Storebot: A conversational Chatbot for shopping

Shikha Verma[1, a] and Shalini Gupta[1, b]

[1]*Kanpur Institute of Technology (KIT), Kanpur Uttar Pradesh*

Abstract. Storebot is a conversational chatbot that is designed for shopping from local stores. The old people who are not capable of going stores for shopping and the students who are busy in their study and can't go for purchasing the products. This storebot will help them for shopping from their local market. They can check the availability of the product and if it will not be available this storebot will notify them as it will be available in the store. This chatbot will lake user's request in speech or text. The NLP (Natural Language Processing) and NLU (Natural Language Understanding) will convert this request from human readable to machine readable and process it using backend. The result will again be converted back into natural language that is human readable using N LG (Natural Language Grammar).

INTRODUCTION

A chatbot is a digital assistant that takes user request in human language and respond in text or speech format. It is AI based software that intract with the user in natural language using the technology NLP. Now a dayschatbots are becoming popular as digitalization is increasing in our surrounding. The chatbot name is originated in 1950s by Alan Turing.

Storebot is a chatbot used for local shop. This storebot is similar to google assistant or facebook chatbot. In today's busy life people are not interested to go store to check out the product or shopping as it is time taking. In today's pandemic era going for shopping is very risky although it is necessary. So the storebot is very helpful for those people as well as for the students to save their precious time. The store bot will help the user to check whether the product is available in store not. They can book their required stuff online using storebot and this storebot will inform the user in how much time they order will be ready when they can pick up it. If the product is not available in store so it will ask you to add the product in your wishlist and as the product will be available in store the storebot will notify you.

LITERATURE REVIEW

Chatbots are firstly designed by Alan Turing in 1950s. Chat bots or voice bots are virtual assistant that takes user request through text or voice and respond in natural language using NLP. These are AI based software. Chat bots are used in every field like health area, for FAQs (frequently Asked Questions), in IRCTC, business, ecommerce, online shopping etc. Here we will discuss some AI based chatbots that support in ecommerce and business.

Simplifai

Simplify is It is chatbot service provider. They provide ready to quick implementation for any website. They provide customer service chatbot for ecommerce websites based on various store. They provide chatbot for every field of service. It handles all type of customer FAQs. It can help customers in tracking order, assist with payments, prices, shipping and delivery as well as returns and claims.

Figure 1. Simplifai

Dialogflow

Ii is a google cloud product. It is conversational AI based chatbot. It is available in two editions: Dialogflow CX (Advanced) and Dialogflow ES (Standard)

Dialogflow CX are advanced chat bots.It has innovative capabilities for large or complex use.

Dialogflow ES are Standard chat bots. It is designed for small to medium and simple to moderately complex type of problem.

User can connect to this chatbot from anywhere on their desired platform. If a customerwants to do any query or need to access any information, the chat bot offer an instant and satisfying reply who need ant quick and accurate responses.

Chatfuel

Chatfuel is founded in 2016. It provides one of the best chatbot solution for ecommerce business. It focused on chatbot for social media like facebook, instagram. It is easy to use with drag and drop UI based with inbuilt NLP.

Key features:

☐ Mainly focused on social media

- Ready-to-use templates
- SupportsImages, video and audio
- Supports in-app payments via Facebook (US users only)
- Analytics integrate it with Dashbot.io, Botanalytics and YandexMetrica
- Integrate with 3rd party tools like Calendly, Zapier
- It can build and manage retargeting campaigns
- It takes profit for Facebook profile data for retargeting
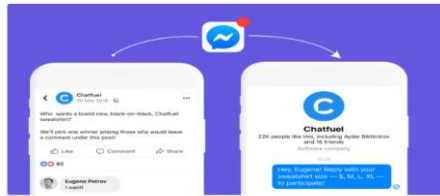

FIGURE 2. Dialogflow   **FIGURE 3.**Chatfuel

Microsoft Bot Framework

It works with Azure Cognitive Services. It is a voice chat bot that speaks. It can recognise user's voice and face. Microsoft uses its own LUIS (Language Understanding Intelligence Service) to configure business logic with advanced NLP and AI training capabilities.

Key features:

- Pre-built dialog "blocks"
- Based on Natural language processing
- Recognizes voice and can speak
- Branded voice
- Recognise face and Image also
- Adaptive cards
- Big Data integration
- Provide SDKs for IoT
- Deployment to Azure

FIGURE 4. Microsoft bot Framework

COMPONENTS OF CHATBOT

A chatbot consists of 7 components. They are as follows:

Natural Language Processing (NLP)

Natural language processing (NLP) is used to convert user's request that is in natural language into structured data that machine can understand easily. NLP processes following steps:

Tokenization

It is also termed as lexical analysis. It breaks the sentence into separate words called "tokens" that are connected with the meaning of other words of the whole sentence.

Normalization

It is also termed as syntactic analysis, It checks the words for typos and make the standard form of these. For example, the word "bcoz" would be converted into "because",

Entity Recognition

It is the process to search for keywords for the recognition of the conversation-topic.

Semantic Analysis

It is the process of knowing the meaning of a sentence by understanding the meaning of each word and its relation to the overall structure.

Natural Language Understanding

NLP is the combination of Natural language understanding (NLU) Natural Language Generation (NLU).NLU focuses on understanding the meaning of human speech by recognizing patterns in unstructured speech input. NLU process has 3 components:

Dictionary

It checks the meaning of a word

Parser

It is the process to check whether the syntax of the text conforms to the rules of the language

Grammar rules

It is used to break down the input based on sentence structure and punctuation

NLU enables chatbots to identify users' request and generate a response based on training data.

Backend

The backend of the chatbot allows handling messages received from several channels and processing them with NLP (natural language processing). The backend of a chatbot connects with the database of the shop system to make the conversation happen. It contain product pricing, availability information.

Natural language generation (NLG)

Natural language generation (NLG) plays important role. NLG is used to read the machine language data into natural language so that it becomes human readable. After processing NLG generate response in following steps:

☐   Content determination: In this step existing data from knowledge base is been filtered to produce correct response.

☐   Data interpretation: In this process response is generated after understanding the pattern of existing data from database.

☐   Document planning: In this process response is generated in structured manner.

☐   Sentence aggregation: In this process expressions and words for each sentence are compiled.

☐   Grammaticalization: In this process grammar rues are applied such as punctuation and spell check.

☐   Language implementations: The processed data is checked to ensure that the response is in natural representation by putting it into language templates.

User Interface

It is the front end of the chatbot through which user will interact and do questions. It act like virtual assistant that serve the user requirement in speech or text.

Here in this paper I am not giving detail of interface. User interface and other components will be described in the next paper.

GENERAL ARCHITECTURE

In this paper I am giving the general architecture of store bot. I will explain detailed architecture in my next paper. Following diagram explains working of chatbot for store.
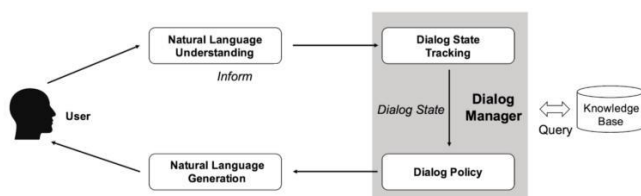

FIGURE 5. General Architecture of store bot

User interface will be interactive and user friendly. User will send the request using speech or text. NLU will make the request machine readable and related query will be formed and send to knowledge base. The produced result will be converted back to natural language using NLG. Detailed discussion will be done in our next paper.

CONCLUSION AND FUTURE WORK

This store bot will help people to check out the store for product availability, booking their order, payment the order. User can do all this without visiting the store. The store bot will act like virtual assistant. That will assist user on their demand. The proposed work report will be available in our next paper with full description along with working architecture and its component.

REFERENCES

1.   Robert Söldner, Sophia Rheinländer, Tim Meyer, Michael Olszowy, Jonas Austerjost. "Chapter 183 Human–Device Interaction in the Life Science Laboratory" , Springer Science and Business Media LLC, 2022.

2.   www.research.aimultiple.com

3.   www.elasticpath.com

4.   www.dinarys.com

5.   www.thegradient.pub