Customer Assistance using Artficial Intelligence based Chat Bots

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ABSTRACT

In this technology world, a recent technology called Chat Bot which have been in demand and usage for every business purpose and have hit the market. Chat Bots is an interaction between person and bot which gives us an efficient service and it also gives the way to develop customer engagement and efficiency by reduction of cost by using these service .Chat Bots can be accessible at any time, which can handle capacity that is chat bot can chat with thousands of people at a time. It has a flexible attribute as well as customer satisfaction. A Chat Bot is constructed using natural language processing with the help of machine learning algorithm for training the bot and to make up the bot to perform in a right way and so training and testing is done using ML.This paper gives an overview of Chat Bot and challenges we faced behind the Chat Bot with extra features of images. Our proposed system is aimed at giving out the desired answers to a definite set of queries . This can be best employed in the situation of COVID-19 since every industry demands the less use of contact between each other since it works on an offline basis. Keywords - Chat Bot, NLP, Machine Learning (ML), Artificial Intelligence (AI).

1. INTRODUCTION

Chat Bots are used as messaging service provider which provides instant messaging framework .Its goal is to provide conversational service to the people who interact with bots normally called as user in an efficient way.The fastest way and minimal confusing web application and mobile application which is easy for installation without any need of installation packages.These packages are easy to manage and distribute [1]. Chat Bots differ from other chatting application as they do not contain any online status and or last seen and call with other user .Figure.1explains about the types of Chat Bot available to be used in web applications. In Figure 1 Open domain Chat Bot is used to retrieve the all general information like general knowledge, weather forecast etc. For example Alexa bot, Cortana bot form windows Siri bot form apple or google assistant.
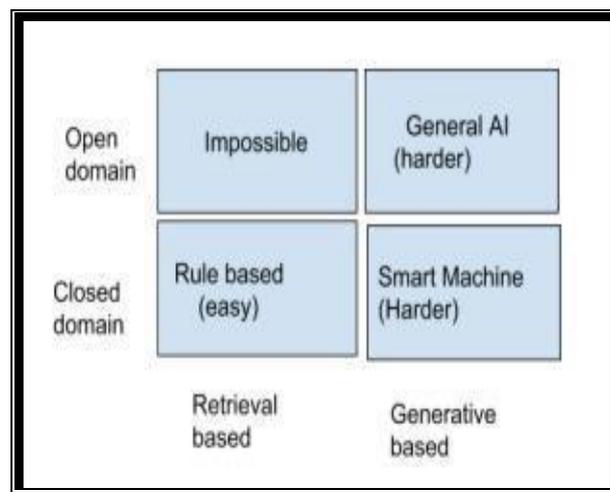

Figure.1 Chat Bots types

Closed Domain Chat Bot concentrated only on the specific domain which is used to answer to the question on the related domain. [2]Generative based Chat Bot is commonly rule based Chat Bot depending upon the input the output is given since it is already data based

.Retrieval model Chat Bot parses the input by grammatical format and produces the output. Chat Bot mainly depends on ml, NLP and logics.
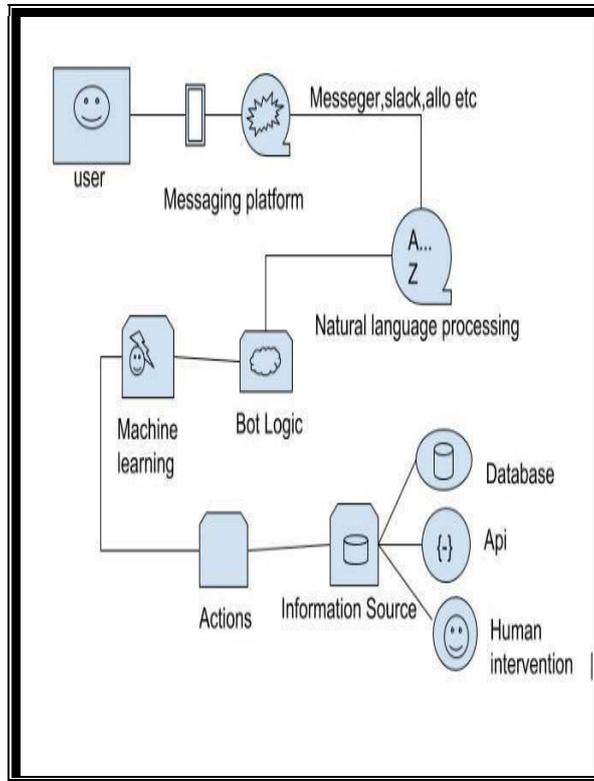

Figure.2 Chat Bot Architecture

In Figure 2 overall process behind the Chat Bot is show. ,In this natural language processing plays a major role in Chat Bot creation .Natural language processing used to play with texts or with better understanding let's say words. [3] NLP is ability for the computer to understand our human language for this NLP is used and also for sentiment analysis we can judge the performance as we have seen in Facebook.

The next big thing that we deal with ,while using Chat Bot is machine learning algorithms used behind it.[4] Machine Learning is the one which we learn from experience instead of coding we train the bot and test the accuracy whether it works to whatever we have trained or not.

There are many machine learning algorithm depending upon the input they are classified as supervised and unsupervised but in our project we use supervised algorithm
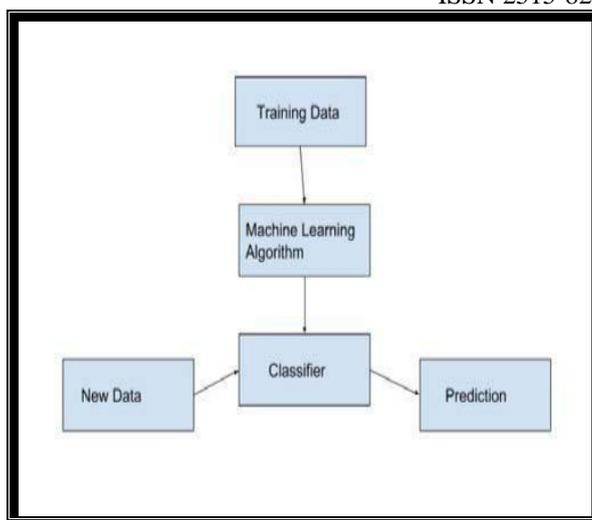
Figure.3 Supervised Machine Learning

In Figure.3 our project uses supervised machine learning algorithm in that itsis classified into linear regression and classification.Using our dataset we parsed the sentence using Natural Language Processing which includes syntactical checking,stemming function, vectorization concepts are used for parsing the sentence and after this machine learning algorithms are used to check for whether the bot works correctly or not.

2. EXISTING WORK

The main contribution of our work is the development of chatbot using Fuzzy logic , natural processing algorithm like pattern parsing ,sentiment analysis etc., Some of the technologies like machine learning and its algorithm are used in chatbot for parsing the sentence. The algorithms of machine learning like Bayesian network, neural network, and recurrent neural network are used in this chatbot. With the help of bag of words (BOW), the detection of cyberbullying can be done easily. The advantage behind this chatbot   is   user   friendly   and   can   get   related

information according to the user queries as well as avoidance of bully words .The drawbacks faced while doing our project is that AdaBoost M1 algorithm is used, which use the base classifier Decision Stump (AdaBoost_DS) but the simulation result shows that the proposed algorithm outperforms the existing sensing technique..

3. PROPOSED CONCEPT

Chat-bot is emerging as a significant technology in shaping the future by connecting physical devices or things with ANDROID. It also presents various opportunities for intersection of other technological trends which can allow it to become even more intelligent and efficient. In this project we focus our attention on the integration of Intelligent Conversational Software Agents or Chat-bots with android. Literature surveys have looked into various applications, features, underlying technologies and known challenges of android. On the other hand, Chatbots are being adopted in greater numbers due to major strides in development of platforms and frameworks.
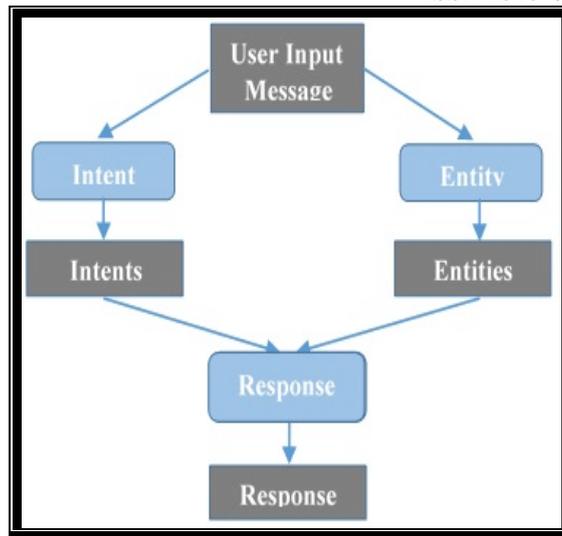
Figure.4 Flow Chart

This proposed system is to activate dynamic answers using mp3 modules with a chat-bot. Its uses chat-bot with an speaker and an mouth action with PIC microcontroller that connected to an servo module which keeps monitoring the connected actions.
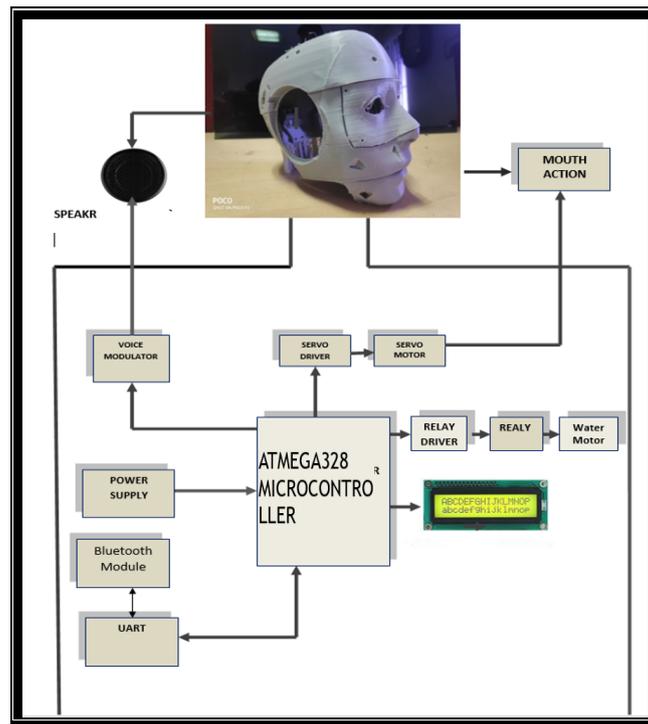
Figure.5. Block Diagram

The connected water motor can be turned on or off using an chat app bot which we have to develop separately .The final output is that when we turn on or off the load using chatbot app after chatbot will convey the respective answers for our questions   using mouth action and speaker the mouth action connected to microcontroller using servo motor and speaker connected through mp3 SD card based modulator .

Here if the queries were asked within the database the chatbot works offline and if it is asked outside the dataset   then   it

connects online and we can also monitor the status using lcd.
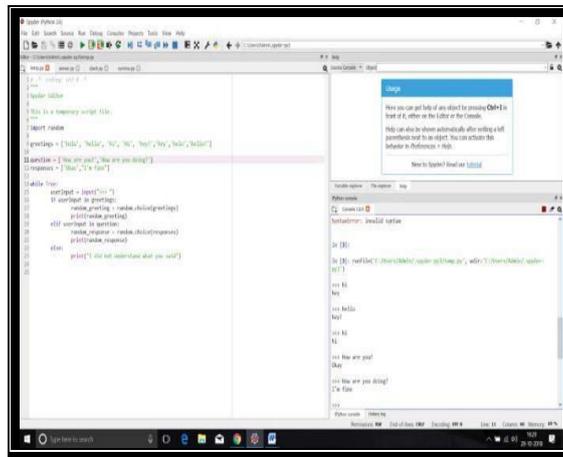
Figure.6. Code of Chat Bot Creation

System specification include python and anaconda, this is the sample code for Chat Bot creation which is based on rule based system. But we created based on parsing method NLP .First when the user enter the input that is when the user ask the questions,the bot will parse break the sentence into words and then star checking whether any bully words present in it or not and then start answering for the given questions.

If there is any detection of bully words the bot will mention it as a bully word,we used this because since it is educational website. Using time stamp automatic question will be raised after certain time interval .If the user did not answer for the questions then after sometime it will ask the same question until we respond for it or it can be trained in another way as user needed. The table 1 shows the information about   the   queries   and   responses   that   are   stored   in   data   base.

Table 1 THE RESPONSE OF CHATBOT/OUTPUTS

SNO.	Queries from customers /users:	Results/response of Chat Bot
1)	a) Set a reminder at 7:00 PM b) "ATTEND MEETING"	a) Alright, today at 7PM what's the reminder? b)OK,I will remind you at 7 PM.
2)	a) Who is Elon Musk? b) What is his net-worth?	a)according to Wikipedia-Elon Musk is the CEO of SpaceX and Tesla b) Elon Musk's net worth is estimated to be 6,990 crores USD.
3)	a) What are coordinates for White house?	a)It is 38.8997° North and 77.0365° West
4)	a) Which is the tallest building? b) Where is it located?	a) The world's tallest building is the BurjKhalifa at the height of 828m. b) It is located in Dubai – United Arab Emirates.
5)	a) Remind me to talk to my boss about my leave when I get to work.	a) Ok, I will remind you when you reach your Workplace.

4. RESULTS

This chat-bot can be employed anywhere for contactless communication which is termed as the most important agenda right now. This can be used to acquire a clear set of answers for definite set of questions. This assessment chatbot template is a guiding tool for people to go over their coronavirus assessment all by themselves. This is a great way for users to understand if they need to visit a COVID-19 center based on their symptoms right at the comfort of their homes.

We have tested a series of dataset queries where we made people ask queries to Chat Bot. We came with successful proposal

Here if the questions are asked within the data set then , then the chatbot answers without accessing the internet and if the queries are been asked outside the database then the required answers can be taken from an online approach.

	QUESTIONS WITHIN THE DATABASE	QUESTIONS OUT OF THE DATA BASE
NUMBER OF SUBJECTS (100)	300	200
ACCURATE ANSWERS	300	183

5. CONCLUSION AND FUTURE WORK

The future is mainly aimed at contact-less communication. Companies across the world are struggling to communicate with customers with direct interactions discouraged with lockdowns enforced amid COVID-19. To surmount these problems, many enterprises are adopting chatbots. These not only help them interact with customers, but also help spread awareness about the ongoing pandemic.

Chat Bots have been a great help – especially healthcare in this critical time – to help spread information about the coronavirus, and also assist with customer queries.

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