An Effective Query Response using Chatbot

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Abstract: *A Chatbot is an artificial intelligence computer program which performs communication using audio and video system. A person can ask any questions and chatbot will answer accordingly. Nowadays a chatbot is highly popular and takes speed as a computer communication application. Chatbot system is in trend, thus it is being used on many websites. With the chatbot, one doesn't have to wait to talk to the customer helpline, they don't even have to search for shopping through Websites. A chatbot is used in many areas like order food, product suggestions, customer support, weather, personal finance assistance, scheduled a meeting, search and track flights, send money, and many more. The main objective that we will discuss in this paper is about creating a web API, and also about sample web and text messaging interfaces that demonstrate the use of API. A bot is trained on and according to the training, based on some rules on which it is trained, it answers questions. It is called ruled based approach. Using these ruled based approach, creation of these bots becomes relatively straight forward. But it is not sufficient for the bot to answer questions whose pattern does not match with the rules on which it is trained. The language by which these bots can be created are Artificial Intelligence Markup Language (AIML). It is a language based on XML which allows the developer to write the rules which bot will follow. In this Project we learn about the working of these chatbots and their outputs.*

Keywords: Chatbot, API, AIML

I. INTRODUCTION

A chatbot is a piece of technology that allows a computer program to communicate with people just like conversing through text messaging using a natural language, say English, to accomplish specific tasks. ... Text To Speech – A text-to-speech technology is simply one that converts verbal speech to text on a digital page. A chatbot is an artificially intelligent creature which can converse with humans. Mainly a chatbot works by a user asking some question or initiating a new topic of discussion. Chat bots can be referred as software agents that pretend as human entity.

Starting in the 1980s, technology companies like Apple, Microsoft, and many others presented computer users with the graphical user interface as a means to make technology more user-friendly. The average consumer wasn't going to learn binary code to use a computer, so the great minds at these leading technology companies slapped a screen on technology and offered an interface that provided icons, buttons, toolbars, and other graphical elements so that the computer could be easily consumed by a mass market. Today it's hard to even imagine technological devices without a screen and a graphical presentation — until now. Early in 2016, we saw the introduction of the first wave of artificial intelligence technology in the form of chatbots. Social media platforms like Facebook allowed developers to create a chatbot for their brand or service so that consumers could carry out some of their daily actions from within their messaging platform.

A few chatbots with useful applications in our system are presented. We begin by discussing the ELIZA chatbot system architecture and the working. Then we continue discussing about other systems like ALICE and Siri . ELIZA It was one of the first chatbots, designed in 1966. It acts like a therapist by rephrasing statements of the user and posing them back as questions. ELIZA works by simple parsing and substitution of key words into reframed phrases. People get emotionally caught up by ELIZA's confident replies forgetting that it's a machine. ELIZA was written at MIT by Joseph Weizenbaum between 1964 and 1966.. ALICE (Artificial Linguistic Internet Computer Entity) is inspired by ELIZA. It is a natural language processing chatbot—a program that engages in a conversation with a human by applying some pattern matching rules to the user's query and then generating an appropriate response. ALICE is consists of two parts, Chatbot engine and Language Model. Language model is stored in AIML (Artificial Intelligence Mark-up Language) files. As discussed earlier,

Siri was developed by Apple. Siri is a computer program that works as a virtual personal assistant and knowledge navigator. The feature uses a natural language user interface to answer questions, give suggestions, and perform actions by using a set of Web services.. Siri was originally introduced as an iOS application available in the App Store by Siri, Inc., which was acquired by Apple on April 28, 2010.

1.1 Disadvantages

- **Complex interface:** It is often considered that chatbots are complicated and need a lot of time to understand what you want in customer. Sometimes, it can also annoy the client about their slowness, or their difficulty in filtering responses.
- **They don't get you right:** Fixed chatbots can get stuck easily. If a query doesn't relate to something you've previously « taught » it, you won't understand it. This can lead to a frustrated customer and the loss of the sale. Other times they do understand you, but they need double (or triple) as many messages as one person, which spoils the user experience.
- **Time-consuming:** Chatbots are installed with the aim of speeding up responses and improving customer interaction. However, due to the limited availability of data and the time needed for self-updating, this process can be slow and costly. Therefore, there are times when instead of serving several customers at once, chatbots may become confused and not serve the customer well

II. PROPOSED SYSTEM

We propose a system which will work as an application and give users information about different kinds of sports present in the world. This application will work using a pattern matching algorithm using depth first search (DFS). It will also convert user's queries from speech to text using a speech-to-text converter and back to speech as an output to the user. Firstly, the user will speak his/her query out loud; the application will convert this query from speech into text. The system finds out what the user actually wants by retrieving the semantic meaning of the query. Then the system will pass on this semantic text as input to the pattern matching algorithm. The pattern matching system will make use of knowledge that is already fed into the databases in order to generate a response. Once this response is generated we will convert it back into speech and the application will read the content out. The purpose of a chatbot system is to simulate a conversation with a human which is so human like that the person gets fooled into believing that he's talking with a human.

2.1 Advantages

- **Accessibility:** One of the biggest advantages is that Chatbots are available for help 24/7. This means that Customers can talk with Chatbots anytime anywhere, even outside of the normal business hours and people don't need to wait for a specific time to get the information they want. This extra comfort and accessibility make customers happy and increases the chances of customers recommending you to others.
- **Time saving:** It also helps in reduction of staff in business that in turn saves money. You don't need a team for training the new employees and you can easily set the roles of Chatbots and take advantage from this system.
- **High volume of requests:** If your business deals with high volume of users on daily basis, Chatbots allow you to connect quickly with huge numbers of customers in a very short time. That is why they are ideal for receiving and attending high volume of requests without any need to hire extra staff.
- **Customer's satisfactions:** Another advantage of chatbot is that your customers will be more satisfied. When they get satisfactory response from your end, they'll be happier, and shop more than they would have if they had problems getting information they need.

III. METHODOLOGY

Step 1: Pre-training your bots

This step involves collecting the information and that most of the customers and viewers are interested in surfing and the activities and the events we need to involve in our chatbot so that it can effectively present the output to the user.

**Step 2: Analysing the customer interactions and writing the relevant code**

Here we usea tool that analyzes customer questions in real time is a key piece of any bot solution. The analysis will tell you what your customers actually want to do with your bot and will let you focus your training efforts where it pays the biggest dividends. And depending on the interactions we will write the relevant code that satisfy the requirements of the customers.

Step 3: Training the bot

With all of the rich information coming from analytics, you can get a handle on how to train the bot. A good bot solution will now let you match your bot to the best platform and take into consideration each platform's capabilities and limitations.
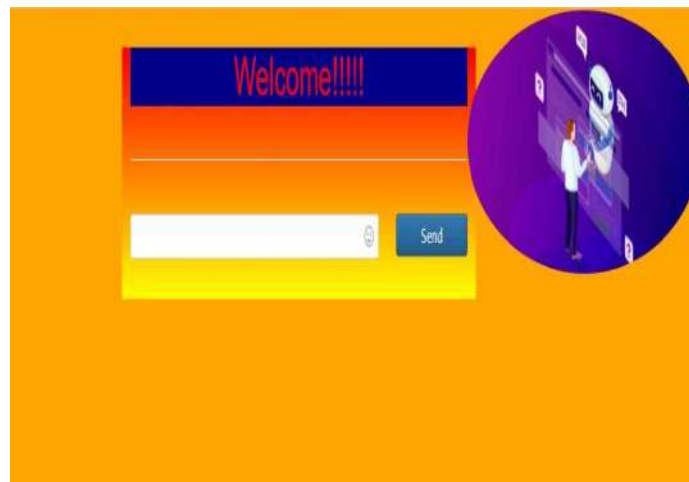
Step 4: Measuring the effectiveness and continuous improving

Here we measure the effectiveness of the output each time we use the chatbot so that we can add any changes if we want to and make our approach wider and effective. If we want to search for more complex situations our chatbot becomes more effective.
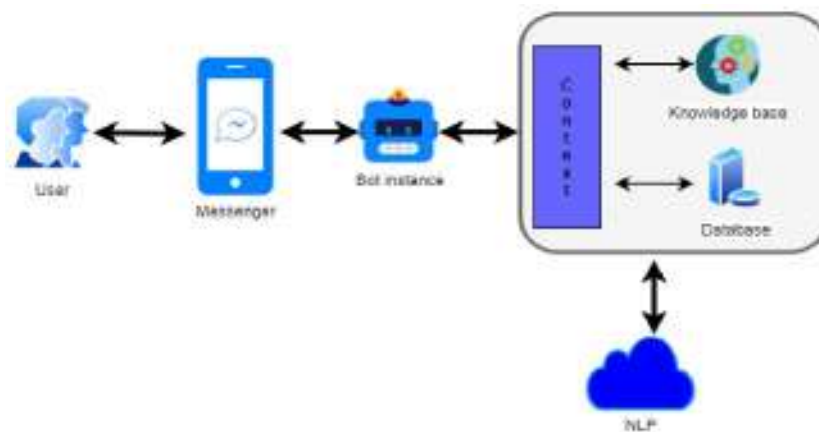
Figure 1: Work Flow of Chatbot

IV. RESULTS

Figure 2: Shows the Home Screen of Chatbot Application

Figure 3: Shows the Single input response.

Figure 4: Shows the Multiple input response.

V. CONCLUSION

Chatbots have the ability to engage customers. They can also foster a relationship between customer and brands, and deliver a more personalized experience. Bots impart information about new product launches and timely updates to the customers. Artificial intelligence, programming languages, databases, and APIs are rapidly evolving and we can see their direct impact on chatbots.Chatbots are replacing apps. A messaging app brings along a chatbot that is easy to download and users get engaged with the campaigns quickly. NLU stands for Natural Language Understanding, although a subset of NLP, a lot of focus is on making the chatbot capable of understanding even the unstructured input. Hence all these lead us to the point that chatbots are emerging as one of our more useful and powerful future developments.

From my perspective, chatbots or smart assistants with graphical user interface are dramatically changing businesses. There is a wide range of chatbot building platforms that are available for various enterprises, such as e-commerce, retail, banking, leisure, travel, healthcare, and so on. Chatbots can reach out to a large audience on messaging apps and be more effective than humans. They may develop into a capable information-gathering tool in the near future.Hence we can see in the modern times where mobiles phones are the biggest companion of humans we see the attempts of the heartless chatbot turning into empathetic friendly companion of human

REFERENCES

[1]. Emanuela Haller, Traian Rebedea, "Designing a Chat-bot that Simulates an Historical Figure", IEEE Conference Publications, July 2013.

[2]. Pratik Slave, Vishruta Patil, Vyankatesh Gaikwad, Girish Wadhwa, "College Enquiry Chat Bot", International Journal on Recent and Innovation Trends in Computing and Communication, Volume 5, Issue 3, March 2015.

[3]. "AIML Based Voice Enabled Artificial Intelligent Chatterbot", International Journal of u- and e- Service, Science and Technology Volume 8 - No. 2, 2015.

[4]. Amey Tiwari, Rahul Talekar, Prof. S. M. Patil, "College Information Chatbot System", International Journal of Engineering Research and General Science, Volume 2, Issue 2, April 2017.