation on products is a challenging task when it comes to e-commerce systems. We tried a primary chat-bot that covers many aspects and cases for negotiation but is not evident to provide the best results. The chat-bot which we created sometimes falls to the price customers ask for though it is always greater than minimum price but may result in loss for seller if it goes the same for many customers. Such situations have to be handled. We used various algorithms such as SVM, KNN but in future there may be some better price prediction algorithms which can be used the ways in which a user can better negotiate with chat-bot and get cheaper prices. Such cases should be handled. Kb-agent is considered to be better when it comes to negotiation, this can be added to our application. An example can be Apple's Siri which has huge knowledge base to provide satisfactory outcomes.

7. FUTURE ENHANCEMENT:

In future we would like to add even features to the chat-bot so that the customers can be accessed and assisted very easily. we would even like to add the more chat-bots features such as comparison of the products from other websites so the customer can easily decide which is favourable price. we would like to add the quick delivery option mode so that the customers need not to wait for the products for days. adding the return policy so that customers are comfortable with site and the products. The chatbot which we created sometimes falls to the price customers ask for though it is always greater than minimum price but may result in loss for seller if it goes the same for many customers. Such situations have to be handled.

8. BIBILOGRAPHY

[1] A. Porselvi, Pradeep Kumar A.V Hemakumar S.Manoj Kumar,"Artificial Intelligence Based Price Negotiating E-commerce Chat Bot System" International Research Journal of Engineering and Technology (IRJET)

[2] Tingwei Liu, Zheng Zheng,"Negotiation Assistant Bot of Pricing Prediction Based on Machine Learning" International Journal of Intelligence Science > Vol.10 No.2, April 2020

[3] Shubham Pingale Prasad Kulkarni Rushikesh Ambekar Vanita Babanne," Implementing E-Negotiator Chatbot for E-commerce Website" International Research Journal of Engineering and Technology (IRJET)

[4] Eleni Adamopoulou and Lefteris Moussiades,"An Overview of Chatbot Technology" Springer

[5] Rushikesh Khandale, Shashank Sombansi, Siddharth Mishra, Mohd Fahad Shaikh, Prof. Pooja Mishra," E- Negotiator Chatbot for E-commerce Websites: Implementation" Journal of Applied Science and Computations

[6] Rushikesh Khandale, Shashank Sombansi, Siddharth Mishra, Mohd Fahad Shaikh, Prof. Pooja Mishra," E- Negotiator Chatbot for E-commerce Websites" Journal of Applied Science and Computations

[7] How to Negotiate with a Chatbot – and Win! https://online.hbs.edu/blog/post/how-to-negotiate- with-a-chatbot-and-win

[8] Facebook teaches bots how to negotiate. They learn to lie instead https://www.wired.co.uk/article/facebook-teaches- bots-how-to-negotiate-and-li