

## A Comparative Evaluation of Different Chatbots

Khushi, MCA Student

### Abstract:

*In the previous paper we had discussed about the uses and working of various chatbots, that chatbots are very important thing for today's generation. Every website must include a chatbot in it. Chatbot can save our time, we do not have to experience the full website for a particular topic and many other things. With this we are also discussed about the various languages in which chatbots are developed and designed. But in this paper, we are going to discuss about the various types of chatbots. Because all websites are not same similarly the working and the motive of all the chatbots are not same they may have different working techniques and can be developed and designed for a particular work. In today's world we have various types pf chatbots that work for different things and on different techniques. For example: The chatbots of a particular school, college and university are designed to answer the question related to their organization and about the courses of their organization.*

**Keywords:** - Chatbots, Keyword-based Chatbots, Menu-based Chatbots, Voice Bots and AI.

### INTRODUCTION: -

**Chatbots:** - A chatbots is a type of bot or a machine that works according to the requirement of the user. This bot machine works like a robot and human in short, we can say that a bot machine is a combination of human and robot that can interact with human and can provide the answer of the question given by the user. But the way of questioning to the bots are different and are based on the type of bot they were used. Working of the chatbots are mostly depend on the different type of bots. Chatbot is a machine or a program that are systematized to stimulate a conversation with the human user especially over the internet. This conversation can be depended on any topic basically a topic that a user required. By using a chatbot user can save their maximum time. Mostly every user wants a chatbot in a website to save their time. Nowadays, user's first need is the chatbot whenever they visit on any particular website. But which type of bot can a website can contain can be depend the website owner because every chatbot can work differently have different functions and different features.

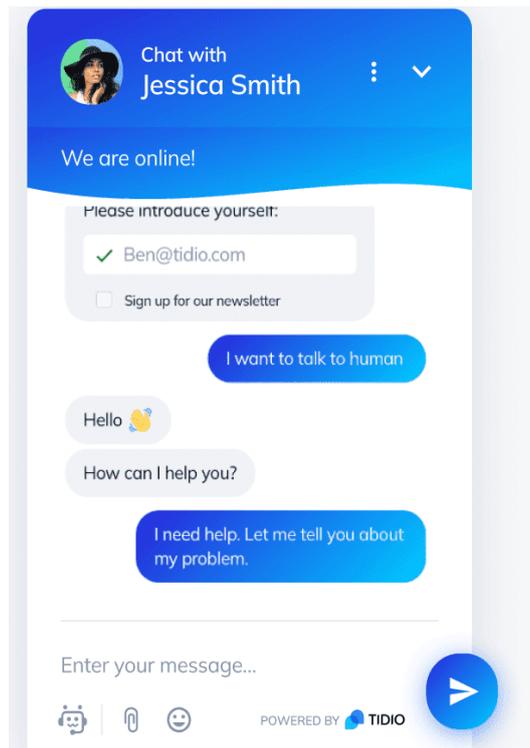
**Keyword-based chatbots:** -In this digital world, where all person's expectations continue to rise, it's important to stay one step ahead. Discover the evolutionary budding that keyword-based chatbots can bring to their work. A keyword recognition-based chatbot is a scheme that utilize artificial intelligence and automatic language processing to acknowledge user appeal and respond automatically. This type of bot is designed to interact with users through conversational interfaces such as natural language instant messaging. These robots are able to recreate the patterns entered into the system, which have been constantly improved over the years. Keyword extraction is a technique used in chatbots to extract relevant information from user queries. The chatbot's algorithm analyses the user's query and tries to identify these keywords in order to provide an appropriate response. In this bot user can type a word or a phrase and then bot can match that word with pre-loaded data and then it displays related data to the user. For example; if a user can visit to any particular school, college and university website and then he/she open a chatbot on that particular website and then type the word 'admission' then the bot automatically goes to the pre-loaded data and then match the word 'admission' with that pre-loaded data and then display the result to the user that are already loaded in the website. In short, we can say that with the word admission the whole or full data of the admission can be displayed in front of the user.

**Menu-based Chatbots:** - To serve any customers in a very short time and addressing their immediate support queries has become much easier with these chatbots. Chatbots are basically replacing the humans of being available 24/7 on work for responding to customers' queries immediately. This can make any business or work or any company for becoming a competitive edge by providing uninterrupted service, enhancing customer satisfaction, and improving operational efficiency. Various developments in the chatbot highlighting the menu-based chatbot, which effectively simplifies customer interactions by presenting predefined options. The menu-based chatbot is very similar to keyword-based chatbots but the only difference is that in keyword-based chatbots the user has to type their query in the form of text and the chatbot can matches the keyword or phrase with the pre-loaded data and then provide the result to the user and in menu based chatbots the user has to select only one option out of the option. This chatbot is designed in such a way that the bots can provide only 3 to 4 options to the user and the user have to select only one option out of the several options and the bot can matches the word or phrase with the pre-loaded data and can submit the details to the user related to the particular option that details have been already saved or feed in the bot.

**Voice-bots:** - Voicebots are like brilliant software subordinates that use conversational artificial intelligence\_(AI) to acknowledge and respond to callers using their voice. They make it easy for callers to negotiate through an associated voice response (IVR) system by simply speaking naturally, without the need to listen to menus or press numbers on a keypad. It's like having a interactive session with a human operator, but in this case, it's in fact a virtual AI-powered bot. A voice Bot can acknowledge what callers are enquire for and replies using routine languages and dialects. This is done using conversational AI and machine learning technology which fundamentally helps computer systems how to understand human language and intentions expressed through words. This type of bots or machines are very alike with other two. The only difference is that this bot can work on the voice instead of the chat or text messages or options. This bot is very useful for those who do not know how to write and working of the particular phone or website properly. These bots can accept the speech command and can convert it into the words and can matches the command with the pre-loaded data and can display the result to the user. This bot can not only work on the pre-loaded data but also can search the answer of the user's query by using the internet. For these bots, the pre-loaded data is not such important because this bot can deal with the online queries also.

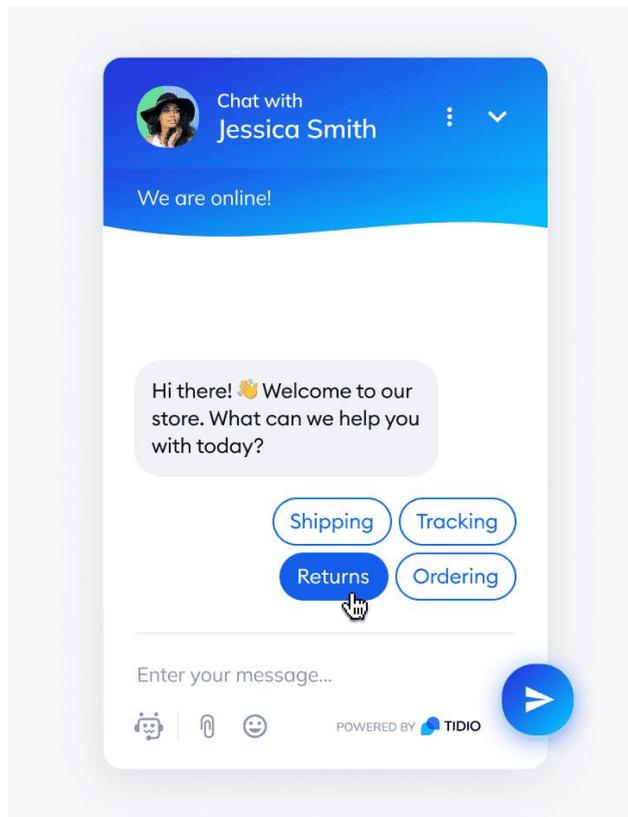
### **Working of the Chatbots:** -

**Keyword-based Chatbots:** - Chatbots can utilize pre-instructed models or machine learning algorithms to enhance the understanding and response. Conversational bots based on keyword identification are broadly used in many applications including e-commerce, search engines, mobile applications, and instant messaging platforms such as Facebook Messenger. Keyword-based chatbots can work on the pre-loaded data. As the user can insert their query then the bot immediately responses to that query. This chatbot can work on a pre-loaded data and on words or phrases..



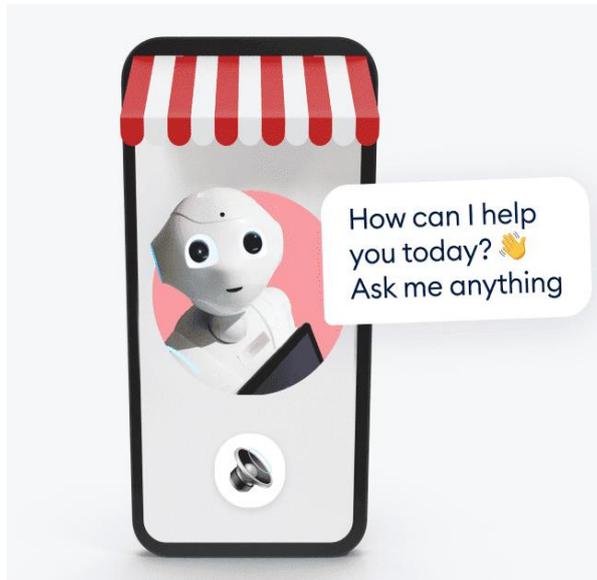
The above picture shows about the working of the keyword-based chatbot in this picture the user can text to the bot and the bot can give replies to that question in the form of answers which look like a conversation. These bots can be used to supply remarkable customer support by answering common asked questions and supporting users to find reliable information. With reliable keywords and language processing algorithms, chatbots can also be work in digital marketing.

***Menu-based Chatbots:*** - A menu-based chatbot is a chatbot that offers users a structured way to interact. It embarks with a greeting to welcome the user. Alongside this greeting, the chatbot conferral a sequence of options or choices. These options can be conferred in the form of a menu or a list, and they cover numerous topics or tasks that the chatbot can assist with. Menu-based chatbots are a type of chatbot that depend on prearranged options to guide the conversation with the user. In other words, can say that the menu-based chatbot can work only the predefined options. The user has to select any one option and the bot can respond according to the selected option basically, in response the user can display the data that are already saved or predefined in the bot according to the options.



According to the above image, in this chatbot the bot firstly greet and welcome the user to their site and then give the options to the user so that user can choose any one option out of the given option like here the bot provide the four options of shopping, tracking, returns, and ordering. In this chatbot the bot ask the user whether he/she would like to do shopping or they want to track any particular order or they want to return their order or they want to order something. So the user have to select any one option out of these four. By using any particular option the bot can provide other set of options that corresponds with the selected option. In this way the menu-based chatbot can work.

**Voice-bot:** - Voice bots can vary based on their functionalities and interaction quality. But in general, voice recognition technology works on the prospect of comprehension human language by encoding and decoding a spoken message. Through machine learning, it extemporaneously improves its data and algorithms to deliver more accurate responses continuously. A fully functional AI-powered voice bot follows step-by-step process before finally answering a customer's query. The working of voice bot is very similar to the other chatbots, it also uses to interact with the user and to respond to the user's query. The features and working of this voice bot are very similar to other chatbots but the only difference is that this bot can accept the speech command of the user. In this the user can give command by talking to the bot instead of text and selecting options so this bot is more reliable and efficient for those who are not well trained in typing text and choosing options because they can handle their bot by giving them speech commands.



By using this bot, the user can easily get the answer of their query by giving the command to the bot in speech mode and the bot can use the speech recognition function and can convert the speech command into the text and can return the answer to the user in the speech format.

### **LITERATURE SURVEY:**

If we talked about the chatbots so there are various number of chatbots that had been developed for a particular website but each and every chatbot have their different working and different features.<sup>[1]</sup> The most basic and natural way of communications for human beings is the natural language. This motivates the idea of developing the chatbot in any natural language. People like to communicate with the chatbot whenever they visit on any particular website. In the earlier era, whenever anybody visit any particular website they had to experience the full website they have to read the full website, each and every content of the website for a particular thing which consumes a lot of time for a single thing people have to go through the all website, but nowadays, if user can visit any particular website in search of any particular or single thing then instead of reading the whole website and opening each and every menu the user can like to communicate with the bot directly where they can get their answer of their query very easily and quickly. Basically, chatbot is very useful and beneficial application or virtual machine that er designed to interact with the user. Chatbot applications can provide a variety of effective interpersonal interactions and the ability to learn through interactive methods and easy-to-use interfaces; they can even be used as a personal consultation tool The most significant advantage of a chatbot is that it can reach a wide audience through a messaging system and automated custom messages. In addition, as the approval of mobile technology grows, the absence of time and place limitations, as well as the augmentation of associative teaching methods, open up the space for the use of chatbots.<sup>[2]</sup> The chatbots can be developed by sing various languages and each and every language had their own additional feature while developing a chatbot. In this paper, the comparison of three different chatbot can light up the feature of particular chatbot. Through this paper we come to know about the feature and working of different chatbot and which chatbot is best and suitable for which website.<sup>[3][4][5]</sup> Text-based chatbots are implemented in the financial sector to intensify the connection between the customer and services provided by the sector, and also to address exterior obstacles and customer requirements. The chatbot technology in the financial sector works to inspect customers' commonly asked questions and the depiction of the process using machine learning.<sup>[6]</sup> In light of this, this study presents a panoramic systematic literature review of articles focused on text-based chatbots in the financial sector. It delineate the understanding of chatbots in the financial sector in terms of execution, maintenance intention, attitude toward use and approval; it also justify how people experience

chatbots, specifically in terms of comprehension, assumption and trust, as well as how they are emotionally activated; management of the security and privacy susceptibilities of the chatbots; and identifies the potential programs that can hinder the efficient, successful evolution of chatbots in the financial sector. Finally, the main findings regarding the use of text chatbots does in the financial sector are presented; additionally, the open issues in current research are highlighted and a number of research opportunities that can be pursued in the future are suggested.<sup>[7][8][9][10]</sup> There are many languages that are used for making chatbot. There are many applications also that are consolidating the human appearance and are trying to reproduce human exchange, but in majority of cases the information used for conversation in both responses are put in the database created by a human specialist. By using the Artificial Intelligence, we can develop different types of chatbots. In this paper, we are going to discuss about the various chatbots that had been developed by using various languages. In this, we are comparing chatbots developed by using three different languages that is, by using PHP, Python and Pluto.<sup>[13]</sup> Each of these languages have their own additional syntax and their own additional features so in this we are going to observe that how all these chatbots work similarly by having different features, different syntax and different coding platforms.<sup>[15]</sup> If we talk about the working of chatbot then we can say that it is a virtual machine that respond to the queries of the human either in the form of text, images, audio video or in the form of speech. In the previous chatbot, the user can ask their queries in the form of text and can get replies in the same form but nowadays,<sup>[17][18]</sup> there are various chatbots that take query verbally or in the form of speech and can respond to these queries in the same form. So, let's move forward and observe that how chatbot can be developed by using various languages and how it can work.

#### **RESULT & COMPARISON DESCRIPTION: -**

From the above analysis we have considered that each and every chatbot have their special features and functionalities and each chatbot can work differently based on their developing process. But the main aim and the min function of each and every chatbot is to interact with the user and can answer to the query of the user on that aim on that basis a chatbot can work accordingly User satisfaction is the main aim of the chatbot for which purpose it will be designed. The method of developing all chatbot is same the only difference between the different kind of chatbot is the working criteria of the chatbot with the user. Some will allow the user to type very long sentences to chat with the bot machine but some allow the user to Only choose one option that have been provided by the bot and some chatbot can allow the user to give the query in the form of speech. Each chatbot can play a very important role in a particular website but each chatbot have some advantages and limitations that are discussed below:

| S NO. | PARAMETER              | KEYWORD-BASED CHATBOT  | MENU-BASED CHATBOT  | VOICE BOT  |
|-------|------------------------|--|---|--|
| 1.    | TYPE                   | This type of chatbots is based on text and keyword             | This type of chatbot is based on options                                  | This type of bot can support both text and speech format.                    |
| 2.    | Interaction medium     | Primarily text-based communication, using written messages     | Primarily menu-based communication, using option selection                | Utilizes voice-based communication, processing spoken language               |
| 3.    | User engagement        | Requires a screen for interaction; suitable for text platforms | Requires a screen for interaction; suitable for text platforms            | Enables hands-free interaction; ideal for scenarios like driving             |
| 4.    | Use cases              | Well-suited for messaging platforms, websites and apps         | Well-suited for messaging platforms, websites and apps                    | Ideal for devices without screens, like smart speakers                       |
| 5.    | Implementation         | Easily integrates into websites and apps with text interfaces  | Easily integrates into websites and apps with menu and option interfaces  | Requires voice recognition technology and may need specific hardware support |
| 6.    | Personalization        | Personalized through text inputs and user-provided information | Personalized through selected option inputs and user-provided information | Recognizes voices and may have personalized voice profiles                   |
| 7.    | Processing information | Processing information is more in text-based bot               | Processing information is less in menu-based bot                          | Processing information is low in voice bot.                                  |

|     |                         |  |  |   |
|-----|-------------------------|--|--|---|
| 8.  | Mode of interaction     | Interact with users through text. Users type and receive responses in text form  | Interact with users through selected options. Users select and receive responses in menu form  | Interact with users through spoken language. Users speak and the bot responds audibly.  |
| 9.  | Underlying technologies | Rely on text processing, which involves tokenization, intent recognition, and machine learning models (for intelligent and generative chatbots). | Rely on text processing, which involves tokenization, intent recognition, and machine learning models (for intelligent and generative chatbots). | Voice bots use NLP as well as Automatic Speech recognition to convert speech to text and Text-to-Speech to revert text to speech. |
| 10. | Accessibility           | Accessible to anyone who can read and type, making them widely usable.   | Accessible to anyone who can read and type, making them widely usable.   | Particularly beneficial for visually impaired individuals, providing a more inclusive user experience.                            |

**Conclusion: -**

In this paper we have discussed the overall working of the different chatbots. And with the study of the literature review we conclude that the aspect of the chatbot is important in different ways. Nowadays, consisting of chatbot in each and every website is very important because in present times, chatbots is the most basic and the first thing that a user can want whenever he/she can visit any particular website. Sometimes this can also happen that when a user can visit any website and user can search for the chatbot and if in that particular website the chatbot is unavailable then the user can immediately exit from that website when he/ she will not able to search the chatbot. It is true that the working of each chatbot is different but having a chatbot is very important things. And from the above study, we can say that having a voice bot is more important than having a chatbot because nowadays user do not want to type anything he/she want the quick and easy work in which they can just ask their query and then get the quick reply form that chatbots. There are very few numbers of cases where the user wants to send their query in the form, of text rather than speech. Overall, we can say that having a chatbot is more important may be that chatbot can be of any type whether it is a text-based chatbot, menu-based chatbot or a voice bot.

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