A Development of an E-Commerce Price Negotiation Application

AbeerJaved Syed, Fatima Waseem, Junaid Ali, Fayyaz Ali, Khalid Mahboob

Sir Syed University of Engineering and Technology/Software Engineering Department, Karachi, 75300, Pakistan

E-mail: ajsyed@ssuet.edu.pk, fwsatti@ssuet.edu.pk, junaid.ali@ssuet.edu.pk, fayyaz.ali@ssuet.edu.pk, kmahboob@ssuet.edu.pk

Abstract: E-Commerce Price Negotiator Provides the best service to the customers and it also helps the e-commerce business to take over the best service. As we all know that e-commerce shopping is very efficient and helpful to the customers and nowadays, people are looking for a technology to do their wishes effectively. With their busy lives, people need a system that brings the product to their doorstep to simplify their purchases. Also, some people are very conscious about the price rates they wanted to bargain. So, for the ease of customers, an automated agent for negotiation will be designed to maintain a flexible and considerable price instead of a fixed price.

Index Terms:E-Commerce, Price Negotiation, Automated agent,Sentiment Analysis

1. INTRODUCTION

E-Commerce Price Negotiator and the primary goals that are being achieved are to fulfill the concept of a new shopping technique with the help of a Chabot that helps the customers to negotiate. In classical shopping methodology, the shopping spree is a cumbersome process from product finding and retrieval and this cumbrousness extends at large while we have to wait in long and arduous queues afterward for invoicing, payment, and security clearing [1]. As a resolution to this problem, E-commerce Shopping is a fast and efficient solution. Our proposed project price negotiator E-commerce Chabot system helps the customers to do online shopping and to negotiate the product. The system would be capable of negotiating the price of the products and adding them to the cart. This system will help the customers to negotiate the product [2].

2. OBJECTIVE & ASSISTANCE

2.1. Purpose

The Purpose project is to help the e-commerce business to take over the best service and provide ease to customers in shopping. The main scope of the project is to develop a Web-based e-commerce system on Laravel using PHP as an essential program writing language, HTML 5 & CSS 3 for designing web pages, and MySQL database for information stack.

2.2 Overall Objective

The objectives of the project are to safeguard the following advantages.

- To allow customers to interact by asking questions to negotiate the product.

- A system, which fulfills the simple needs of society through modern IT advancement.

- Flexible pricing

- Analyze Chabot system

- Increment in sellers and venders pays off

- Improves the standard of selling

3. ABBREVIATION AND ACRONYMS

IDE   : Integrated Development Environment
XML   : Extensible Markup Language
SQL   : Structural Query Language
GUI   : Graphical User Interface
SDK   : Software Development K

4. MOTIVATION

E-Commerce Price Negotiator has been created in arrange to assist the e-commerce systems to require the best service. This empowers the e-commerce destinations to preserve an adaptable cost rather than having a settled one. Due to these flexible available costs, the payoffs of buyers and vendors have increased. Thus, it acts as a very effective mechanism for business-oriented areas.

5. SCOPE

Nowadays, people are looking for technology to do their wishes effectively. The life of humans is fully engaged with their busy schedule, so it seems to be very difficult for everyone to make their purchase over the product. People need a system that brings the product to their doorstep to simplify their purchases. Thus, e-commerce websites have been developed and act as emerging technologies in this current world but when coming to online purchasing the quality and price of the product are very important. Even though things we want are getting easier, still all people are very conscious of the quality and rate of the product. Having the best price that is not a fixed one will increase the payoff among sellers and buyers. Thus, an automated agent for negotiation has been designed to maintain a flexible and considerable price instead of a fixedprice

- This project will help the organization or shops to have their selling online automatically.
- It also helps the customers tonegotiate.
- The Chabot understands and converses with the user in simplelanguage.
- The proposed system will be aimed at reducing the level of customer dependency on physicalchat.

6. LITERATUREREVIEW

A study in [3] revealed that consumers, all over the world, are increasingly shifting from crowded stores to the oneclick online shopping format. However, despite the convenience offered, online shopping is far from being the most preferred mode of shopping. 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 [4].

According to [5] it is the customer's probability that shopping online would increase his/her efficiency and this positively affect the entire purchase process. Study in [6] says thatcustomerprefertoacquire a product when such usage is perceived to be useful. Its easy-to-use agent skeleton makes it a suitable platform for negotiating agent development. The first step toward moving the problem of automated negotiation toward natural language interfaces was provided in [7].

The paper explained how the currentstate-of-the-artautomatednegotiator would perform when paired against chatbased interface. This paper extended the GENIUS negotiation system. Chatbots arenot new programs in the computer world, and ELIZA, the first chapter bot was released in 1966 but most of the existing Chatbots were mainly for recreational and research purposes [8].

A Chabot for selling physical and digital goods was introduced by Amir Reza Asadi. A Chabot can be developed in many ways and the bot developed using Deep Learning requires Neural Networks to learn the input sequence. Some bots like ELIZA, and ALICE take only text as input whereas bots like Siri, Google Assistant, and Amazon's Alexa accept voice also as input [9]. Customer service plays an important role in an organization's ability to generate income and revenue. Support staff spends a lot of time answering questions via telephone or messaging applications to make sure we are customers satisfied with theirbusiness.Therefore, Chatbots can be a great waytosupplement customer service offerings since they are more economical and indefatigable, and free up support staff to answer much higher valuequeries [10].

7. SYSTEM REQUIREMENTS

In Software Design & Development, a requirement is a physical or non-physical need that a particular plan, artifact, or procedure targets to fulfill.

7.1. Functional Requirements:

A Functional requirement describes a purpose of a system or its modules, whereas a role is defined as a requirement of performance among input and output.

Web-based E-commerce System:

- ○ **Admin Panel**
- Dashboard
- Users
  - •Admin Users
  - •Website Customers
- Category
  - •All Categories
  - •Add Category
- Products
  - •All Products
  - •Add Products
- Website
  - •Chabot Setting
  - •Order
- Contact Requests
- Settings

•Slider

•Contact

•About

•FAQ's •Roles

○ **Front End**
- Register
- Login
- View Products
- Talk to Chabot
- Negotiate the price
- Add to cart
- Confirm Order
- Checkout

7.2. Non-Functional Requirements:

Non-functional requirement describes specifies the benchmarks that can be used to evaluate the actions of a software system, instead of definite actions. They are distinguished by functional requirements that define definite actions or tasks of the system.

- Cost-Effective
- Efficient
- Optimized
- Flexible
- Maintainable
- User Friendly

8. SCALABILITY

The system is a scalable project as we can upgrade the system by training the Chabot for recommendations of all products and can be upgraded by adding more advanced product searching methods.

9. SERVICES

Price Negotiator E-commerce Chabot System consists of a web-based system, which is controlled through a webbased admin panel that controls all the activities. If the user becomes part of the system, he can talk to the Chabot and negotiate the price of the product. All the system is controlled through a singledatabase.

10. APPLICATIONARCHITECTURE

Following Fig.1 shows application architecture of the system.

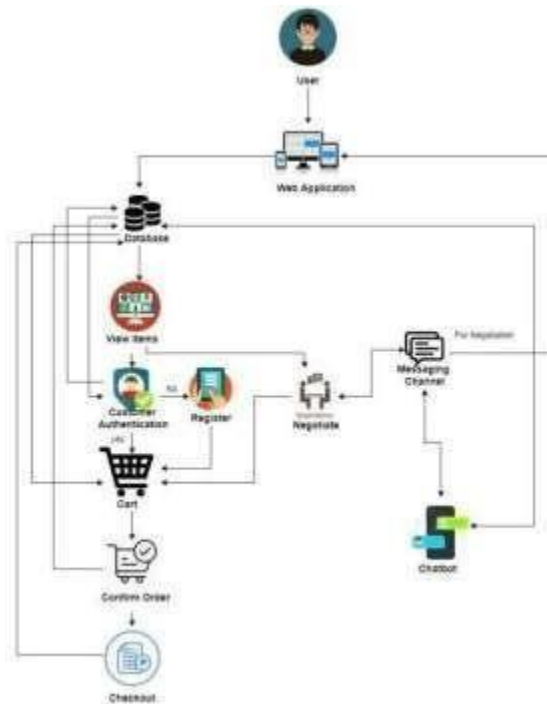# A Development of an E-Commerce Price Negotiation Application

Fig.1. Application Architecture

11. CHAT BOT WORKING

The price Negotiator Chabot helps the customers by negotiating the price of the product. It asks the customers about their price range and negotiates the price if possible. This empowers the E-commerce destinations to preserve an adaptable cost rather than having a settled one. It acts as a very effective mechanism for business-oriented areas. As the main module of our system is a Chabot, for the construction we used python. For the development of the Chabot we have used Machine learning and a deep learning model, we have worked on GPT 2 in the initial stage but unfortunately, the results were not as satisfying as they should be, so we moved toward RASA Framework which luckily worked wonders [11, 12].

11.1. System Features:

1. **Negotiator Chabot:** Agent-based automated negotiation can be done through the system. Consumers can negotiate with the AI Bot concerning product price.

2. **Sentiment Analysis (SVM):** Our agent will respond to the customer according to his/her moods or sentiments.

3. **Recommend Customer a Budget-Friendly Product:** Chabot will ask the customer about his/her budget and desired product and show the products that are budget-friendly for the customer.

4. **File A Complaint:** Through our integrated Chabot on the web app the customers can easily chat and provide their feedback regarding the service or product they received through our platform.

11.2. Deployment:

After training the Machine Learning Model, with RASA framework, which was later integrated into Web Application using Node is APIs on EC2 instance of Amazon Web Services. Alongside basic frameworks of PHP for UI development, Laravel is used for Backend Application processing all the information including ML Model.
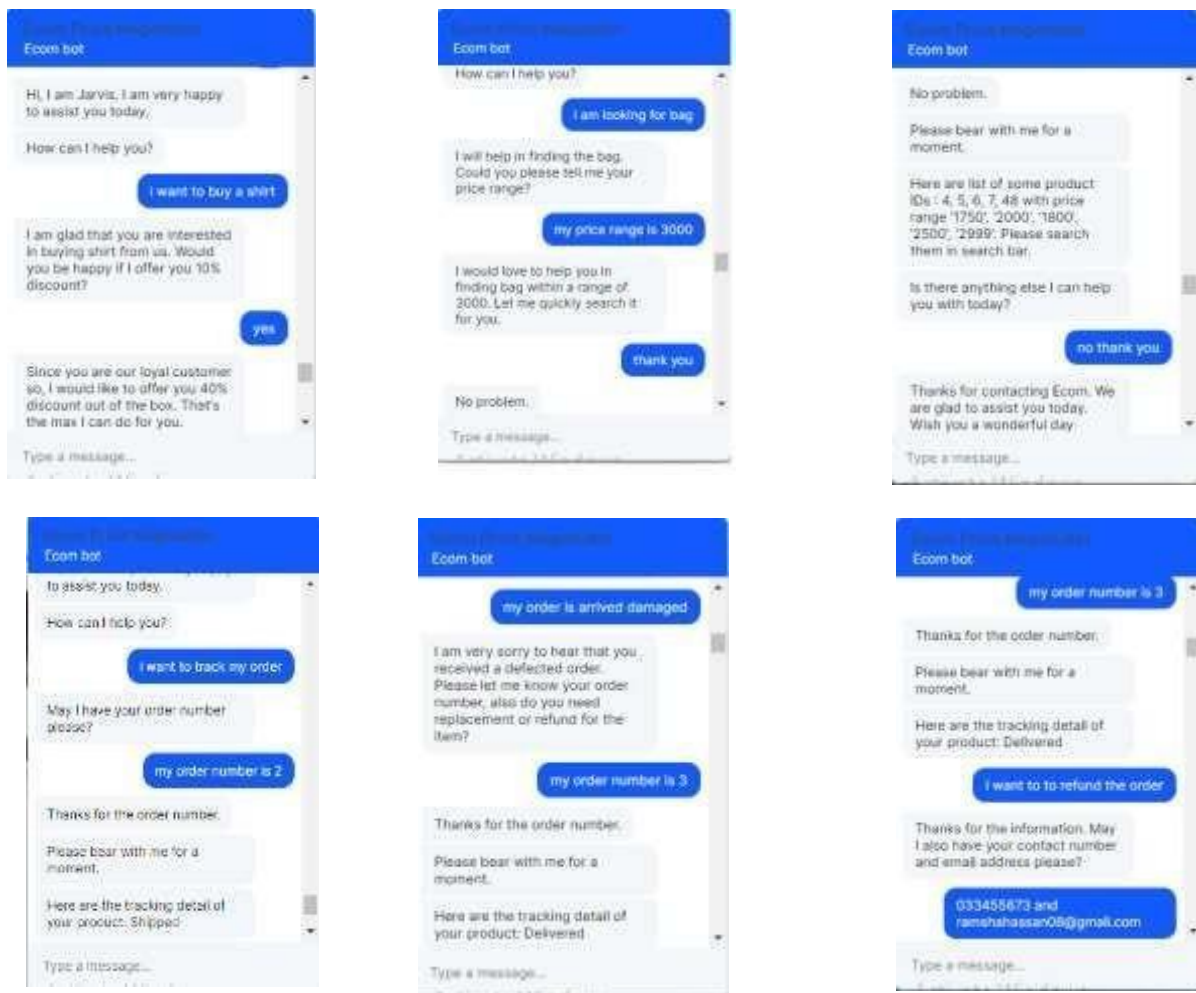
12. CONCLUSION AND FUTURE WORK

In Conclusion, we can say that this project helps the web-based e-commerce business to take over the best service and provide ease to customers in shopping E-commerce has been developed and act as an emerging technique in this current world. People efficiently made their purchases Even though things we want are getting easier, still, all people are very conscious about the rate of the product. Thus, an automated agent for negotiation will be designed to maintain a flexible and considerable price instead of a fixed price. This empowers the e-commerce destinations to preserve an adaptable cost rather than having a settled one. It acts as a very effective mechanism for business-oriented areas.

There is always room for enhancement as well as improvements as the technology expand, we will also add new functionalities as per customer requirement and necessities.

- Improved User Interface as well as database
- Introduce new functionalities according to the customer demands

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- Provide the live IP to the system and make it accessible from anywhere in the world • The system is flexible and can be deployed in any other society with few modifications
- The Chabot can also recommend products to the customers.
- Enhance android application and may also introduce cross other cross-platform applications.

RESEARCH CONTRIBUTION

Abeer Javed Syed designed and directed the project. Fatima Waseem, Junaid Ali, Fayyaz Ali, Khalid Mahboob contributed to the design and implementation of the research, to the analysis of the results and to the writing of the manuscript.

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Authors, Profiles

ABEER JAVED SYED

SENIOR LECTURER DEPARTMENT OF SOFTWARE ENGINEERING, SSUET

BS(Computer Sci. & IT) from NED University Karachi, Pakistan.
MS (Wireless Communications and Networks) from Hamdard University Karachi, Pakistan.

FATIMA WASEEM

LECTURER DEPARTMENT OF SOFTWARE ENGINEERING, SSUET

MS Software Engineering from Bahria University, Karachi Campus,
BS Software Engineering from International Islamic University Islamabad.

JUNAID ALI

LECTURER DEPARTMENT OF SOFTWARE ENGINEERING, SSUET

BE(Software Engineering) from MUET,MS(Computer Engineering) in Data Science from Politecnico Di Torino Turin Italy.

FAYYAZ ALI

LECTURER DEPARTMENT OF SOFTWARE ENGINEERING, SSUET
BS Computer Engineering – SSUET
MSc. Software Engineering – University. of Hertfordshire – UK

A Development of an E-Commerce Price Negotiation Application

KHALID MAHBOOB

SENIOR LECTURER DEPARTMENT OF SOFTWARE ENGINEERING, SSUET

BS(Computer Science & IT) from NED university,
MS(Computer Science & IT) from NED university   .