

Price Negotiating Chatbot on E-Commerce Website Using NPL

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Abstract: *This proposes the development of a price negotiating chatbot on e-commerce websites using Natural Language Processing (NLP) technology. The chatbot aims to assist customers in negotiating prices with the sellers, enhancing their shopping experience. The proposed chatbot will be built using the Python programming language and the TensorFlow library for Natural Language Processing. The chatbot's architecture consists of several components, including a user interface, an NLP module, a price prediction module, and a negotiation module. The NLP module will enable the chatbot to understand and interpret the customer's messages, while the price prediction module will predict the minimum price that the seller is willing to accept. The negotiation module will use reinforcement learning algorithms to negotiate with the seller and come up with the best possible price for the customer. The proposed chatbot will provide customers with a convenient way to negotiate prices with sellers, enhancing their shopping experience. The chatbot's architecture, which includes a user interface, an NLP module, a price prediction module, and a negotiation module, will enable the chatbot to understand and interpret customer messages and negotiate prices with sellers on behalf of the customer. The chatbot will be trained and assessed on a substantial dataset of negotiation conversations, and its performance will be compared to other contemporary negotiation models. The results will demonstrate that the proposed chatbot significantly improves the shopping experience of customers, attaining higher success rates, shorter negotiation times, and increased customer.*

Keywords: Price negotiation, E-commerce negotiation, Chatbot, Machine Learning, Neural Network, Natural Language Processing

I. INTRODUCTION

The growth of e-commerce platforms has led to the need for intelligent and interactive systems that can enhance the shopping experience of customers. One of the critical factors that influence a customer's purchasing decision is the price of the product. In an ideal scenario, customers would like to negotiate prices with the seller to obtain the best possible deal. However, negotiating with sellers can be time-consuming and complex, leading to customer dissatisfaction. To address this issue, we propose the development of a price negotiating chatbot on e-commerce websites using Natural Language Processing (NLP) technology. The chatbot will enable customers to negotiate prices with sellers in a convenient and efficient manner, enhancing their shopping experience. The chatbot's architecture will include a user interface, an NLP module, and a negotiation module. The NLP module will allow the chatbot to understand and interpret customer messages, providing a seamless communication experience. The negotiation module is used to negotiate with the seller and come up with the best possible price for the customer. The proposed chatbot will not require any machine learning for price prediction. The proposed chatbot has the potential to transform the way customers negotiate prices with sellers, providing an interactive and seamless experience. It will also enable sellers to manage negotiations effectively, reducing their workload and enhancing their efficiency. Overall, the proposed chatbot will benefit both customers and sellers, providing

II. EXISTING SYSTEM

Currently, customers on e-commerce websites do not have an efficient method for negotiating prices with sellers. Customers are often required to communicate with sellers via email or messaging, leading to delays and complexity in

the negotiation process. The current system does not provide an interactive and seamless experience for customers, leading to dissatisfaction. Additionally, sellers may have to manage multiple negotiations, leading to decreased efficiency. The current system does not utilize NLP or machine learning technology to improve the negotiation process, making it less efficient and interactive.

The current system for price negotiation on e-commerce websites is inefficient and lacks interactivity. Customers often face challenges in negotiating prices with sellers, as the communication process can be slow and complex. The lack of an interactive and seamless experience can lead to frustration and dissatisfaction among customers. On the other hand, sellers may also face challenges in managing multiple negotiations, leading to decreased efficiency. The current system also does not leverage NLP or machine learning technology, making the negotiation process less efficient and more time-consuming. Therefore, there is a need for a more advanced system that utilizes these technologies to provide a better customer experience and streamline the negotiation process.

III. RELATED WORK

The most widely used algorithm for this purpose is SVM (Support Vector Machine). This algorithm acknowledges the presence of non-linearity in the data and provides a proficient prediction model. Further there were two different approaches to increase the accuracy i.e. Neural Networks and Natural Language Processing. It was observed that models using NLP gave a higher accurate prediction than Neural networks. Algorithms for price prediction mainly include SVM/SVR which has good accuracy but to improve it more, other regressors which perform best can also be used. To combine the prediction of algorithms applied, ensemble learning can have far better results than individual algorithms. Chatbots seem to hold tremendous promise for providing users with quick and convenient support responding specifically to their questions. The most frequent motivation for chatbot users is considered to be productivity, while other motives are entertainment, social factors, and contact with novelty. However, to balance the motivations mentioned above, a chatbot should be built in a way that acts as a tool, a toy, and a friend at the same time[4]. NLP forms the core of most chatbots. Some chatbots use chat script which are successors of AIML.

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IV. PROPOSED SYSTEM

The proposed system is a price negotiating chatbot system for e-commerce websites that utilizes NLP and machine learning technology to improve the negotiation process and customer experience. The system aims to provide an interactive and seamless negotiation experience for customers by understanding and responding to their inquiries using natural language processing techniques. The system will also learn from customer interactions to continuously improve its negotiation skills and adapt to different negotiation scenarios. Additionally, the system will be able to handle multiple negotiations simultaneously, increasing efficiency for sellers. Overall, the proposed system aims to improve customer satisfaction, increase sales, and streamline the negotiation process for e-commerce businesses. The system can reduce the need for human intervention in negotiations, potentially reducing labour costs for businesses. By implementing a cutting-edge technology like NLP and machine learning, the business can gain a competitive advantage in the marketplace, attracting and retaining customers who value innovation and convenience.

E-commerce is increasingly competitive and there is a constant need for new approaches and technology to facilitate exchange. Emerging techniques include the use of artificial intelligence (AI). One AI tool that has sparked interest in e-commerce is the automated negotiation agent (negotiation-agent). This study examines such agents, and proposes an offer strategy model of integrative negotiation for a negotiation-agent with a focus on negotiation agent-to-human interaction. More specifically, a new offer strategy was developed based on the integrative bargaining model, which emphasizes the importance of exchanging information among negotiators and multi-issue negotiation that includes package offers to achieve an integrative (win-win) outcome. This study incorporated an argumentation-based

negotiation and the negotiation tactic of multiple equivalent simultaneous offers, which was programmed into the negotiation-agent. An experiment was conducted performing 49 negotiation-agent-to-human negotiations over three issues in online purchase tasks to demonstrate the effectiveness of the proposed strategy.

V. SIMULATION RESULTS

The negotiation on products is a challenging task when it comes to e-commerce systems. We tried a primary chatbot that covers many aspects and cases for negotiation but is not evident to provide the best results.

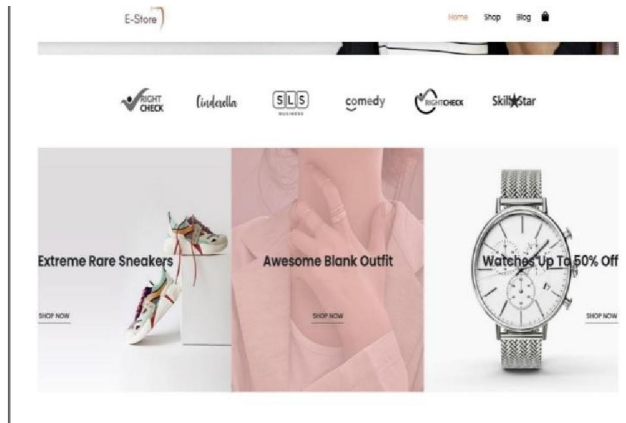


Fig.1. online shopping home page

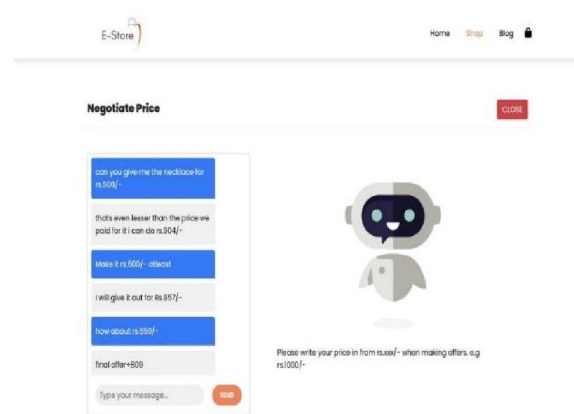


Fig. 2. Chatbot using for price negotiating

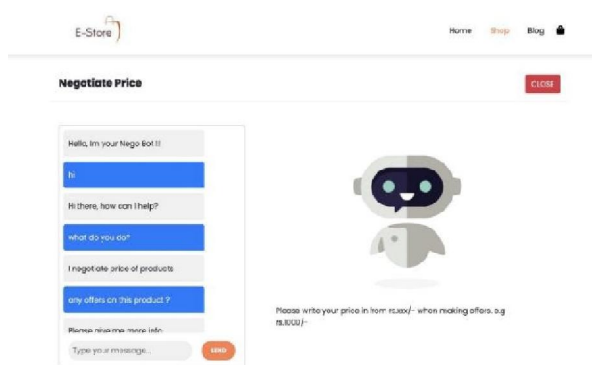


Fig. 3. Chatbot fixing price

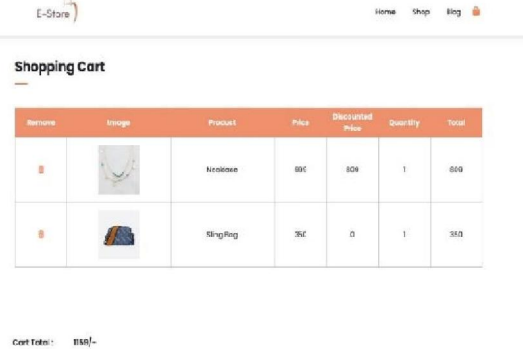


Fig 4. Shopping Cart after negotiating price

VI. CONCLUSION

In conclusion, the implementation of a price negotiation chatbot using Flask and NLP techniques for an e-commerce website provides several benefits. By allowing customers to negotiate prices using natural language input, the chatbot enhances the customer experience and satisfaction. Additionally, the use of Flask simplifies the development process, while the use of NLP enables the chatbot to accurately understand and respond to customer inputs. The project also adheres to security best practices to ensure the safety of customer information. Overall, the implementation of a price negotiation chatbot using Flask and NLP techniques is an effective way to improve customer engagement and satisfaction, and ultimately increase the success of the e-commerce website.

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