A Report

on

Designing an efficient chatbot to work in offline and online mode

Submitted in partial fulfillment of the

requirement for the award of the degree of

Bachelor of Technology

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Under The Supervision of
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Signature of Project Coordinator **Signature of Dean**

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Abstract

A chatbot is a software application which is used for conducting an on-line conversation either through text or speech. It allows the humans to communicate or interact with digital devices as if they were communicating with a real person and are used in almost all domains such as E-commerce, travel, real estate etc. Chatbots may be very simple basic programs that answer a single-line response, or it may be too complex as digital personal assistants that are able to learn and evolve and answer on the basis of gathered information from previous searches and from the internet. In this project we have created a voice chatbot which has more features than the bots currently present in the market, like Cortana (in windows). We have used python language for creating this chatbot. The functionality is improved by using some of the python modules like pytsx3, speech recognition, webbrowser, os, smtplib, sys. Pytsx3 is a text-to-speech conversion library in Python and it works offline also. Speech recognition is used to convert the spoken words to text. Webbrowser is used to open any specific website, it is done by simply calling 'open' command and then the name of the website to be opened. The os module in Python provides functions for interacting with the operating system, local folder or apps are opened using os. smtplib is used to send emails. The Data set used in this bot is taken from Wikipedia. Earlier we have noted that we were unable to open any specific website or any apps present in local devices, or do web search or send emails by speaking but now using this chatbot we are able to do all these things. Hence the features of the bot are enhanced.

Keywords: Chatbot, Cortana, pytsx3, webbrowser, os, smtplib, sys, bot.

Contents

CHAPTER-1 Introduction

Now a days every thing is getting digitalised and we need to advance ourselves in technical perspective. Speech is an effective and natural way through which people interact or communicate with electronic appliances. Even they are replacing keyboards, controllers, mouse, etc. Speech helps people to be productive and stay informed in many types of situations where other interfaces may not. Speech recognition is a technology that is very useful in many applications in our daily life. Generally, speech recognizer is a machine which understands human language and their spoken word and then they can act thereafter. Despite it is very complex to handle natural language, applications which are based on the natural language are observed as emerging technologies for current and future businesses. There are two term which are often used interchangeably in many works of literature, they are chatbot and intelligent conversational agent. Whether it is a chatbot or a conversational agent, it is an application software that makes conversation possible between a human user and a computer device. The conception of discussion is central to the chatbot in malignancy of its limited capabilities. Chatbots can have advantages over human agents. They can surpass humans in terms of speed and accuracy in a narrow domain. The main benefit of using a chatbot in any business domain is that it can behave as a personal assistant which is available 24/7.[1] This is very important in the business world due to the time and different locations across countries. By including the chatbot in business process, the companies are able
to entertain their customers without concerning about regions, time, languages etc. Customers have benefits of having instant answers to their queries. There have been a number of business domains which had applied chatbots in their business processes. Some of them are banking, marketing, finance, computer services, human resources, games, and entertainment. Merchandisers need their guests to be pious and to keep buying
their products. One factor which can contribute to guests' satisfaction is the vacuity of a human help. Unfortunately, it's not an easy thing to keep a human always available for help all the time. The deployment of the chatbot in the business process may replace any type of human help and this can even keep client satisfaction. The chatbot allows guests to interact with merchandisers and express their opinions freely.[2] Accordingly, an active engagement between the guests and merchandisers can be achieved. It's no doubt that the chatbots may give a significant impact to the business world. Technically, chatbots are intelligent machine-to-human discussion. Systems. The people-computer dialog is achieved by either textbook or speech. The use of textbook dialog may bear natural language understanding ways, while the. Ultimate requires speech recognition. The main task of the chatbot is to understand input textbook and reply with the stylish answer to the people. Generally, chatbots is classified into two orders independent chatbots and web- based chatbots. The independent chatbots are used in a stand- alone computer with no need to pierce web, while the . Web- grounded chatbots are penetrated via web services. The main purpose of this paper is to propose new way to make a chatbot which have more functions and features. We have made a comparison with the chatbot present in windows named Cortana. [3]

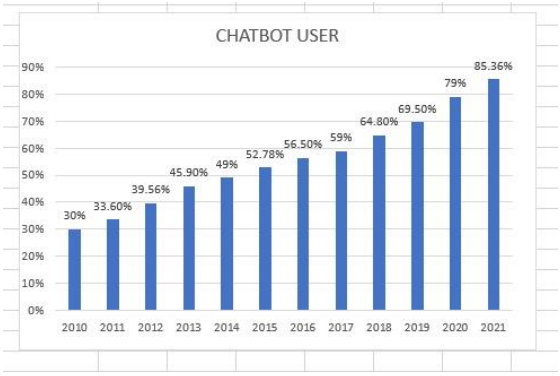


Fig 1 : Bar chat representing increase in use of chatbot.

This paper is organised as follows. Section II presents the literature survey and & background is described in section III. Section IV presents the architecture, section V is about proposed method. VI section is about Result. VII th section consists of future scope , Conclusion is in section VIII, Reference is in IX.

CHAPTER-2 Literature Survey

Google, IBM, Amazon, and Microsoft are among the top leaders driving the main advancements in AI technologies. These are major languages used in making chatbots of python, Ruby, Java, Clojure, C#. Using NLP services chatbots are made more intelligent. Amazon is using Alexa Skill Kit (ASK) which is one of the most popular language processing technology. Substantially, it's a collection of tone- service APIs, law samples, tools, and croakers that we can use to make chops for Alexa. IBM's Watson Conversation Service (WCS) also give some service end at language processing . IBM's product has tools which is suitable for both entrepreneurs and chatbot formulators.[4] Microsoft has also recently launched three new tools for businesses and chatbot formulators that allow investing being software with AI algorithms. Azure Machine Learning has Workbench, Model Management, and Experimentation tools. These services are designed for making new AI agents or make-upon being models. As a part of the Microsoft Cognitive Services, its Language Understanding Intelligent Service (LUIS) provides an advanced toolkit that's concentrated on NLP models. Its machine literacy- grounded platform allows to train new discussion models and make NLP into the apps. Google isn't before in this, it has also TensorFlow. It's open source software is especially designed for machine literacy systems. TensorFlow includes rich attestation and tutorials to support inventors that aren't yet familiar with the platform. Google also offers machine literacy services with its Cloud Ai. This deep literacy system allows using pre-trained models or creating your own acclimatized models with its neural net- grounded ML service.[4] Some other platforms are following.Wit.ai, Its robust operation toolkit can be used to make a Siri-suchlike speech interface and train the platform in new discussion models. Recast.Ai, It's another platform for inventors to apply chatbot results for businesses.API.ai is used to design, apply, and integrate conversational interfaces into chatbots. PatInc. is he platform which is aimed at humanizing relations between AI system and end druggies. Pat can assay veritably complex interferences due to its structure grounded on linguistics, rather than on statistics and machine literacy.[5]

NAME	FUNCTION1	FUNCTION2	QnA	Technology	Dependency on wiki
Cortana	**Can't work offline**	**can't open local files**	**54%**	**C#**	**-**
Google assistant	**Can't work offline**	**can open local files and apps**	**86%**	**C++**	**98.8%**
Siri	**Can't work offline**	**can open local files and apps**	**72%**	**Ml + Advance NN**	**99.3%**
Alexa	**Can't work offline**	**can open local files and apps**	**54%**	**Alexa Skill Kit(ASK)**	**99.2%**
Bixby	**Can't work offline**	**can't open local files**	**54%**	**JS**	**87.6%**

.

Table 1: Comparative study of chatbots on the basis of functionality.

We can watch the above table and understand that we can divide the chatbot in two categories on the basis of functionality. First which works online and second which works both online and offline. As we can see

None of the above chatbots can work offline. Second Functionality is that whether they can open local files, folder or application. Clearly from the table, cortana and

bixby can't open local file or application while the other chatbots like google assistant, Siri, Alexa can do that. When a same set of questions were asked to the chatbots then the result were as following –

Cortana was able to answer 54% questions, Google assistant was able to answer 86% of the question. Siri was able to answer 72% of the question. Alexa was able to answer 54% of the question. Bixby was able to answer 54% of the question.[6][7]

CHAPTER 3 - Working of Project

Step 1:
First we imported the pysxttx3 library which will make the python to speech and then we made a engine, voices and engine.setproperty which will make bot to speak as demanded in project.
Step 2:
In the second step we have imported the datetime library which will tell us the current date and time.
Step 3:
In the third step we have imported speech recognition library which will listen the user voice and ask for the command. Wishme, Speak command Take command, is defined in the code. Wishme command will wish the user according the current time like Good morning! Good night! Etc.
speak command will listen the user voice ,take command will take the command from the user and execute it.
Step 4:
Further we have imported Wikipedia library for that the user just have to say search from Wikipedia and it will automatically search from Wikipedia and give the answer of desired question.
Step 5:
In the fifth step we have imported webbrowser library which will open online site like youtube, Instagram, facebook, stackoverflow or any other site where the user desires. We have to give the chrome path, web browser.register and webbrowser.get to work the webbrowser library.
Step 6:
In the sixth step we have imported the os library which will help us to open the system apps or any downloaded apps for this we just need to add the os.path and startfile for it's working and it will automatically work.
Step 7:
In the last step smtplib is imported and sys which helps to send and receive the mail through the voice command.

BACKGROUND

To understand the need of chatbot first we will se that how exponentially the use of chatbot have increased in recent years. Some of the fields where chatbots are used are following E-commerce Industry, Medicine Industry, Travel Industry, Real Estate, Banking Industry, Hospitality, Food-tech Industries, Hotel industry. The question is why we need chatbot. Its simple answer is that it can replace the human and it is available 24*7 and anywhere. It can give repose in any language. Some other advantages of using chatbot instead of humans are Faster replies, 24/7 support, Better user experience, More customer interactions, Many integrations with messaging apps, conversation templates, **Great return on investment for businesses.** chatbots are most generally used in customer contact centres to manage incoming dispatches and direct guests to the applicable resource. They 're also constantly used for internal purposes, analogous as onboarding new workers and helping all workers with routine exertion including vacation scheduling, training, ordering computers and business supplies, and other tone- service exertion that don't bear mortal intervention.

ARCHITECTURE & DESIGN

iv.1. Speech-To-Text Conversion

Speech is the most natural and easy mode of communication. It is so simple that even the people with IQ less than 50 can speak. In a neurological research scientist have found that brain activates most by speech in comparison than any other processing function.[8]

For speech to text conversion we have used speech recognition module. It helps to recognise user's voice and then it converts it into text so that the chatbot can understand the command given by user.

On the other hand we have used pyttsx3. It converts the text in speech. It helps to reply to the user accordingly to the command given by the user.
[9]

iv.2 Database

We have taken the data base for from Wikipedia. It is used to make the searches on the internet.
The link for the Wikipedia is –
https://www.wikipedia.org/

iv.3 Opening Of local Files

Further for opening of the of the local file we OS module in used in which we have added the location of files and applications.

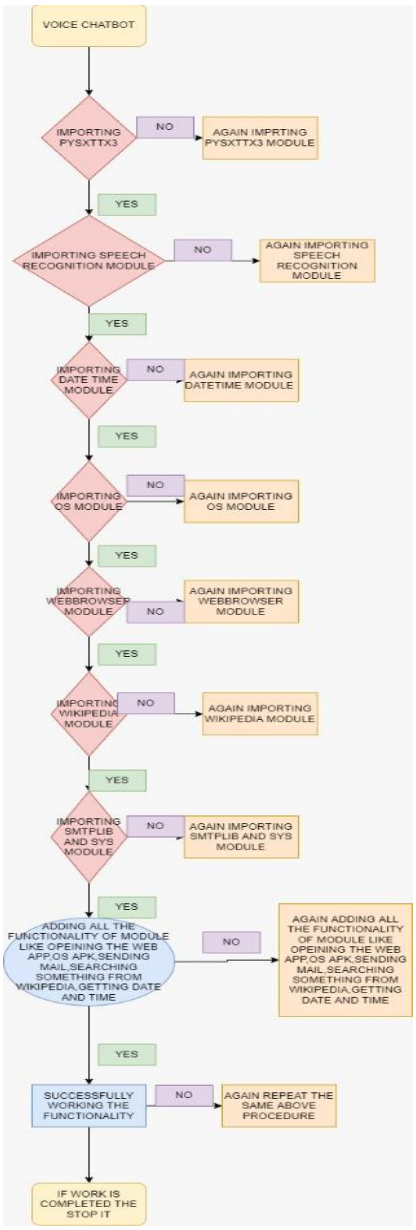
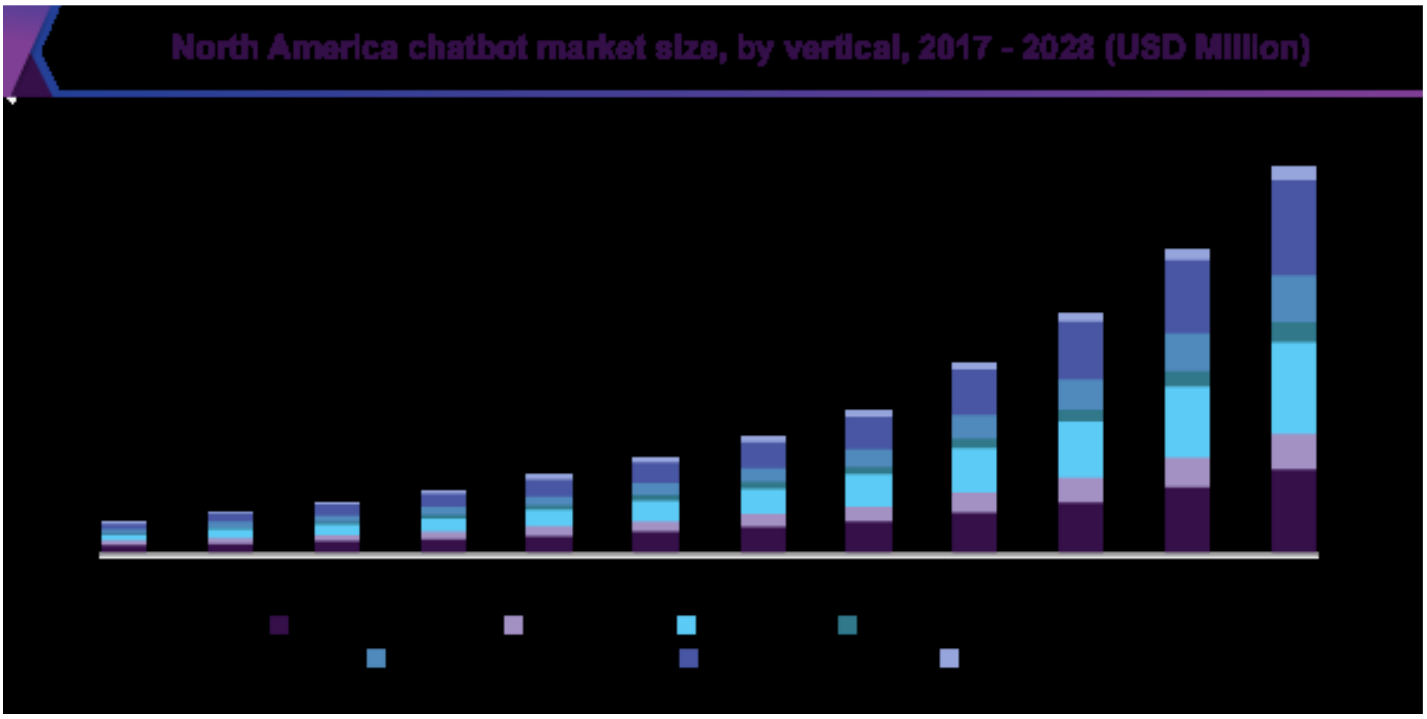


Fig : activity diagram for the proposed model.

CHAPTER 4 - Results and Discussion

3.1 About chatbot

To understand the need of chatbot first we will se that how exponentially the use of chatbot have increased in recent years.



Some of the fields where chatbots are used are following E-commerce Industry, Medicine Industry, Travel Industry, Real Estate, Banking Industry, Hospitality,
Food-tech Industries, Hotel industry.
The question is why we need chatbot. Its simple answer is that it can replace the human and it is available 24*7 and anywhere. It can give repose in any language. Some other advantages of using chatbot instead of humans are Faster replies, 24/7 support, Better user experience, More customer interactions, Many integrations with messaging apps, conversation templates, Great return on investment for businesses.
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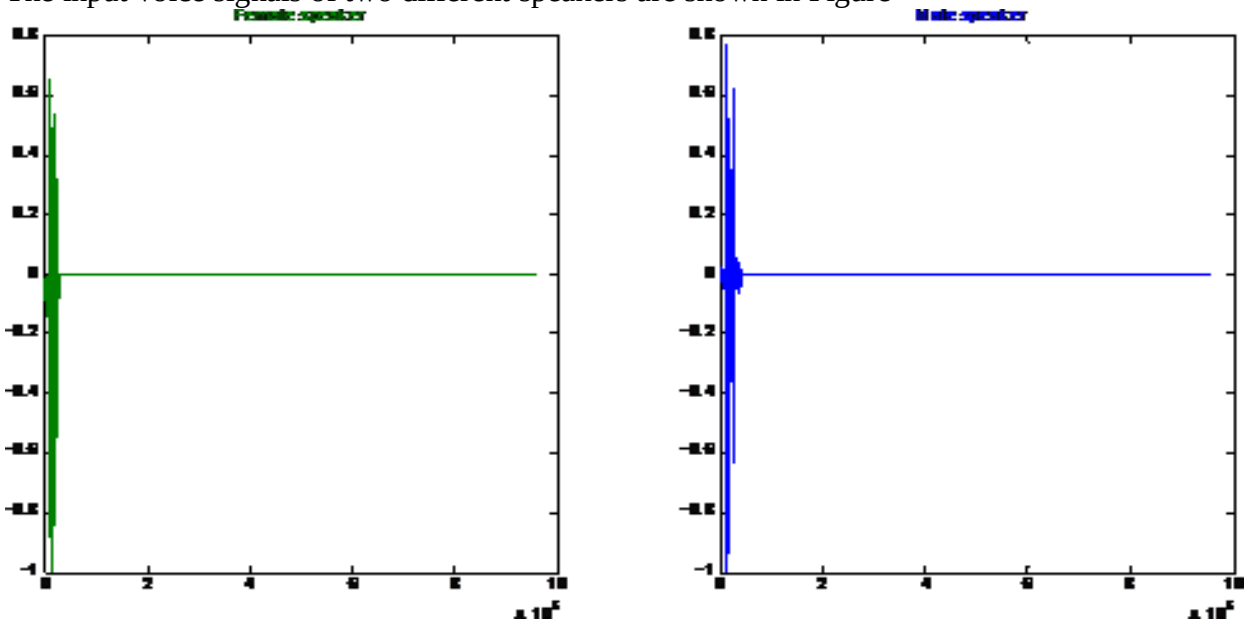
vacation scheduling, training, ordering computers and business supplies, and other tone- service exertion that don't bear mortal intervention.

The input voice signals of two different speakers are shown in Figure



length differences and take account of the non-linear nature of the length differences within the words. Fig.. Mel Frequency Cepstrum Coefficients (MFCC) of one Female and Male speaker is used for carrying the voice analysis performance evaluation using MFFC. A MFCC cepstral is a matrix, the problem with this approach is that if constant window spacing is used, the lengths of the input and stored sequences is unlikely to be the same. Moreover, within a word, there will be variation in the length of individual phonemes as discussed before, Example the word Volume Up might be uttered with a long /O/ and short final /U/ or with a short /O/ and long/U/

Figure shows the MFCC output of two different speakers. The matching process needs to compensate forlength differences and take account of the non-linear natureof the length differences within the words.

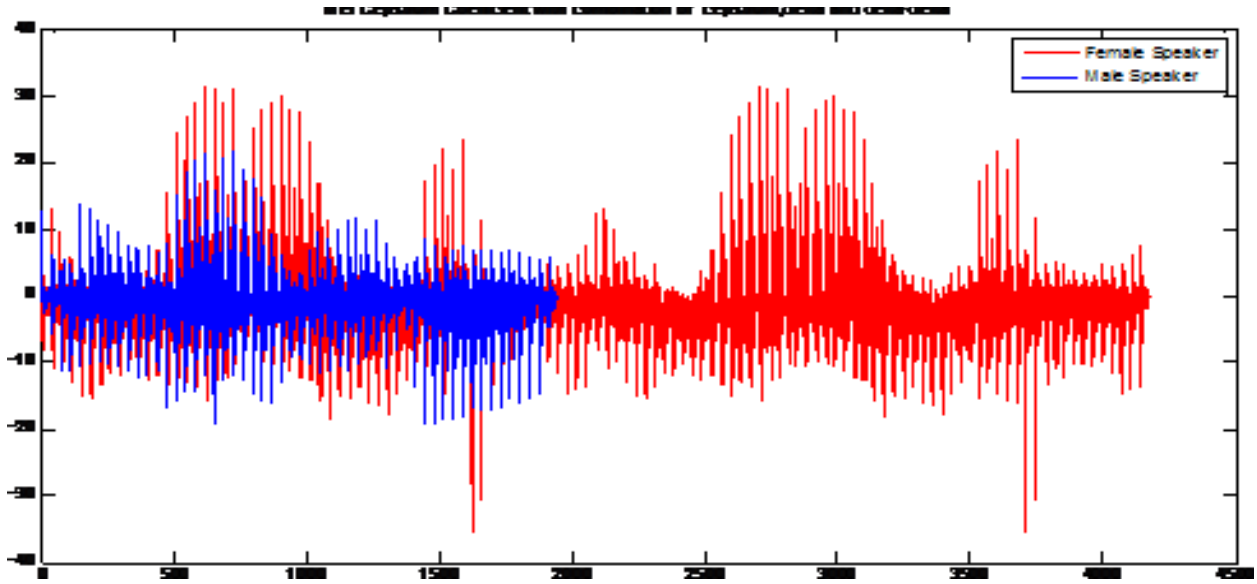
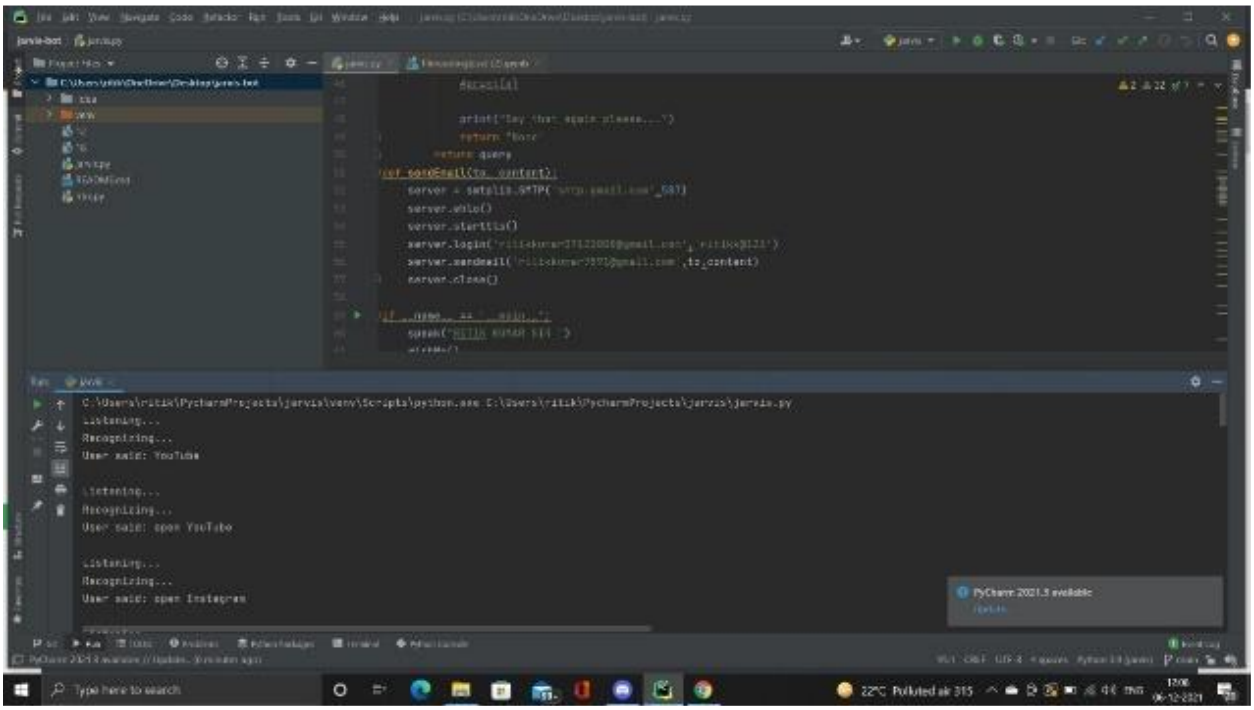
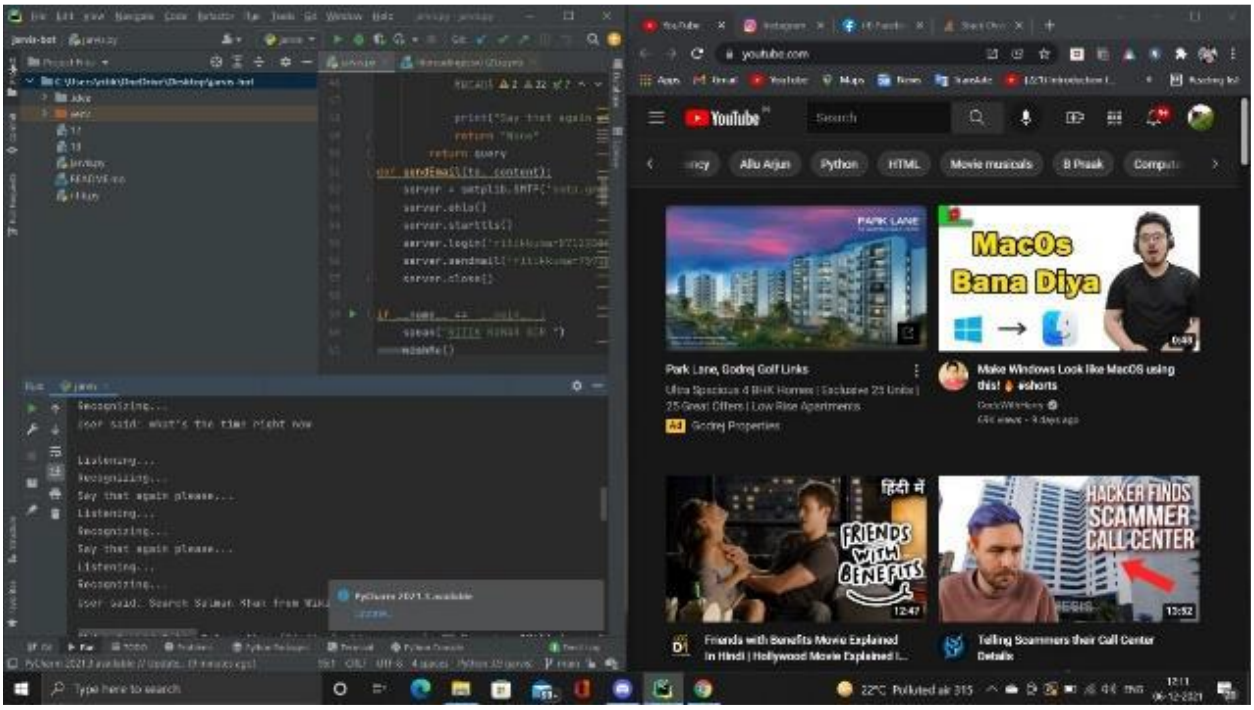


Fig: Mel Frequency Cepstrum Coefficients (MFCC) of one Female and Male speaker

This paper has discussed voice recognition algorithms which are important in improving the voice recognition performance. The technique was able to authenticate the particular speaker based on the individual information that was included in the voice signal. The results show that these techniques could use effectively for voice recognition purposes. Several other techniques such as Liner Predictive Coding (LPC), Dynamic Time Wrapping (DTW), and Artificial Neural Network (ANN) are currently being investigated. The findings will be presented in future publications. Fig 8: . Example voice signal input of two difference speakers Figure 8 is used for carrying the voice analysis performance evaluation using MFFC. A MFCC cepstral is a matrix, the problem with this approach is that if constant window spacing is used, the lengths of the input and stored sequences is unlikely to be the same. Moreover, within a word, there will be variation in the length of individual phonemes as discussed before, Example the word Volume Up might be uttered with a long /O/ and short final /U/ or with a short /O/ and long/U/ Figure 9 shows the MFCC output of two different speakers. The matching process needs to compensate for


GLOBAL CHATBOT MARKET 2020-2024
Market growth will ACCELERATE at a CAGR of almost
29%
Incremental growth ($B)
1.11
2019
2024
The market is FRAGMENTED with several players occupying the market
Growth Contributed by NORTH AMERICA
37%
Growth for 2020
25.07%
Market impact:
NEUTRAL
17000+ Reports covering niche topics. Read them at technavio




Recognizing...
User said: what's the time right now
Listening...
Recognizing...
Say that again please...
Listening...
Recognizing...
Say that again please...
Listening...
Recognizing...
YouTube
Search
Alia Arjun
Python
HTML
Movie musicals
B Praak
Park Lane, Godrej Golf Links
Ultra Spacious 4 BHK Homes | Exclusive 25 Units |
25 Great Offers | Low Rise Apartments
Ad Godrej Properties
MacOs
Bana Diya
Make Windows Look like MacOS using
this! #shorts
हिंदी में
FRIENDS WITH BENEFITS
12:47
Friends with Benefits Movie Explained
in Hindi | Hollywood Movie Explained i...
HACKER FINDS
SCAMMER
CALL CENTER
13:52
Telling Scammers their Call Center
Details
22°C Polluted air 315

3.2 Source Code:

```
import pyttsx3
import datetime
import speech_recognition as sr
import wikipedia
import webbrowser
import os
import smtplib
import sys


engine = pyttsx3.init('sapi5')
voices = engine.getProperty('voices')
#print(voices)
engine.setProperty('voice', voices[1].id)

def speak(audio):
    engine.say(audio)
    engine.runAndWait()

def wishMe():
```

```
    hour = int(datetime.datetime.now().hour)
    if hour >= 0 and hour < 12:
        speak("Good Morning!")
    elif hour >= 12 and hour < 18:
        speak("Good Afternoon!")
    elif hour >= 18 and hour < 20:
        speak("Good evening")
    else:
        speak("Good night!")

    speak("I am Jarvis Sir. Please tell me how may i help you")

def takeCommand():
    r = sr.Recognizer()
    with sr.Microphone() as source:
        print("Listening...")
        r.pause_threshold = 1
        audio = r.listen(source)

        try:
```

```
            print("Recognizing...")
            query = r.recognize_google(audio,language='en-in')
            print(f"User said: {query}\n")

        except Exception as e:
            #print(e)

            print("Say that again please...")
            return "None"
        return query
def sendEmail(to, content):
    server = smtplib.SMTP('smtp.gmail.com',587)
    server.ehlo()
    server.starttls()
    server.login('YOUR EMAIL@gmail.com','YOUR PASSWORD')
    server.sendmail('YOUR MAIL@gmail.com',to,content)
    server.close()

if __name__ == '__main__':
    speak("RITIK KUMAR SIR ")
```

```
wishMe()
while True:

    query = takeCommand().lower()
    if 'wikipedia' in query:
        speak("searching Wikipedia...")
        query = query.replace("wikipedia", "")
        results = wikipedia.summary(query,sentences=2)
        speak("According to Wikipedia")
        print(results)
        speak(results)
    elif 'open youtube' in query:
        speak("opening youtube!")
        chromePath = r"C:\\Program Files\\Google\\Chrome\\Application\\chrome.exe"
        webbrowser.register("chrome",None, webbrowser.BackgroundBrowser(chromePath))
        webbrowser.get("chrome").open_new_tab("youtube.com")

    elif 'open google' in query:
        speak("opening google!")
        chromePath = r"C:\\Program Files\\Google\\Chrome\\Application\\chrome.exe"
```

```
        webbrowser.register("chrome",None, webbrowser.BackgroundBrowser(chromePath))
        webbrowser.get("chrome").open_new_tab("google.com")


    elif 'open facebook' in query:
        speak("opening facebook!")
        chromePath = r"C:\\Program Files\\Google\\Chrome\\Application\\chrome.exe"
        webbrowser.register("chrome",None, webbrowser.BackgroundBrowser(chromePath))
        webbrowser.get("chrome").open_new_tab("facebook.com")
    elif 'open instagram' in query:
        speak("opening instagram!")
        chromePath = r"C:\\Program Files\\Google\\Chrome\\Application\\chrome.exe"
        webbrowser.register("chrome",None, webbrowser.BackgroundBrowser(chromePath))
        webbrowser.get("chrome").open_new_tab("instagram.com")
    elif 'open stack overflow' in query:
        speak("opening stack overflow!")
        chromePath = r"C:\\Program Files\\Google\\Chrome\\Application\\chrome.exe"
        webbrowser.register("chrome",None, webbrowser.BackgroundBrowser(chromePath))
        webbrowser.get("chrome").open_new_tab("stackoverflow.com")
    elif 'play music' in query:
```

```
        music_dir = 'D:\\MIUI\\sound_recorder\\call_rec'
        songs = os.listdir(music_dir)
        print(songs)
        os.startfile(os.path.join(music_dir,songs[0]))
    elif 'the time' in query:
        strTime = datetime.datetime.now().strftime("%H:%M:%S")
        speak(f"Sir,the time is {strTime}")
    elif 'open code' in query:
        codePath = "C:\\Users\\ritik\\AppData\\Local\\Programs\\Microsoft VS Code\\Code.exe"
        os.startfile(codePath)
    elif 'open whatsapp' in query:
        whatsappPath = "C:\\Users\\ritik\\AppData\\Local\\WhatsApp\\WhatsApp.exe"
        os.startfile(whatsappPath)
    elif 'java ka compiler khol de' in query:
        intellijPath = "C:\\Program Files\\JetBrains\\jetbrains\\IntelliJ IDEA Community Edition 2020.2\\bir
        os.startfile(intellijPath)



    elif 'email to ritik' in query:
        try:
```

```
            speak("What should I say?")
            content = takeCommand()
            to = "ritikkumar07122000@gmail.com"
            sendEmail(to, content)
            speak("Email has been sent!")
        except Exception as e:
            print(e)
            speak("Sorry my friend ritik bhai. I am not able to send this email")
    elif 'band ho ja' in query:
        exit()
```

Output:

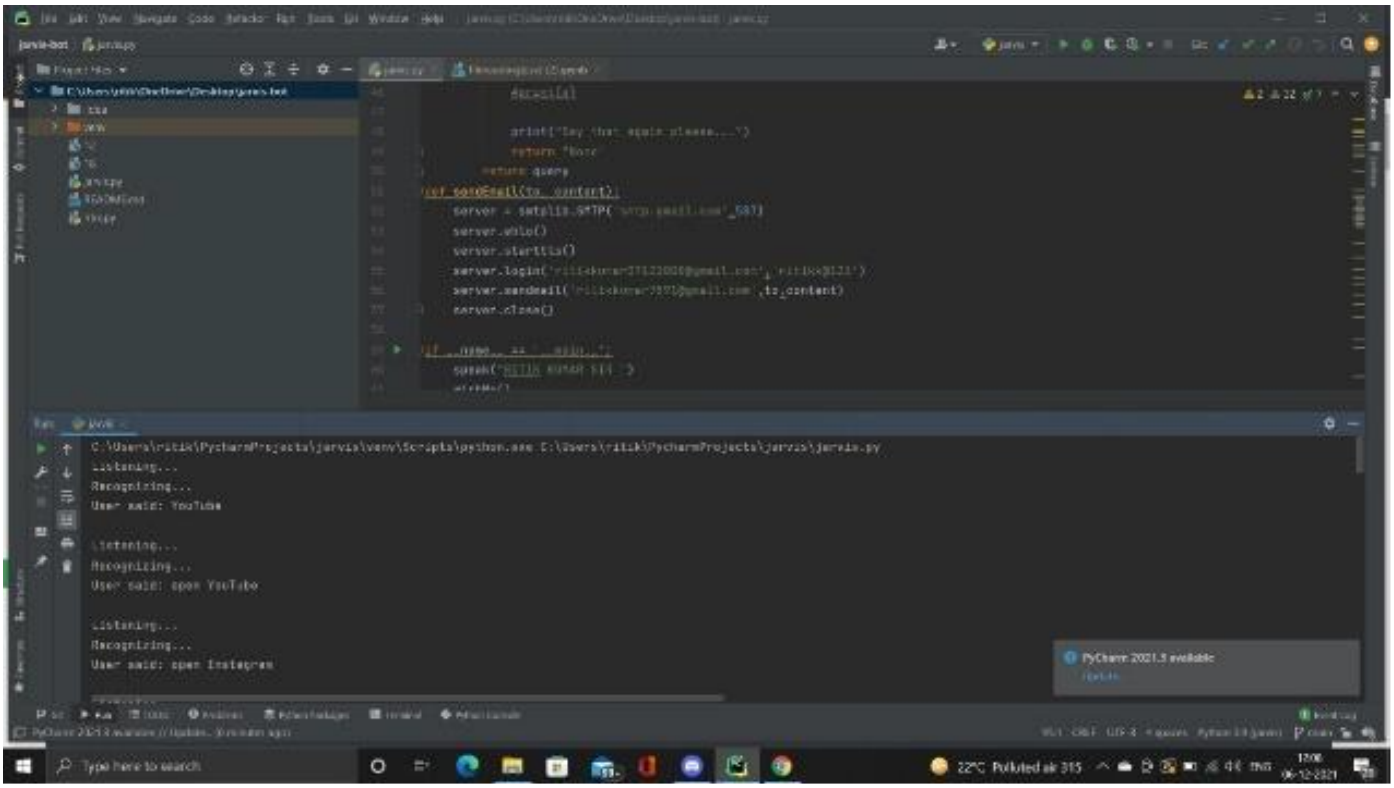


Fig : Giving input to Chabot

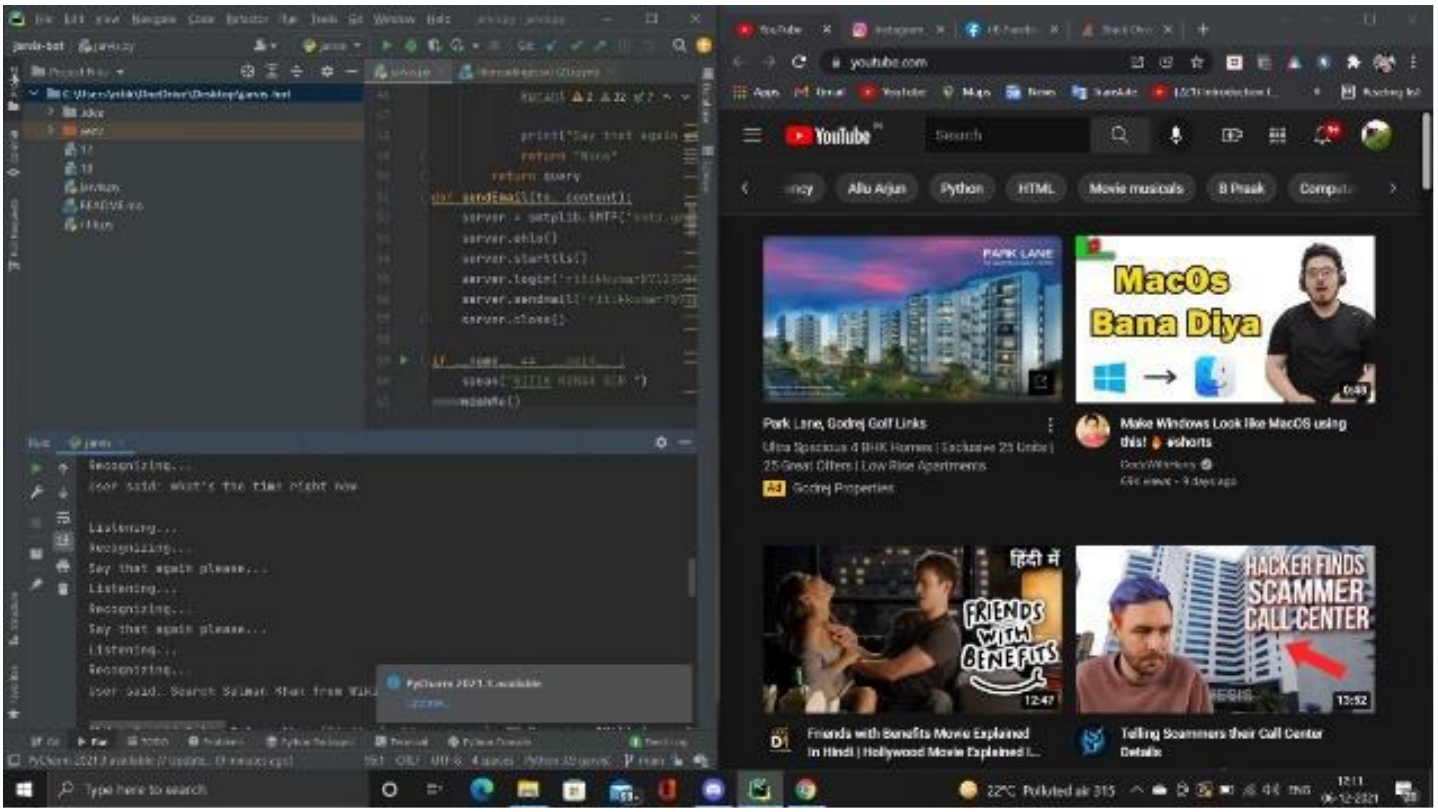


Fig : Response of chatbot

CHAPTER 5 – CONCLUSION AND FUTURE SCOPE

5.1 conclusion

We have successfully created a voice bot which is able to open any local file or make web searches for any specific website. Some of the modules used in code are pytsx3, speech recognition, webbrowser, os, smtplib, sys. The data set used in this bot is taken from Wikipedia. Earlier we were unable to open any specific website or any apps present in local devices, or do web search or send emails by speaking but now using this chatbot we are able to do all these things. Hence the features of the bot are enhanced.

5.2 FUTURE WORK

In the future this chatbot can be converted in an digital assistant like google or siri but it will be much more advance than others. It can be used to control home appliances like lights, fan, air-conditioner, doors, windows, refrigerator, television etc.

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