



CHATBOT FOR RETAIL SHOP EVALUATION

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Abstract— *Recently, the development of business can make so many opportunities and innovations, such as online shopping. The online shopping system can make the interaction between seller and customer easier. But the problem still exists. The seller cannot deliver their respond immediately while the customer sending some questions. Therefore, a Chabot system can beat solution to the seller, where they able to deliver a response to a question quickly. In today's scenario, the furniture retails shop processes the furniture retails shop's raw material, sales, supplier, stock, receipt, and etc. is done manually through hands by ink and paper, which take large amount of time and causes strain and struggle for the furniture retails shop processing. It is important and needed to design a Retails Shop Evaluation for Chatbot, to pace up the work and make it an easy way to use system by shrinking those drawbacks we create a secure windows application for handling the furniture retails shop processing.*

Keywords— *Chatbot, Retail shop, E-commerce, Query expansion, Chatbot engine.*

I. INTRODUCTION

This application shows the details of the maintenance process in furniture retails and manufacturing shop. The system contains the details about admin, future client, booking, supplier, purchase, payment, manufacturing, inventory shipping and report. The admin can only access the database section to change any changes from it. The booking, supplier and purchase sections are for maintaining the details about those modules. Supplier information contains details about supplier id, supplier name, phone number etc. The booking module contains information about booking id, client id, booking date etc. And the purchase module is about purchase id, product details that have been purchased etc. Also, the furniture retails shop details carry about the furniture retails shop oriented data which are furniture retails shop id, name, stocking of furniture retails shop, sale details of furniture retails shop, purchased details of furniture retails shop and more details to be maintained. This application is having a more advantage to be compared with the existing system of this application.

The existing system based on this application is found to have more drawbacks. The system automation is the main drawback of the existing system. But this proposed system is reducing the drawbacks. This system has developed so that the existing system's drawbacks have been enhanced. The system is developed

with PYTHON as a front-end language and MS SQL as a back-end language. These two languages are making a best connectivity in offline which makes the current application to be differ from all other existing applications. Along with, interface and backend server interaction are also easy.

The scope of this information system includes information about mill background, machinery and equipment, human resources, production and marketing of the furniture retails shop under subcontract for the open market, export market and raw materials used in manufacturing wooden furniture retails shop.

Information on production of rubber wood, sawn timber and species used according to state is also through this information system. As this is Retails Shop Evaluation for Chatbot for furniture retails and manufacturing shop company it can be used by a wide variety of outlets (Retailers and Wholesalers) to automate the process of manually maintaining the records related to the subject of maintaining the stock and cash flows. The main goal of the application is to maintain the records of stock, billing, details of purchasers and sellers and their current financial positions with the company.

The purpose of this web system is to reduce the work load, to make the process easy and to give the desired functionality ingesting of time during the keeping the records of furniture retails shop processing procedure. The aim of this project is to develop a Retails Shop Evaluation using Chatbot for furniture retails and manufacturing shop company which is used to access the new innovative items through the application this project has salient features which reduces the complexity.

The application is a system-based manufacturing system that enables a furniture retails and manufacturing shop company to schedule its furniture retails shop operations based on daily update of sales from its dealers. This system I modelled to be used by a furniture retails shop company, whose main activity is furniture retails shop different type furniture retails shop and then selling the finished goods through a network of dealers

II. LITERATURE SURVEY

Chatterbots can be grouped into four categories based on where it is integrated, namely service chatbots, commercial chatterbots, Chatbots for entertainment and advisory chatbots[4]. Service chatbots provides facilities to the customers as the Logistic organization responds to a question about deliveries and copies of documents through messaging channel. Commercial chatbots are developed to purchase for customers. The Entertainment chatterbots are aimed at engaging the users with favorite sports, movies, music and the events that the customers enjoy. Advisory chatbots provide recommendations on services and offer maintenance goods. This type of advisory chatbots can converse with the customers to offer support and advice tips whenever it is needed. And according to the words in [5], chatbot applications can be categorized into Task-oriented chatbots, that aims to help and guide customers or the chatters to do some works and also have a short conversation and Non-Task oriented chatterbots, which is simply to have a conversation with customers for entertainment.

ELIZA, the first chatbot was released in 1966 as mentioned in [1] and it is not a new concept in the recent computer world. The existing chatbots are developed only for the research and recreational process. But the chatbots so far developed based on commercial conversation were initially released in the banking sector. An example of chatbots in the banking sector is DigiBank, a virtual assistant created by DBS bank of Singapore. Digibank helps the customer to check their transfer money, transaction details, account balance, and the whole transaction details. The user can give both text and voice-enabled inputs to this virtual assistant. Some more examples for chatbots in the banking sector include chatterbots created by Ally Bank, Capital One, Bank of America and Barclays Africa.

The authors mentioned by [3] has developed a virtual assistant chatterbots for their e-commerce website. These chatterbots are integrated along with the e-commerce websites, which enables users to purchase suitable products of their wish and need with great-ease. The existing e-commerce websites are coded in PHP with MYSQL as the backend database. To improve the smartness of their chatterbots, they used RiverScript.

Amazon Lex is an AWS developed to provide a conversational interface for any application using both voice and text[6]. This application was made available from April 2017 to the developer community alone. It provides a communicational interface that includes mobile applications, web applications, drones and more and this also powers Amazon Alexa virtual assistant.

Wu et., al., (2017) has recognized a problem in response selection if the user has a long conversation in a retrieval-based chatterbots. The existing matching methods to match a response candidate with a conversational context doesn't recognize important parts of the context and lose many important information which reduces the accuracy of the chatterbots response. The author suggested a new solution for a matching framework called SMF(Sequential Matching Framework).

III. EXISTING SYSTEM

A few chatbots Application that are presents. There are a few examples such as Elisa, Alice, and Siri. Each one has a specific working and system.

ELIZA

The first-ever chatbot was designed in 1966. It was designed to give a human interaction using simple parsing and substitution of key. Since the development of Eliza, more people got emotional connection with it. Eliza was done by Joseph Weizenbaum at MIT. There was no human thought or emotion given to Eliza but the most developed was a DOCTOR which provides human-like interaction towards the users.

ALICE

ALICE (Artificial Linguistic Internet Computer Entity) is based on Eliza. Alice work by using pattern matching rules based on user query expansion and generates a response. There was a problem that arises in the turning test. There were even flaws that were found in short conversations. There are two parts involved chatbot engine and language module. Language model is gathered in AIML (Artificial Intelligence Mark-up Language) files. AIML consists of patterns and templates. Pattern is used for matching the user query whereas the response will be provided in the template. AIML also has SRAI (symbolic reduction) tags, which reduces the amount of pattern and templates. Using SRAI several questions can be grouped and a similar response can be provided in the template.

SIRI

Siri was invented by Apple.it is based on a computer program that uses virtual personal assistant and knowledge navigator. It gives responses based on the suggestions. on April 28, 2010, Siri was developed by IOS application which is now available in the apple store. IN iPhone 4s Siri has been implemented through IOS 5on October 14, 2011. Siri listens to the queries by the user evaluates it on a device .it will be connected to a server through phone communication the data are stored in a cloud server. The information is gathered in database or the network.

IV. IMPLEMENTATION

Python is used as a front-end language to develop the GUI. The reason for using python is, an interpreted, high-level, general-purpose, object-oriented, imperative, and has a large and comprehensive standard library. Multiple programming paradigms use the Python. Many operating systems have Python interpreters. CPython is open source software and has a community-based development model. non-profit Python Software Foundation manages the Python and CPython.

'MySQL' is used for back-end for the system. 'MySQL' is a commonly used database management system for all applications. In MySQL, the database is organized as a structured collection of data. The data can be anything from a simple shopping list on an e-commerce website to a picture gallery that is managed by a website or a vast amount of information in the corporate network. In addition to that, with the help of MySQL one can access, and process data stores. In a computer database, we need a DBMS (Database Management System) such as the 'MySQL 'server. DBMS plays a vital role in managing and computing, which enhances the computer capability of handling a large amount of data. The advantages of using MySQL are it provides data security, high performance, complete workflow control and reduces the total cost of ownership.

A. System Module

The system now developed contains different modules. These collections of modules are used to develop a complete application. The following modules are implemented to design the chatbot for an e-commerce website.

1) *Admin Module*: This proposed system is completely authenticated to enhance security and avoid corruptions of database and also the software. A person is given access permission to this system i.e. the administrator, who is responsible for maintenance of this website. Hence the authentication module of this system includes two fields where administrator (programmer) is asked to enter the username/email id and password.

2) *Client Module*: The client module is used to add and manage the client's details. The client module can be accessed by both administrator and also by the client. The new client's details can be added by the admin using new client form. The client can login into the client module by using the registered email id and password.

3) *Booking*: The booking module is accessed by the admin and the client of the system. After login the client can book the needed items by using this module. The system admin can easily view the client bookings by using the same module.

4) *Supplier*: The supplier module is used to manage the supplier details. This supplier module is accessed by the supplier and the system admin. The system admin can enter the new supplier details by using the new supplier form. Even the supplier can login into the supplier module by using the registered email id and password.

5) *Payment*: The payment module is used to manage the client and supplier payment details. In this module the admin can send the payment to the supplier and also can receive the payment from the client. The client should pay the initial payment for booking system.

6) *Manufacturing*: The manufacturing module is one of the main module of the application. This module contains the details of different items which are showcased for sales. This module is only managed by the system admin.

7) *Shipping*: The shipping module is used to notify the product shipping details to client. Even this module is accessed by the supplier for raw material shipping details. After product shipping the admin should pay the full payment for supplier and also the client should pay the full amount for admin.

8) *Report*: The report module is used to generate the various report from the system and the report module is also generating the reports in PDF format. The report module generates the client details, booking details, supplier details, purchase details, payment details, etc.

B. Illustration

Let's consider our application is running in an android mobile.

1. Client-Server Model

In that case, application will be used to serve as the front end and the bot will learn to respond on the server. Hence, it works based on the client-server model.

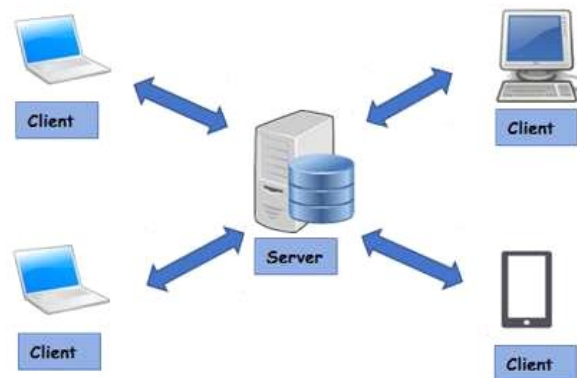


Fig. 1 Client Server Architecture

2. Recurrent Neural Network

The real processing of data takes place on the server. The inputs that is taken from the user is sent to the server for processing using the Recurrent Neural Network (RNN) and the output is generated. A Recurrent Neural Network is a deep learning model specifically used to handle the sequences. Provided that its properties are given, this model is most suitable for different NLP tasks, and exactly in the text generation, it can be explored using basic concepts of Tensorflow and Theano.

For our chatbot, a sequence to sequence (Seq2Seq) model of RNN will be used. Sequence to sequence (Seq2Seq) model consists of 2 main components, an encoder RNN and a decoder RNN. The encoder's task is to encapsulate the information of the input text into a fixed representation. The decoder's task is to take that representation, and generate a variable length text that best responds to it.

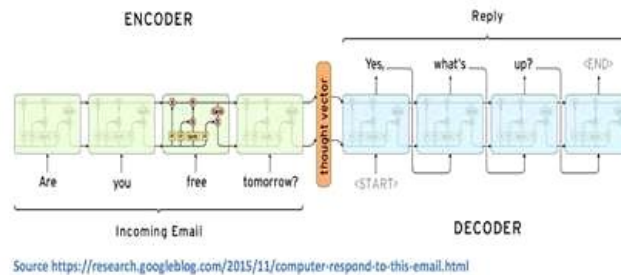


Fig. 3 Encoder and Decoder

RNN contains many hidden state vectors, wherein each represents information from the previous time steps. The final hidden state vector of the RNN encoder can be considered as an accurate representation of the whole input text. The another RNN that is the decoder, takes in the final hidden state vector of the encoder, to predict the words of output reply. The first cell's job is to take in the vector representation v , and decide which word in its vocabulary is the most appropriate for the output response. The second cell will be a function of the vector representation v and the output of the previous cells.

$$p(y_1, \dots, y_{T'} | x_1, \dots, x_T) = \prod_{t=1}^{T'} p(y_t | v, y_1, \dots, y_{t-1})$$

$y_1, \dots, y_{T'} = \text{Output Sequence}$
 $x_1, \dots, x_T = \text{Input Sequence}$
 $v = \text{Vector Representation}$

Fig. 4 Vector Representation

Tensor flow will be helpful in doing it. We need a large number of conversation logs for sequence to sequence models. This encoder decoder network must be able to understand the type of responses (decoder outputs) that are expected for every query (encoder inputs). Some common datasets are the the Ubuntu corpus, Microsoft's Social Media Conversation Corpus, and Cornell Movie Dialog Corpus.

3. Architecture Diagram

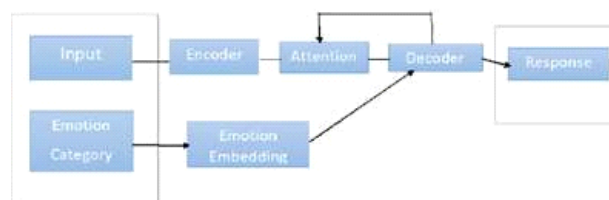


Fig. 5 Architecture Diagram

The architecture consists of Recurrent neural network of GRU cells with attention mechanism. But it contains three different mechanisms which can be used for generating response with specific emotion. The following are the characteristics of the system :

- Emotion Category Embedding: Representing different emotion category as an embedded vector. This vector will be learned during training by being feed to the decoder. The emotion embed remains static

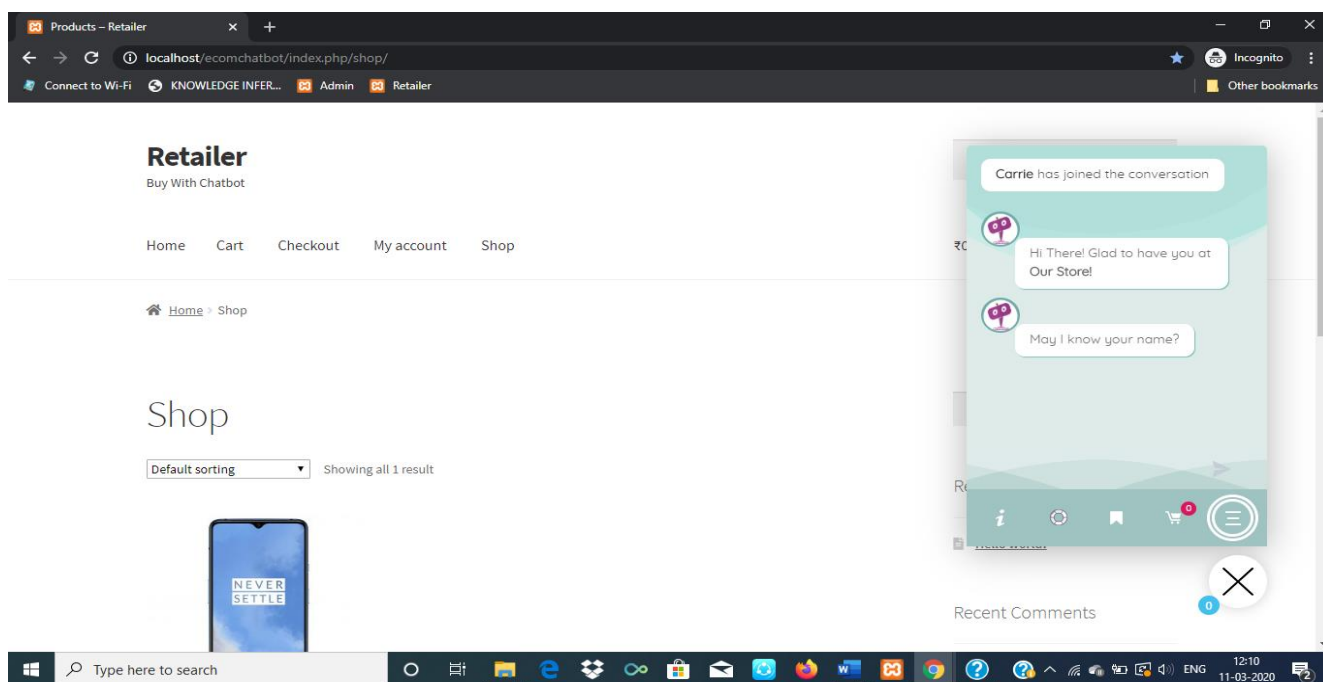
and would not change in the flow.

- We build our encoder using bi-directional LSTM and concatenate the cell state and hidden state to be the input of decoder.
- Gated Recurrent Unit (GRU) aims to solve the vanishing gradient problem which comes with a standard recurrent neural network. The architecture is a regular end to end sequence model, where the GRU is been used to be the basic cell and based on that we build our decoder using Recurrent Neural Network.

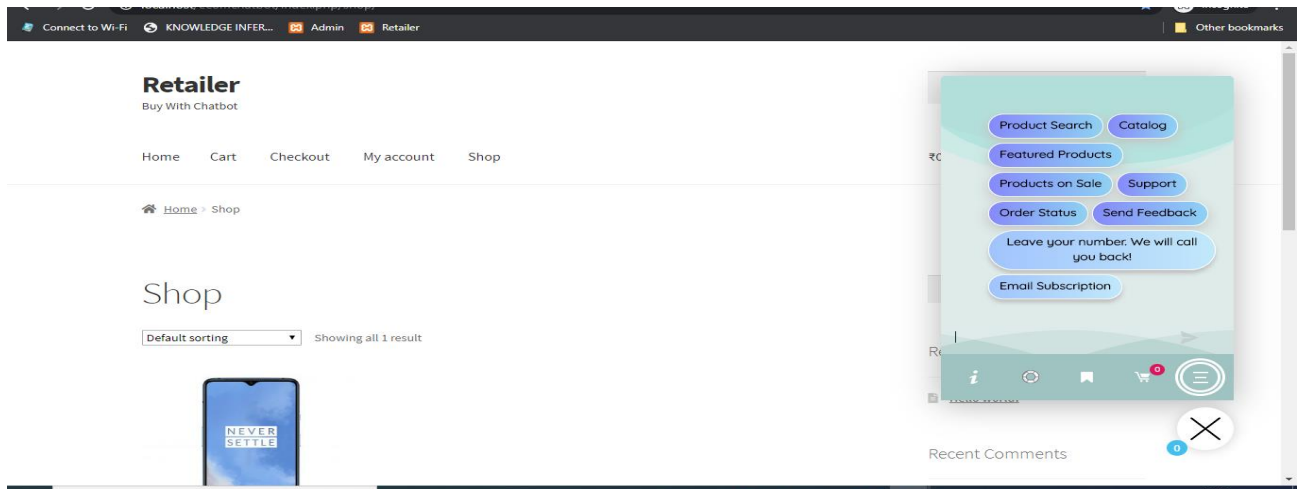
V. PROPOSED SYSTEM

There is has not been a chatbot developed for e-commerce website.to improve the e-commerce communication amongst the users we have developed a chatbot that is available to the user 24*7. This chatbot uses the user's history search and interest to analyse the products they are interested in and presents it to the user. This chatbot needs not be opened on a website to search for a product.it analysis the product on different websites and gives the best results according to the user's interests. There are unique features in this chatbot compared to others such as email notification which provides information about similar the users are interested. the feedback of a specific product can also be sent through this chatbot. If there are any problems and queries about a specific product the chatbot will provide the contact information of the seller. The chatbot provides sales of a product, catalogs of different products specification and product features. through chatbots, orders can be made and order status can be checked. The time consumption of using the chatbot is less compared us physical searching for a product.

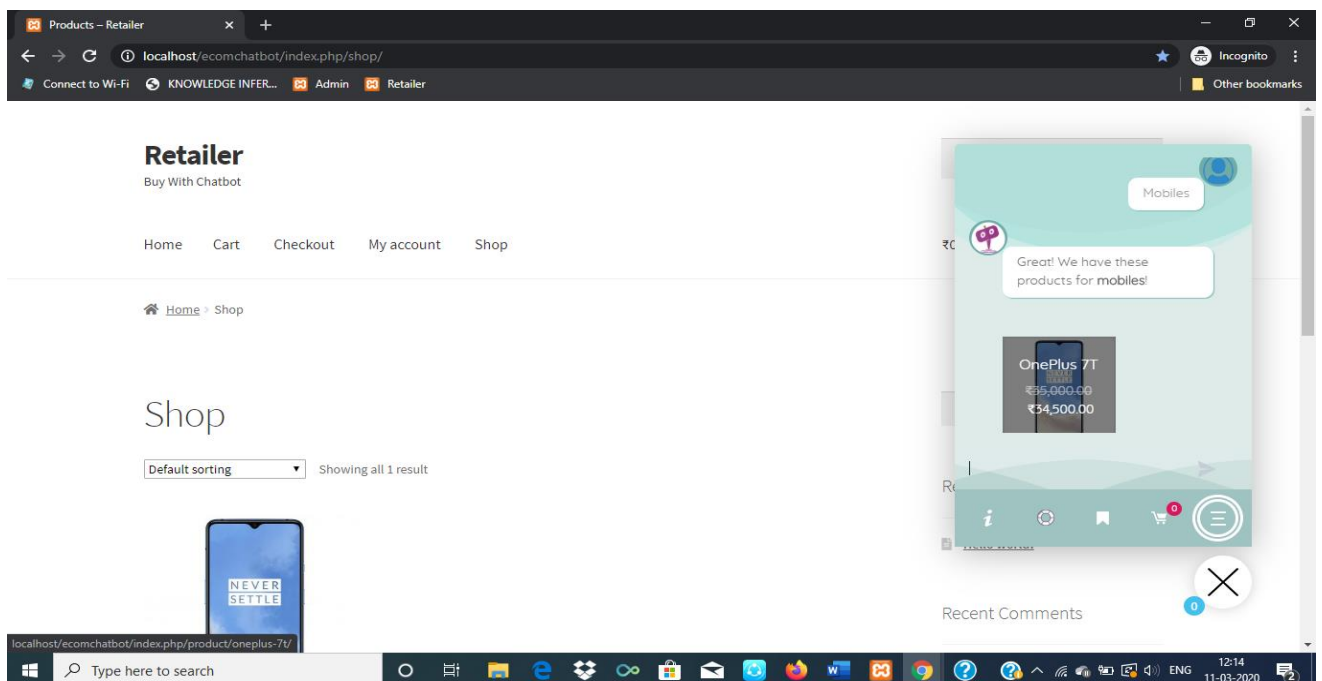
VI. RESULT AND DISCUSSION



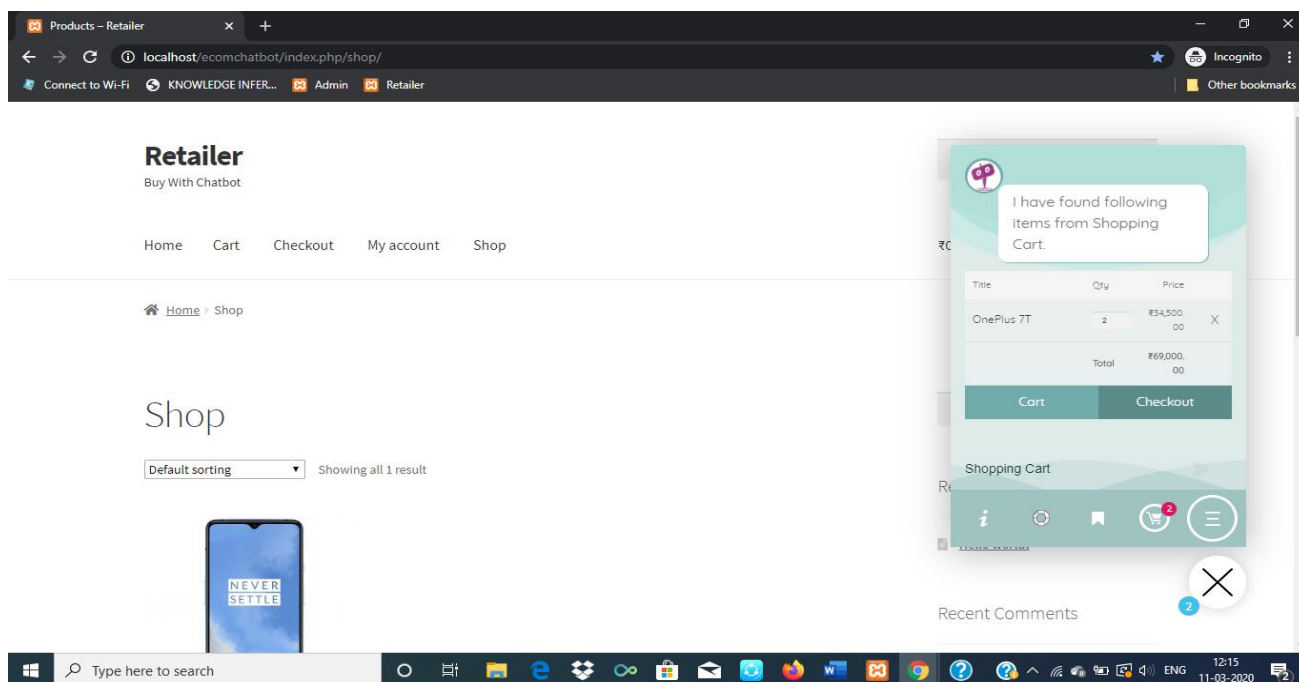
This is the example snap where chatbot starts to interact with the user when he/she gets into the e-commerce application.



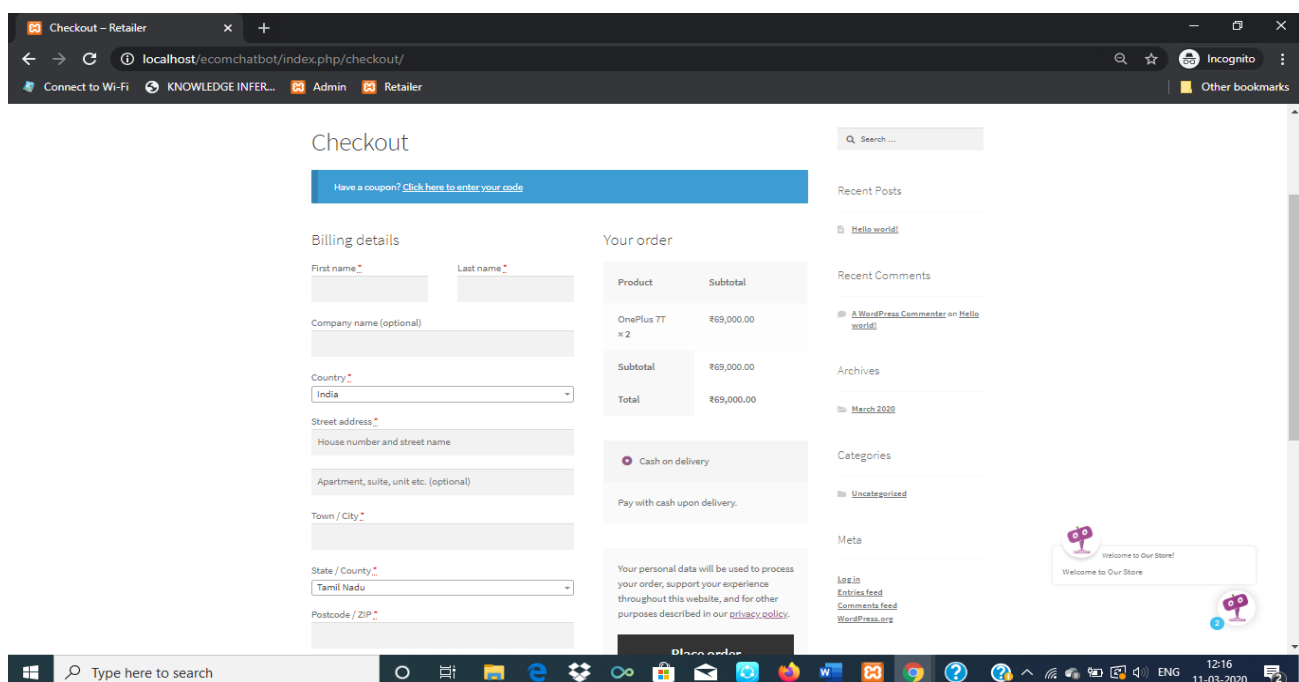
After the first interaction, the chatbot gives the number of options for the user to select for searching products, products which are on sales, order status, etc. These options are displayed based on user sentiment analysis.



The application displays the list of available products when the user asked chatbot to search for the product. Along with this, the page shows up the details of the products like its name and its price.



Subsequently, next to the selection of all items for order, the chatbot presents the details of the total amount from the shopping cart to the user.



Later the item selection for order, the application directly gets to the billing page for online transactions.

VII. CONCLUSION AND FUTURE ENHANCEMENT

Chatbot has been developed for the requirements of users. They are bringing a new way for businesses to communicate with the world and most importantly with their customers and with the rise of emerging technologies and Artificial Intelligence (AI). They are being used in customer support, our chatbot is a such an approach. It helps the users to interact with the chatbot and the chatbot analyses the e-commerce site and gives a recommendation according to user's needs. The development of chatbot helps both the user and seller to communicate effortlessly. The future enhancement development involves better algorithm identification according to the user's specification.

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