

# Analysis of Chatbots

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**Abstract**--- Chatbot is broadly popular now-a-days and easily spread speed as an application of computer communiqué. Some programs respond sharply like human. This type of program is called a Chatbot. For this purpose, many open source platforms are available. Artificial Intelligence Markup Language (AIML) is derived from Extensible Markup Language (XML) which is used to build up a conversational agent (chatbot) artificially. This paper address the design and execution of a Chatbot system. We will also study another application where Chatbot's could be helpful and techniques used while designing a Chatbot

**Keywords**— Chatbot; Communication; Pattern Matching; Request; Response; designing

## INTRODUCTION

Now a days computers play an important role in our society? Computer helps us in lots of manners like they gives us information, they entertain us etc . A chatbot is a program designed to imitate a smart message on a text or written ground. But this paper is based on the AI(Artificial Intelligence )chatbot's. Artificial Intelligence Markup Language (AIML) is derived from extensible Markup language (XML) which is used to artificially build up a conversational agent . The AIML based chatbots are famous because they are light weighted, easy to configure as well as at minimum cost. It has a class of data objects called AIML object which describes behavior of computer programs .Chatbot identify the user input as well as by using blueprint identical, access information to provide a predefined acceptance. The chatbots that have been deployed on the internet, uses text, voice as well as sentiments as the input. For example, if the user is providing the bot a sentence like “What is your name?” The chatbot is most likely to reply “Myself Chatbot.” or the chatbot replies “You can say Chatbot.” Which is based on the judgment given by the user. When the input is brought into mortal in the database, a reply from a predefined pattern is

given to the user. A Chatbot is implemented using pattern comparing, in which the order of the sentence is recognized and a saved response pattern is accustom yourself to the exclusive variables of the sentence. They cannot register and respond to complex questions, and are unable to perform complex activities. Chatbot is comparatively a new technology. The application of a Chatbot can be seen in various fields in the future. This

paper covers the techniques used to design and implement a Chatbot. Comparisons are made, findings are discuss and conclusion is drawn at the end. efficient, bots prove themselves as best in dealing with simple queries

## What Is The Use Of Chatbot?

The Chatbots are capable of providing 24/7 automated self-service solutions and thus handle the customer related issues intelligently. They are capable of handling the frequently asked questions, the underlying transactions, and many more. Thus the timely addressing of issues by the chatbots results in increased efficiency by reducing the volume of calls from the customers to the staff. In 2019 and beyond chatbots will accord itself with search functionalities and with the capability of acting as a separate search engine. With chatbots capacity to understand voice-based messages with text, they can provide you with all the important details related to research at a single place without leaving the app.

## Types of Chatbots

### Rule-Based Chatbots

They are not new in the market. They have marked their presence in text messaging and are used by many companies for the same purpose. A command in the form of a specific text is sent. The chatbot on the server on receiving the text extracts it and starts executing.

### Artificial Intelligence Chatbots

This genre incorporates sophisticated chatbots built for messaging apps like Facebook messenger, slack, etc. The chatbots interact with humans using the normal language. The chatbots decode the message easily and reply accordingly. The input message is decoded into structured data and further broken down into commands.

### Voice Enabled Chatbots

Voice enabled chatbots like Alexa, Siri creates personalized experience for the users. These chatbots accept user inputs through voice, act upon user request, answer their queries, and perform a number of creative tasks. Businesses can create their own voice-activated chatbot by using text-to-speech (TTS) and voice recognition APIs.

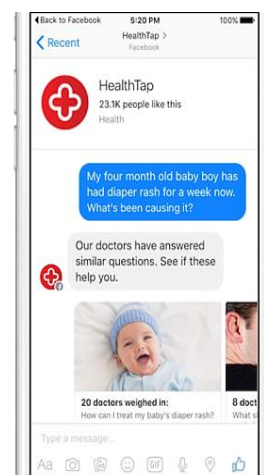


### Context Enabled Chatbots

Contextual chatbots are the most advanced kind of conversational bots. They utilize Machine Learning and Artificial Intelligence to remember conversations that happened in the past, with specific users, to learn and grow over time. These chatbots learn with their experiences with the user. Siri, Alexa, Google Assistant are some of the examples of contextual chatbots.

### Social Messaging Chatbots

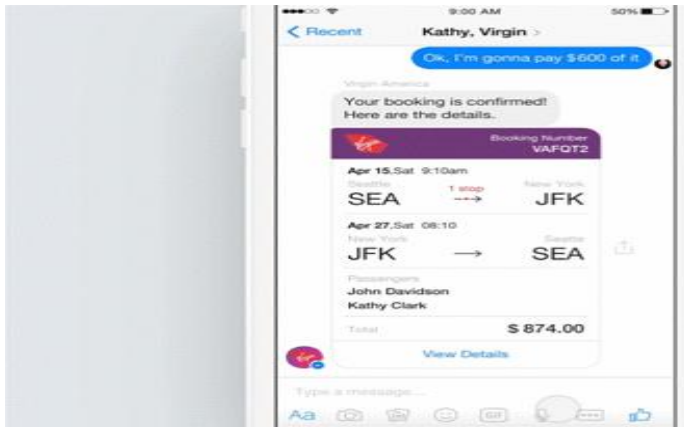
These chatbots are integrated within a social messaging platform (Messenger, Telegram, Whatsapp, Slack etc.), making it easy for customers to directly interact with the bot, just like they do with their friends.



### Service/Action Chatbots

Service chatbots ask for relevant info from the user to complete their request or take a specific action. This chatbot is heavily used in the airline industry. It helps customers check flight booking, cost of reserving the flights and check

the statuses as well.



#### Few platforms for publishing chatbot:

- Facebook Messenger
- Skype
- Email
- Slack
- Amazon Echo
- LINE
- Telegram
- Twitter
- Viber
- Websites
- WeChat
- Android
- iOS



#### [4] DESIGN OF CHATBOT

A Chatbot refers to a chatting robot. It is a communication simulating computer program. It is all about the conversation with the user. The conversation with a Chatbot is very simple. It answers to the questions asked by the user. During designing a Chatbot, how does the Chatbot speak to the user? And how will be the conversation with the user and the Chatbot is very important [3]. The design of a Chatbot is represented using diagram as follows:

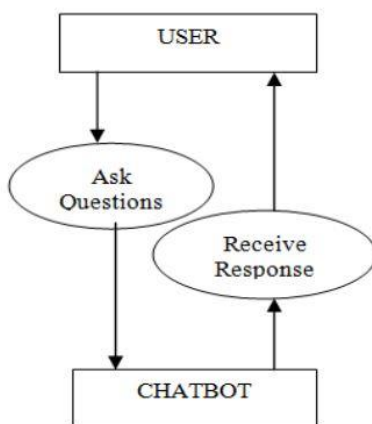


Fig.1: Use Case Diagram of Chatbot Design.

The following facts are kept in mind during designing a Chatbot :

##### A. Selection of OS

Windows is used for this project because it is user friendly. It is also robust.

##### B. Selection of Software

Eclipse software is used for programming in java. Because it contains basic workspace and it is mostly used for java applications.

##### C. Creating a Chatbot

For creating a Chatbot, a program has to be written. Java programming language is used for programming. The Chatbot is created in such a way to help the user, improve the communication

and amuse the user.

##### D. Creating a Chat

The chat is created using a pattern that is known to the user and could be easy to understand. Chat dialog box show up to create conversation. This dialog box is created using java applets.

##### E. Pattern Matching

It is a technique of artificial intelligence used in the design of a Chatbot. The input is matched with the inputs saved in the database and corresponding response is returned.

##### F. Simple

The design of a Chatbot is very simple. It just answers to the questions asked by the user, if the question is found in the database.

##### G. Conversational and Entertaining

The Chatbot responses are a way known to the user. The conversation follows a Basic English language and interacts in an easy to read manner. The conversation between the user and the Bot is entertaining. It is like talking to other person.

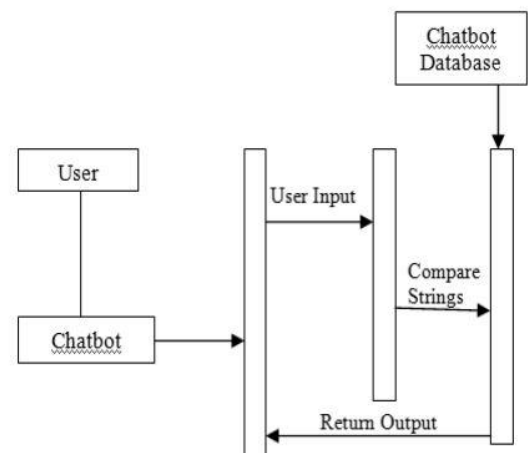


Fig. 2: Sequence Diagram Representing Design of the Chatbot.

#### [5] IMPLEMENTATION PROCESS

Chatbot is a computer application which uses artificial intelligence to mimic human conversation. It helps the user by answering the questions asked by them. The program is implemented using Java programming language. Particularly Java applets are used. Applets are used because it is easy to create the dialog box required for the conversation between the user and the bot. Detailed implementation is given below :

### A. Fundamental Design Techniques and Approaches

**Creating the dialog box** All the packages required for creating the dialog box are imported. The size of the dialog box and text area inside the dialog box is given. Vertical scrollbar is used so that the screen is scrolled as the conversation goes on. Horizontal scrollbar is never used because the size of the dialog box is fixed.

**Creating a database** Two dimensional string arrays are applied to build a database. Rows in the array are used for request and response. All the even rows contain the request or questions and all the odd rows contain the response or answers. Columns in the array are applied to save different types of questions that could asked by the user and responses that a Chatbot can answer. There is one row in the array which contains default responses which is used when the matching question is not found in the array.

### B. Modules Description

The description of the modules used in the implementation is given below

#### □ Chatbot()

In this function, all the variables used for creating the dialog Box are added. Default close operation is set to EXIT\_ON\_CLOSE so that the dialog box closes on exit. Required background colour is set using inbuilt set Background () function.

#### Random()

The input from the user is taken using get Text () function. All the punctuation marks in the users input are removed using trim () function. The uppercase letters are converted to lowercase. A variable called response is used to hold a byte value and it is set to 0. While response is 0, the match for the input is found in the database and it is returned as a response which is displayed in the text area. If the response is 1, then the match for the input is not found in the database. In this case, a default response is returned. Random () function is used to choose the response saved in the database

#### AddText()

All the texts or strings used in input and output are added to the text area in the dialog box.

#### InArray()

This is used as a pattern matching function. A variable match is used to hold a Boolean value and it is set to false . If the match for the users input is found in the database, true is returned else false is returned as a result. This value is returned to keyPressed() function and the result is displayed in the dialog box.

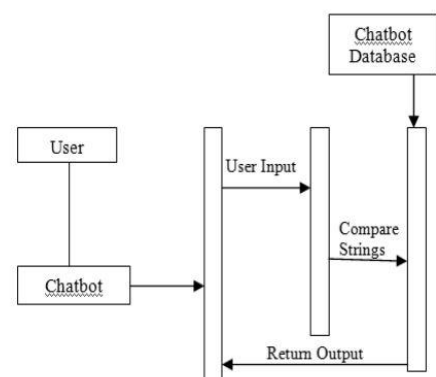


Fig. 2: Sequence Diagram Representing Design of the Chatbot.

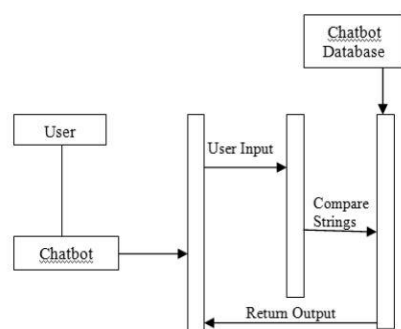
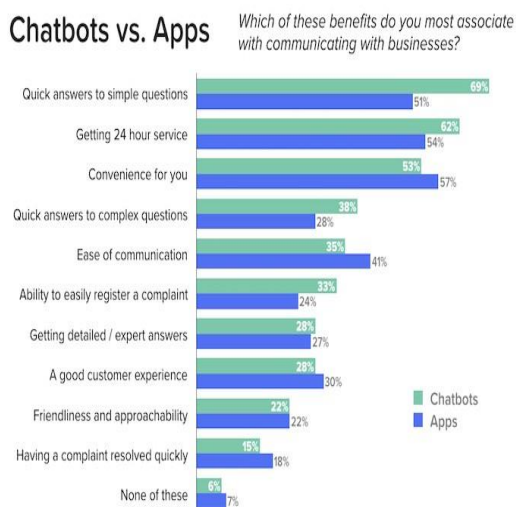


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[6] According to Chatbot Report 2018: Global Trends and Analysis One of the basic reasons of chatbots expansion is so called “being tired of apps”. Consumers are annoyed by the need to install special applications to their mobile devices. Many consumers showed reluctance to use new applications. Along with that, it is clear, that it is unprofitable to create, promote and bring into operation some new application, that will ultimately make no use. Being able to function at different planforms, chatbots deals with this issue by their multichannels. The general quantity of different messengers users is up to 4.1 billion people, so the business in conjunction with chatbots can take the advantage of it.

[7] Future scope

In this paper, we have introduced a chatbot application in android which is able to interact with users. This chatbot can answer for queries in the textual as well as in voice form of user input. For this purpose, AIML with program-o has been used. The chatbot can answer only those questions which he has the answer in its dataset. So, to increase the knowledge of the chatbot, we can add the APIs of Wikipedia, Weather Forecasting Department, Sports, News, Government Services and a lot more. In such cases, the user will be able to talk and interact with the chatbot in any domain. Using the APIs like Weather, Sports, News and Government Services, the chatbot will be able to answer the questions outside of its dataset and which are currently happening in the real world.



## Conclusion

A chatbot is one of the simple ways to transport data from a computer without having to think for proper keywords to look up in a search or browse several web pages to collect information; users can easily type their query in natural language and retrieve information. In this paper, information about the design, implementation of the chatbot has been presented. From the survey above, it can be said that the development and improvement of chatbot design grow at an unpredictable rate due to variety of methods and approaches used to design a chatbot. Chatbot is a great tool for quick interaction with the user. They help us by providing entertainment, saving time and answering the questions that are hard to find. The Chatbot must be simple and conversational. Since there are many designs and approaches for creating a chatbot, it can't beat

odds with commercial considerations. Researchers need to interact and must agree on a common approach for designing a Chatbot. In this project, we looked into how Chatbots are developed and the applications of Chatbots in various fields. In addition comparison has been made with other Chatbots. General purpose Chatbot must be simple, user friendly, must be easily understood and the knowledge base must be compact. Although some of the commercial products have recently emerged, improvements must be made to find a common approach for designing a Chatbot

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