

An E-Commerce Website based Chatbot

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Abstract— This paper describes a website based chatbot. This chatbot can make it easier to interact with the website. The bot understands and converses with the user in Simple Language. This chatbot is linked to an e-commerce website. This website has a variety of products with different features. The chatbot helps you to make a decision which product is suitable for you. This is especially helpful when you have not narrowed down the criteria for the product. Its functions basically like an online automated assistant.

Keywords— E-Commerce, Chatterbot, Rivescript, MySQL, PHP.

I. INTRODUCTION

A chatterbot or chat bot is a computer program designed to simulate an intelligent conversation with one or more human users via auditory or textual methods. Chatbots can be programmed for small talk, or can also serve as a medium of interaction with users, providing them with answers based on regular questions. The chatbot understands context and delivers a response based on the message given to it. Chatbot is one of many examples of AI. Chatbots were initially designed as means of entertainment and some of them have been designed to pass the Turing Test. [1]

The other aspect to be considered is a website. Today most websites rely on menu based navigation and a search bar to provide information to the user. However websites with a large amount of content and poorly structured navigation can make it difficult for user to find the information easily and quickly. For instance if you consider an online shopping portal, it has a large catalogue of products. Browsing through the products can be challenging and time consuming given the variety of features a product can have.

In this scenario a chatbot to make it easier for the user to find information. The user has an option to chat with the bot and ask it normal questions to get responses. The chatbot has pre programmed responses, but it can work with dynamic information from a user message in order to make a relevant conversation and suggest relevant information. This is a promising alternative as compared to using search and sort based tools. In this sense, chatbot is used to visualize the contents of a corpus (i.e. samples of real world text) and to give answers to a specific domain[2], which in this context is an ecommerce website.

This paper is divided into various sections. Section II talks briefly about the existing work done on chatbots. Section III presents the concept of the project, and what it entails for an end user. Section IV describes the various components involved in the project, while Section V briefly describes the working of the project. Section VI concludes the paper, followed by references.

II. RELATED WORK

ELIZA[3] was one of the first chatbots and the brain behind it was Joseph Weizenbaum. ELIZA's key method of operation involves the recognition of cue words or phrases in the input, and the output of corresponding pre-prepared or pre-programmed responses that can move the conversation forward in an apparently meaningful way[4]. Thus the key technique here—which characterises a program as a chatbot rather than as a serious natural language processing system—is the production of responses that are sufficiently vague and non-specific that they can be understood as "intelligent" in a wide range of conversational contexts. [1]

More recent notable programs include A.L.I.C.E.[5], Jabberwacky[6] and D.U.D.E. While ELIZA and PARRY[7] were used exclusively to simulate typed conversation, many chatterbots now include functional features such as games and web searching abilities.

Most of the existing virtual agents, also known as the chatbots, are mainly for entertainment and research purpose. Successful and Award winning chatbots like A.L.I.C.E and CleverBot[8][9] focus on generic responses to entertain the end user. Some companies like IKEA, Lloyds Banking Group and Royal Bank of Scotland are using automated online assistants as first point of contact.

III. CONCEPT DESCRIPTION

Today E-Commerce websites contain a wide range of products in each of its category which results in a vast and complex database. These products are spread across numerous amount of web pages and categorized according to their type. Navigating through these web pages to locate relevant results, according to the user specifications, can be non intuitive, time consuming and exasperating.

A user visiting an E-commerce may look for a specific product, or generally browse the website. The search tools use keyword matching to display multiple results to the user's query. Out of these results, some might be relevant to the user or the results might be inconclusive. This will lead to an unpleasant user experience. The search tools fail to deliver relevant results when ambiguous and imprecise words is used to describe a product. The system may not display a relevant product. Also in case a user does not have much knowledge about the product he/she intends to buy, conventional systems do not help such a user in any way.

The chatbot attempts to address the above mentioned issues by presenting a more intuitive way of interacting with the website. It interacts with you and also suggests products suitable for you.

This project takes the FAQchat[10] approach, where instead of using a complex Natural Language Processing

System and logical inference, a simple but large set of pattern matching templates will suffice.

A. Proposed System

In order to demonstrate the concept of the project we will design an E-Commerce Website that has a catalogue of products that can be browsed. The website itself is designed so it can be integrated seamlessly with the chatbot. The website has traditional navigation options for the user if he or she desires to browse the website, in a conventional manner. It will also feature conventional search/filter options. This website will have an unobtrusive chatbot that can be accessed from any page. The user can interact with the bot using Natural Language. The bot can make suggestions, give information or ask further questions to elicit further information depending on the user interaction. The bot has a small response time.

B. Interaction with the User.

From the user's perspective, the website has a chat overlay using which the user can chat with the bot. Any information the chatbot requires, the user directly enters into the message window. The chatbot takes this input and matches it with the programmed responses. It then provides information in its responses and in the form of links to the suitable products.

IV. COMPONENTS

The two major components are the website and the chatbot. They are integrated seamlessly to provide a good user experience.

A. Website

The website is coded in HTML/CSS with PHP used for scripting. The website has a MySQL database that stores the product details and inventory.

B. Chatbot

The chatterbot utilizes Rivescript, to fetch responses based on user input. Rivescript is a simple scripting language for giving intelligence to chatbots and other conversational entities. It's a plain text, line-based scripting language with goals of being simple to learn, quick to type, and easy to read and maintain. [11]

The core implementation of the Rivescript[12] has the following major features:

1. Simple : Responses are coded in plain text file. No complicated syntax.
2. Powerful : It has a handful of rule that can be combined to build a fairly impressive chatbot.
3. Flexible : Rivescript follows the Unix philosophy: the core library is focused on rendering responses, while also leaving enough scope for extensibility by ways of custom modules and scripts.
4. Open Source : Rivescript is released in the MIT license, and are available on popular platforms such as Perl, Python, Javascript and even C#.

We will utilise the Javascript version of the interpreter. The entire Interpreter runs on the client browser, with the responses stored in simple text files, with the extension '.rive'. These responses are essentially the "brain" of the bot. The basic syntax of Rivescript follows the convention where "+" denotes a trigger i.e. a user query or input whereas '-' denotes the chatbot response. This is illustrated below:

```
+ Hello
- Hello. I am a chatterbot. How can I help you?
```

Figure 1 Simple atomic trigger and response

This is a simple atomic response. The interpreter matches user input with the stored triggers and determines the most suitable response to the user input. Rivescript also supports user and bot variables, wild cards, conversational redirects etc. Bot variables can be pre-programmed, whereas user variables can be set using parts from user query. Rivescript also supports Javascript object macros. This allows us to program simple Javascript functionality.

V. WORKING

In order to implement the dynamic functionality, the server contains a PHP file that serves as a medium of interaction between the Chat Client and the MySQL database. When a trigger that contains an object macro is called, the response is parsed and then executed by the Interpreter's Javascript Object handler. The response makes an AJAX request to the PHP page, and on receiving a response, displays it within the chat window. This response contains a hyperlink to the respective product pages of the suggested products.

Since the responses are not hardcoded, but depend on the user and the backend database, the chatbot is capable of providing updated information. In a scenario where the backend database is updated with newer products, the chatbot will make suggestions taking into account the updated database.

```
User: Hello
Bot: Hello there. How can I help you?

User: Can you suggest a good phone?
Bot: Have you decided a budget?

User: 40,000.
Bot: Do you have a particular brand in mind?

User: I like Samsung Phones.
Bot: As per your requirements I suggest you checkout
Galaxy Note 3,Galaxy S5....
```

Figure 2 Sample conversation between user and the bot.

VI. CONCLUSION

Thus we have implemented a website based chatbot that attempts to improve User Interaction with the E-Commerce website. The chatbot has a stored set of responses, but also takes dynamic user input into account and thus tends to provide relevant responses and product suggestions. Since the product database is independent of the stored responses, newer products under the respective category can be easily added and removed and require no modification of the stored chatbot responses.

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