

**A**  
**Report On**

**“Speech Recognition And AI System Using Python”**

**Under the subject**

**‘Capstone Project- Execution & Report Writing  
[22060]’**

**Submitted By**

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**Under the guidance of**

**Ms. S.B.Patil**

**Department of Computer Engineering**

**Government Polytechnic, Karad**

**JUNE 2021**



**Maharashtra State Board of Technical Education**

**Certificate**

This is to certify that,

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From **Government Polytechnic, Karad** (Code **0010**) have completed project of final year having title **Speech recognition and AI System using Python** during 2020-21 in a group consisting of 4 persons under the guidance of **Ms. S.B.Patil**.

**Date:**

**Place:** Karad

**Guide**  
**Ms. S.B.Patil.**

**Head of Department**  
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**Principal**  
**Dr. R.K.Patil**

## **ACKNOWLEDGEMENT**

We take it an opportunity to thank all those who had directly and indirectly inspired us and lead to successfully completion of this Capstone-Project report.

We express sincere thanks to the Principal **Dr. R.K.Patil** for allowing us this report as part of our academic learning. We extend our sincere and heartfelt thanks to our esteemed guide, **Ms. S.B.Patil** of Computer department, for providing us with the right guidance and advice at the crucial junctures and for showing us the right way.

We also take this opportunity to express a deep sense of gratitude to our class co-ordinators for their cordial support, valuable suggestions and guidance. We extend our sincere thanks to our respected Head of the Department **Ms .S.B.Patil**, for allowing us to use the facilities available. We would like to thank the other faculty members also, at this occasion.

**Place:** Government Polytechnic, Karad

**Date:** / /2021

Yours sincerely,

TYCO,

Nikam Rutuja R.

Thombare Shreya V.

Patankar Aishwarya A.

Patil Sakshi M.

## **ABSTRACT**

This report represents the project report on a project entitled " Speech Recognition and AI System using Python" as a part of the curriculum for the fifth semester project of Diploma in Computer Engineering. The report discusses various methods and implementation techniques to build the system of IVR system with speech recognition and presents the results of the system being implemented.

The report represents project work of developing an **Interactive Voice Response (IVR) system** with the capability of Speech Recognition. It is a system where the user can interact with his/her voice and on the basis of the user's voice input the system performs particular action as a response to the voice command. It is an approach to make use of the voice of the user to recognize the given command instead of using keyboard or other form of input. The project is helpful for various large organizations where there are many call queries or for telecommunications companies or other business ventures where user queries through their voice online or via cellular connections. The system provides an application environment whereby users are prompted to input specific voice commands and the given voice input is being processed for further task accomplishment as per the request.

Making use of speech as a input significantly increases user experience. Unlike traditional touch-tone or key-press based IVR system the system being developed is capable to take a real time voice input from a user. Speech recognition applications are becoming more and more useful nowadays. With growth in the needs for embedded computing and the demand for emerging embedded platforms, it is required that the speech recognition systems (SRS) are available on them too. This project is a simple approach to developing a system where the speech recognition is embedded within another system to automate task using speech as input command.

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## Chapter -1 Introduction

### Introduction -

Speech probably is the most efficient and natural way to communicate with each other. Thus, being the best way of communication, it could also be a useful interface to communicate with machines and systems like IVR system. The Interactive Voice Response (IVR) system along with the speech recognition technology can play efficient role in providing easy and efficient customer/user service. If properly implemented it can increase the user satisfaction and offer new services. Voice command based applications will make life easier due to the fact that people will get easy and fast access to information. Therefore the popularity of automatic speech recognition system has been greatly increased. The work of speech recognition further helps in establishing an easy way communication between interactive response system and users/ customers i.e. as a part of post processing of the speech recognizing process we can accomplish some computational task with such a system making voice input as a trigger to do some task within the system.

In this project our focus is to build such an application where users can simply command the IVR system with their voice and in response the system accomplishes its task as per the user request. The system could have wide range of application in various fields such as 2 interactive response customer support center, automatic number dialer, banking assistant etc.

### Project Objectives -

The typical objectives are listed below:

- To make use of domain specific models and algorithms in field of speech recognition.
- To develop an interactive voice response system along with speech recognition attribute.
- To understand the basics of speech processing.
- To get knowledge on various speech recognition approaches.
- To get insights on speech responsive application development.

### Academic Activities –

- To fulfill the requirements of the capstone project in computer engineering.
- To design and complete a functional project that integrates various course concepts.
- To develop various skills related to project management like team work, resource management, documentation and time management.
- To get hands-on experience of working in a project as a team work.
- To learn about and become familiar with the professional engineering practices.

## Chapter -2 Literature Survey

- **Historical Overview of Speech Recognition** : The concept of speech recognition started somewhere in 1940s, practically the first speech recognition program appeared in 1952 at the bell labs, that was about recognition of a digit in a noise free environment. 1940s and 1950s consider as the foundational period of the speech recognition technology, in this period work was done on the foundational paradigms of the speech recognition that is automation and information theoretic models. In the 1960s, it was able to recognize small vocabularies (order of 10-100words) of isolated words, based on simple acoustic properties of speech sounds. The key technologies that were developed during this decade were, filter banks and time normalization methods. In 1970s the medium vocabularies (order of 100-1000 words) using simple template-based, pattern recognition methods were recognized. In 1980s large vocabularies (1000-unlimited) were used and speech recognition problems based on statistical, with a large range of networks for handling language structures were addressed. After the five decades of research, the speech recognition technology has finally entered marketplace, benefiting the users in variety of ways. The challenge of designing machine that truly functions like an intelligent human is still a major one going forward.
- **Speech Recognition Overview** : Speech Recognition (SR) is the process of extracting the string of words automatically from the speech signal, by means of an algorithm. It is the ability of a machine or program to identify words and phrases in spoken language and convert them to a machine readable format. Speech recognition is a powerful tool of the information exchange using the acoustic signal. Speech recognition is a technology that makes a computer able to capture the words spoken by a human with a help of microphone. These words are later on recognized by speech recognizer, and in the end, system outputs the recognized words which can also serve as input to the further systems to accomplish several task. Speech recognition is basically the science of talking with the computer, and having it correctly recognized.
- **Human Hearing system** : The main function of hearing system is to get information about the outside, which is carried by pressure variations in the air, that is, sound wave. Sound waves are generated by the movement or vibration of an object, that is, sound source. As the vibrating object moves out and in, the nearby air molecules create a slight increase and decrease in pressure, respectively. From the pressure variations, we perceive what the sound source is and where it comes from. We perceive a sound wave, which is a continual time series signal, by the ears. A point of a sound source and the two ear entrances has directional characteristics from the shapes of the head and the pinna. The pinna significantly modify the incoming sound, particularly at high frequencies, and this is important in our ability for sound localization. After a sound wave arrives nearby, it passes through the peripheral auditory system, the outer ear, middle ear, and inner ear.



- **Speech Recognition System** : Speech recognition software can analyze the sounds you make by filtering what you say, digitizing it to a format it can “read”, and then analyzing it for meaning. Then, based on algorithms and previous input, it can make a highly accurate educated guess as to what you are saying.

Google-Speech-API – The Speech-to-Text API enables developers to convert audio to text in over 120 languages ,by applying powerful neural network models in an easy to use API.

## Chapter -3 Scope of the Project

### 3.1 Scope of the Project

- Interactive Voice Response (IVR) system make it more convenient in interaction with the user and computer system and hence help in easy accomplishment of several tasks.
- The IVR system serves as a bridge between people and computer systems as users if give command to system through their voice and this makes such system applicable in vast areas.
- The current system is being built for the desktop computers.
- In future the project work can be further enhanced and has huge scope and potential for future implementations in several areas.

#### 3.1.1 Deliverables :

1. Desktop application
2. AI Speech system Input data
3. Test cases Report
4. UML diagram's
5. Planning Report
6. Final Report
7. Gantt chart

#### 3.1.2 Justification for the project :

The project was decided to develop considering the issues of the components of the Speech system. The project was developed for all people who need their virtual assistant for their help. The admin had to manage response of the system on user basis to gie reply to the person by performing given task. Considering all those issues, system was intended to solve these problems.

#### 3.1.3 Constraints :

Action of the application is depend on speed of internet. As for the developer Constraint, the alumini information was not available for security reasons.

#### 3.1.4 Assumptions :

All the data entered will be correct and up to date. Recognition of sound depend on the type of data user want to get. And it is assumed that user have computer system with active internet connection.

### 3.2 Feasibility Study

#### 3.2.1 Technical Feasibility

ASR have been utilized under several platforms and several development approaches have been developed. Development of new artificial intelligence and pattern matching models have made it more simpler for implementation of ASR embedded with interactive system. Similarly today's powerful computing processors and easy data collection software makes it more technically feasible.

**From this it's clear that the project is technically feasible.**

#### 3.2.2 Resources and Time Feasibility

Resources that are required for project includes:

1. Laptop
2. Python installed

**From this it's clear that the project has required resource feasibility.**

#### 3.2.3 Economic Feasibility

The project is economically feasible to begin with as no expensive hardware and software components is required. Similarly all the tools and techniques to be used are open source and are easily available free of cost. Data collection is done among us and other individuals which is economically feasible.

**From this it's clear that the project is economically feasible.**

#### 3.2.4 Social Feasibility:

The aspect of study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system efficiently. Project uses freely available development tools, and provide the system as an open source system. Only the maintenance cost will be charged as per the organization.

**From this it's clear that the project is socially feasible.**

#### 3.2.5 Schedule Feasibility

To develop the project a proper time line has been projected to complete relevant portion of the project in scheduled time period. Most of the Necessary resources are searched on the web and are available to begin research in time. Also all the related software packages are easily available which makes it more feasible

### **3.3. Requirement Specification**

The purpose is developing Speech recognition and AI System is Speech probably is the most efficient and natural way to communicate with each other. Thus, being the best way of communication, it could also be a useful interface to communicate with machines and systems like IVR system. The Interactive Voice Response (IVR) system along with the speech recognition technology can play efficient role in providing easy and efficient customer/user service. it can increase the user satisfaction and offer new services. Voice command based applications will make life easier due to the fact that people will get easy and fast access to information. Therefore the popularity of automatic speech recognition system has been greatly increased. The work of speech recognition further helps in establishing an easy way communication between interactive response system and users/ customers i.e. as a part of post processing of the speech recognizing process we can accomplish some computational task with such a system making voice input as a trigger to do some task within the system.

#### **3.3.1 Functionality**

- User:
  1. To start system using “Alexa command”
  2. To provide voice command.
- System:
  1. To give the response to users command.

#### **3.3.2 Platform**

System can be used from any computer system which have installed python.

#### **3.3.3 Scheduling**

The schedule by which project is developed in mentioned in chapter 4.

#### **3.3.4 Technical Process**

Development Language- Python

Packages used to develop system-

1. speech\_recognition
2. pyttsx3
3. pywhatkit
4. webbrowser
5. datetime
6. wikipedia
7. pyjokes

## Chapter -4 Methodology

### 4.1 Gantt Chart

Task	March				April				May				June			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Searching for the Problem area and finalizing problem statement																
Collected Overall information of the Project and literature survey																
Problem Definition, Proposed Methodology and Identifying Resources																
Preparing final Action Plan, Gantt Chart and Developing Data Flow Diagrams																
Developing Use- Case and Activity Diagram																
Developing Class Diagram and Installation of virtual environment and software packages																
Developing Code																
Checking Results with Sample input																
Result Analysis and conclusion																
Unit and Integration Testing																
System and Acceptance Testing																
Preparing Report																
Conclusion, Limitations and Future Enhancements																

Figure 4.1 – Gantt Chart for Coding and Testing

#### 4.2 Actual Procedure Followed

Sr. No.	Details of activity	Planned Start date	Planned Finish date	Name of responsible Team members
1.	Searching for the Problem area	Week 01	Week 01	1.Aishwarya Patankar 2.Rutuja Nikam
2.	Finalize the problem statement	Week 01	Week 02	1.Sakshi Patil 2.Aishwarya Patankar
3.	Collected Overall information of the Project	Week 01	Week 02	1.Sakshi Patil 2.Shreya Thombare
4.	Literature Survey	Week 02	Week 02	1.Shreya Thombare 2.Rutuja Nikam
5.	Problem Definition and Proposed Methodology	Week 02	Week 03	1.Sakshi Patil 2.Shreya Thombare
6.	Identifying Resources	Week 03	Week 03	1.Rutuja Nikam 2.Sakshi Patil
7.	Preparing final Action Plan	Week 03	Week 04	1.Aishwarya Patankar 2.Shreya Thombare
8.	Preparing Gantt Chart	Week 04	Week 04	1.Sakshi Patil 2.Shreya Thombare
9.	Developing Data Flow Diagrams	Week 04	Week 04	1. Nikam Rutuja 2.Sakshi Patil
10.	Developing Use- Case Diagram	Week 05	Week 05	1.Rutuja Nikam 2.Sakshi Patil
11.	Developing Activity Diagram	Week 05	Week 05	1.Aishwarya Patankar 2.Shreya Thombare

<b>12.</b>	Developing Class Diagram	Week 06	Week 06	1.Rutuja Nikam 2.Sakshi Patil
<b>13</b>	Installation of virtual environment	Week 06	Week 06	1.Aishwarya Patankar 2.Shreya Thombare
<b>14</b>	Installation of software packages	Week 06	Week 07	1.Rutuja Nikam 2.Sakshi Patil
<b>15</b>	Developing Code	Week 07	Week 10	1.Aishwarya Patankar 2.Shreya Thombare 3..Rutuja Nikam 4.Sakshi Patil
<b>16</b>	Checking Results with Sample input	Week 08	Week 10	1.Shreya Thombare 2.Aishwarya Patankar
<b>17</b>	Result Analysis	Week 09	Week 10	1.Sakshi Patil 2.Rutuja Nikam
<b>18</b>	Conclusion	Week 10	Week 11	1.Shreya Thombare 2.Aishwarya Patankar
<b>19</b>	Unit testing	Week 11	Week 11	1.Rutuja Nikam 2.Sakshi Patil
<b>20</b>	Integration Testing	Week 11	Wee11	1.Shreya Thombare 2.Aishwarya Patankar
<b>21</b>	System Testing	Week 12	Week 12	1.Rutuja Nikam 2.Sakshi Patil
<b>22</b>	Acceptance Testing	Week 13	Week 13	1.Aishwarya Patankar 2.Shreya Thombare
<b>23.</b>	Making Final Report	Week 14	Week 14	1.Aishwarya Patankar 2.Shreya Thombare 3..Rutuja Nikam

				4.Sakshi Patil
24.	Finalizing Report	Week 15	Week 16	1.Aishwarya Patankar 2.Shreya Thombare
25.	Conclusion	Week 15	Week 15	1.Sakshi Patil 2.Rutuja Nikam
26.	Limitations and Future Enhancements	Week 16	Week 16	1.Aishwarya Patankar 2.Shreya Thombare 3..Rutuja Nikam 4.Sakshi Patil

**Table 4.2 – Action Procedure Followed**



## Chapter -5 Details of designs , working and processes

### 5.1 UML's

#### 5.1.1 Data Flow Diagram

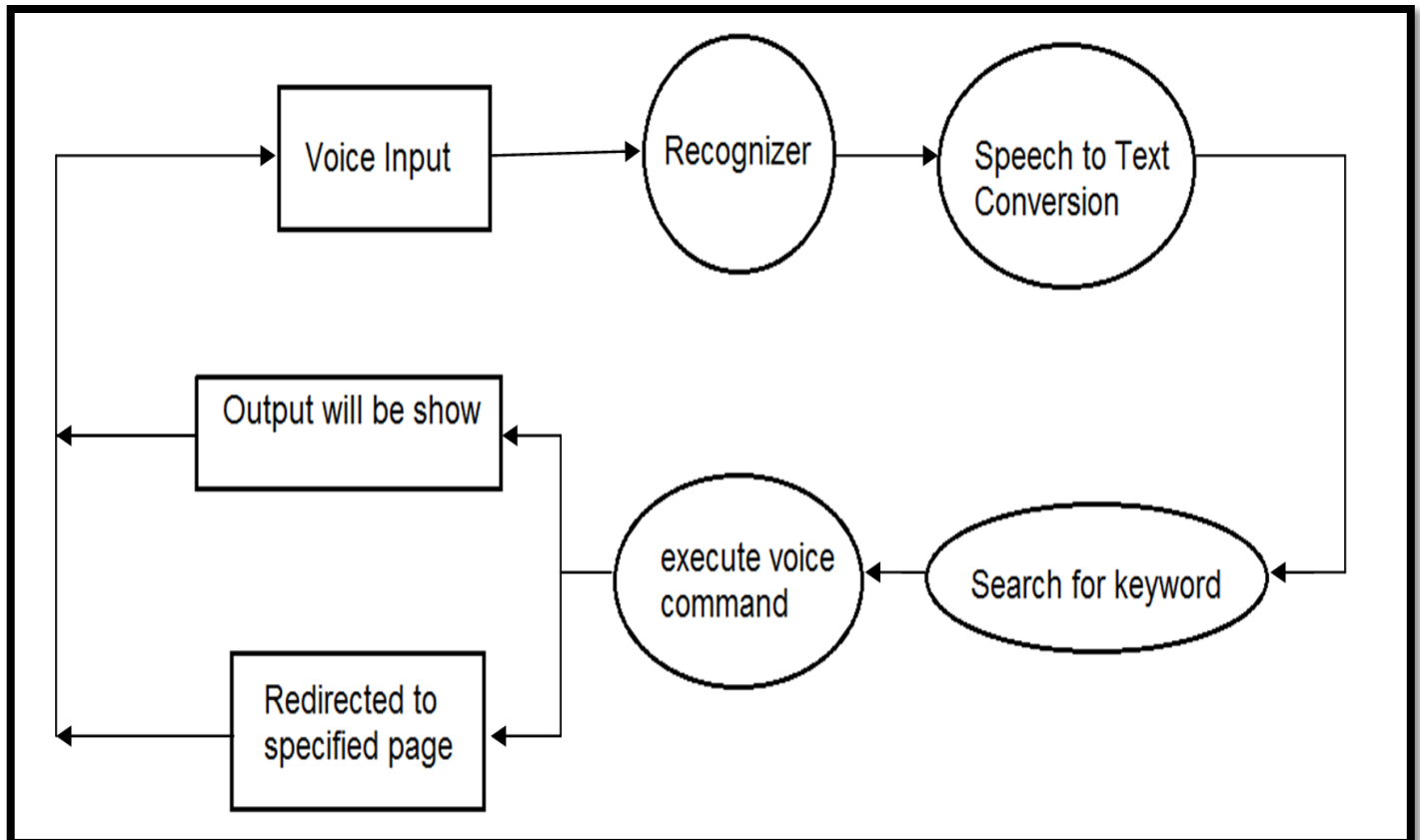


Figure 5.1.1 Data flow Diagram

### 5.1.2 Use Case Diagram

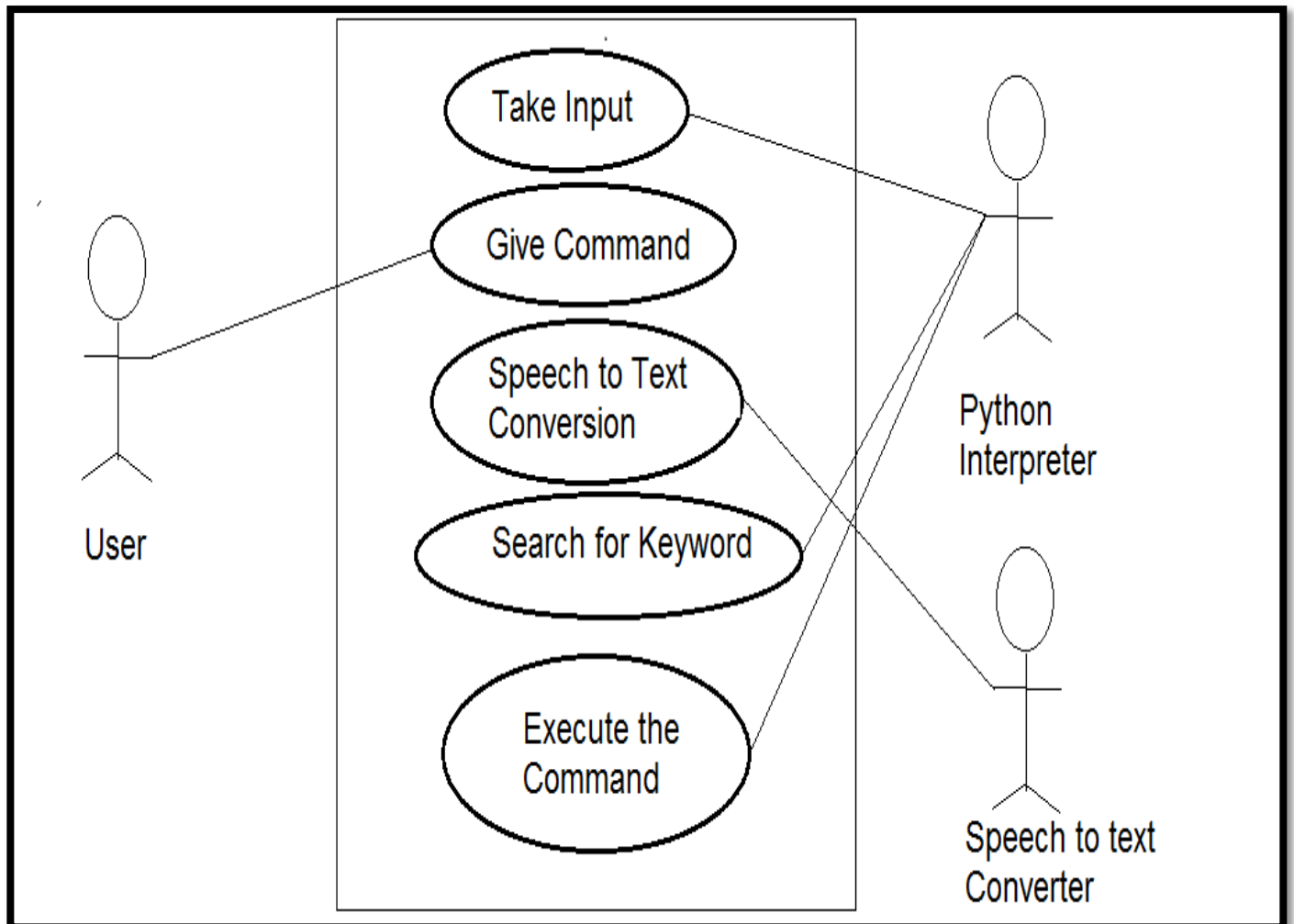


Figure 5.1.2 Use Case Diagram

### 5.1.3 Activity Diagram

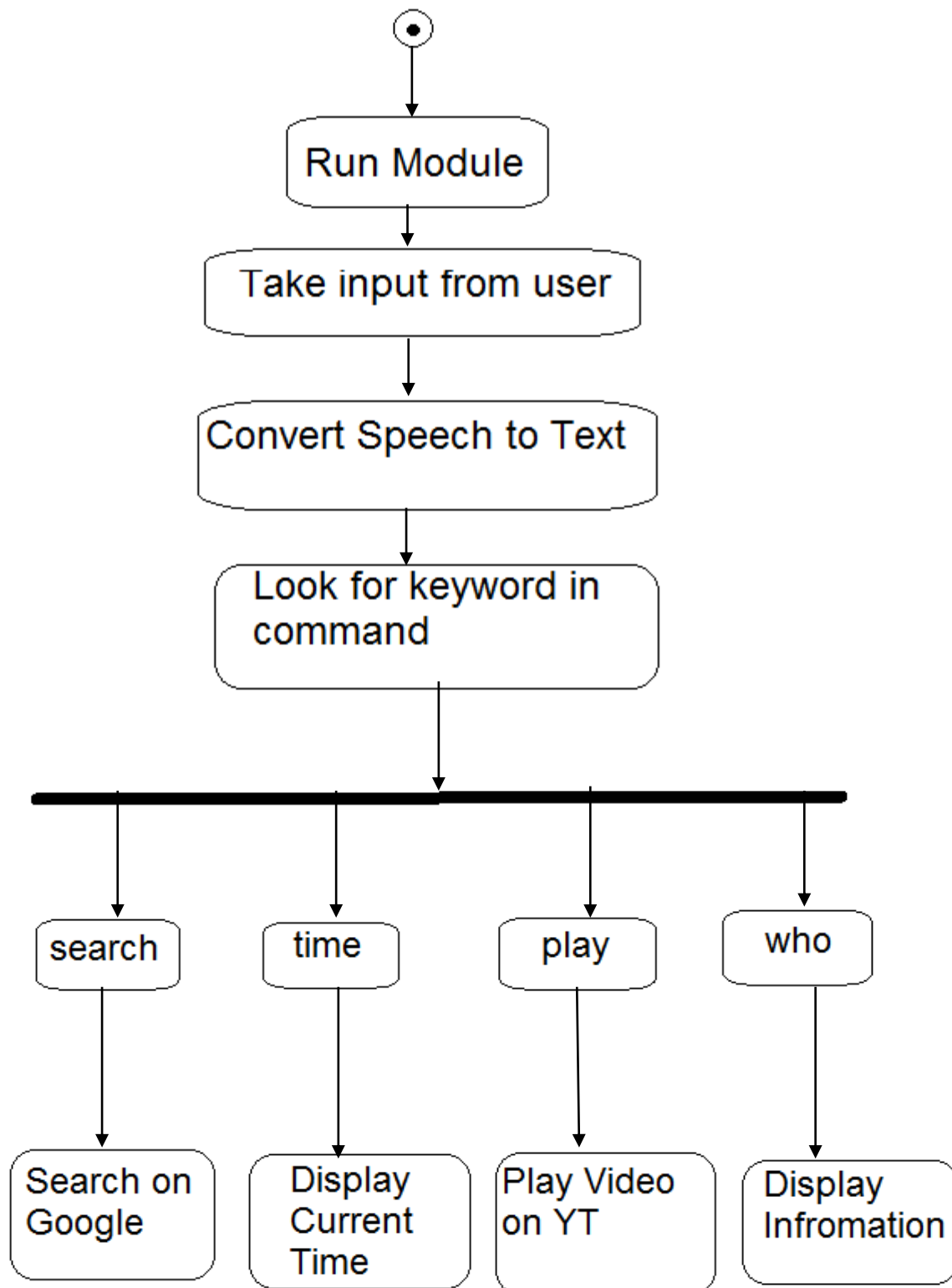


Figure 5.1.3 Activity Diagram

## 5.2 Code

### **Assistant.py**

```
from __future__ import print_function
import warnings
import pyttsx3
import speech_recognition as sr
from gtts import gTTS
import playsound
import os
import datetime
import calendar
import random
import wikipedia
import webbrowser
import ctypes
import subprocess
import pyjokes
import pywhatkit
import smtplib
import requests
import json
import time
import os.path

from time import sleep

#warnings.filterwarnings("ignore")

engine = pyttsx3.init()
voices = engine.getProperty("voices")
engine.setProperty("voice", voices[1].id)

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

def rec_audio():
    recog = sr.Recognizer()

    with sr.Microphone() as source:
        print("Listening...")
        audio = recog.listen(source)
        data = " "
    try:
        data = recog.recognize_google(audio)
        print("You said: " + data)
```

```
except sr.UnknownValueError:
    print("Assistant could not understand the audio")
except sr.RequestError as ex:
    print("Request Error from Google Speech Recognition" + ex)
return data

def response(text):
    print(text)
    tts = gTTS(text=text, lang="en")
    audio = "Audio.mp3"
    tts.save(audio)
    playsound.playsound(audio)
    os.remove(audio)

def call(text):
    action_call = "assistant"
    text = text.lower()
    if action_call in text:
        return True
    return False

def today_date():
    now = datetime.datetime.now()
    date_now = datetime.datetime.today()
    week_now = calendar.day_name[date_now.weekday()]
    month_now = now.month
    day_now = now.day
    months = [
        "January", "February", "March", "April", "May", "June", "July", "August", "September",
        "October", "November", "December",
    ]

    ordinals =
    ["1st", "2nd", "3rd", "4th", "5th", "6th", "7th", "8th", "9th", "10th", "11th", "12th", "13th", "14th",
    "15th", "16th", "17th", "18th", "19th", "20th", "22nd", "23rd", "24th", "25th", "26th", "27th", "28th",
    "29th", "30th", "31st"]

    return "Today is " + week_now + ", " + months[month_now - 1] + " the " +
    ordinals[day_now - 1] + "."

def say_hello(text):
    greet = ["hi", "hey", "hola", "greetings", "wassup", "hello"]
    response = ["howdy", "whats good", "hello", "hey there"]
    for word in text.split():
        if word.lower() in greet:
            return random.choice(response) + "."
```

```
def wiki_person(text):
    list_wiki = text.split()
    for i in range(0, len(list_wiki)):
        if i + 3 <= len(list_wiki) - 1 and list_wiki[i].lower() == "who" and list_wiki[i + 1].lower() ==
"is":
            return list_wiki[i + 2] + " " + list_wiki[i + 3]

def note(text):
    date = datetime.datetime.now()
    file_name = str(date).replace(":", "-") + "-note.txt"
    with open(file_name, "w") as f:
        f.write(text)
    subprocess.Popen(["notepad.exe", file_name])

def google_calendar():
    creds = None
    if os.path.exists('token.pickle'):
        with open('token.pickle', 'rb') as token:
            creds = pickle.load(token)
    if not creds or not creds.valid:
        if creds and creds.expired and creds.refresh_token:
            creds.refresh(Request())
        else:
            flow = InstalledAppFlow.from_client_secrets_file(
                './../Voice Assistant/credentials.json', SCOPES)
            creds = flow.run_local_server(port=0)
        with open('token.pickle', 'wb') as token:
            pickle.dump(creds, token)
    service = build('calendar', 'v3', credentials=creds)
    return service

def calendar_events(num, service):
    talk('Hey there! Good Day. Hope you are doing fine. These are the events to do today')
    now = datetime.datetime.utcnow().isoformat() + 'Z'
    print(f'Getting the upcoming {num} events')
    events_result = service.events().list(calendarId='primary', timeMin=now,
                                         maxResults=num, singleEvents=True,
                                         orderBy='startTime').execute()
    events = events_result.get('items', [])
    if not events:
        talk('No upcoming events found.')
    for event in events:
        start = event['start'].get('dateTime', event['start'].get('date'))
        events_today = (event['summary'])
        start_time = str(start.split("T")[1].split("-")[0])
        if int(start_time.split(":")[0]) < 12:
            start_time = start_time + "am"
```

```
else:
    start_time = str(int(start_time.split(":")[0]) - 12)
    start_time = start_time + "pm"
    talk(f'{events_today} at {start_time}')

def send_email(to, content):
    server = smtplib.SMTP("smtp.gmail.com", 587)
    server.ehlo()
    server.starttls()
    server.login("email", "pass")
    server.sendmail("email", to, content)
    server.close()

while True:
    try:
        text = rec_audio()
        speak = ""
        if call(text):
            speak = speak + say_hello(text)
            if "date" in text or "day" in text or "month" in text:
                get_today = today_date()
                speak = speak + " " + get_today
                response(speak)
            elif "time" in text:
                now = datetime.datetime.now()
                meridiem = ""
                if now.hour >= 12:
                    meridiem = "p.m"
                    hour = now.hour - 12
                else:
                    meridiem = "a.m"
                    hour = now.hour

                if now.minute < 10:
                    minute = "0" + str(now.minute)
                else:
                    minute = str(now.minute)
                speak = speak + " " + "It is " + str(hour) + ":" + minute + " " + meridiem + " ."
                response(speak)

            elif 'who is' in text:
                person=text.replace('who is','')
                info=wikipedia.summary(person,2)
                speak=speak + info
                response(speak)

            elif "who are you" in text or "define yourself" in text:
```

speak = speak + ""Hello, I am an Assistant. Your Assistant. I am here to make your life easier.

    You can command me to perform various tasks such as solving mathematical questions or opening

    applications etcetera.""

    response(speak)

    elif "your name" in text:

        speak = speak + "My name is Assistant."

        response(speak)

    elif "who am I" in text:

        speak = speak + "You must probably be a human."

        response(speak)

    elif "why do you exist" in text or "why did you come" in text:

        speak = speak + "It is a secret."

        response(speak)

    elif "how are you" in text:

        speak = speak + "I am fine, Thank you!"

        speak = speak + "\nHow are you?"

        response(speak)

    elif "fine" in text or "good" in text:

        speak = speak + "It's good to know that you are fine"

        response(speak)

    elif 'joke' in text.lower():

        print(talk(pyjokes.get\_joke()))

    elif "open" in text.lower():

        if "chrome" in text.lower():

            speak = speak + "Opening Google Chrome"

            os.startfile(

                r"C:\Program Files (x86)\Google\Chrome\Application\chrome.exe"

            )

            response(speak)

        elif "excel" in text.lower():

            speak = speak + "Opening Microsoft Excel"

            os.startfile(

                r"C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Microsoft

Office"

            )

            response(speak)

        elif "vs code" in text.lower():

            speak = speak + "Opening Visual Studio Code"

            os.startfile(

                r"C:\Users\Admin\AppData\Local\Programs\Microsoft VS Code\Code.exe"

            )

            response(speak)

        elif "youtube" in text.lower():

            speak = speak + "Opening Youtube\n"

            webbrowser.open("https://youtube.com/")



```
response(speak)

elif 'play' in text:
    song=text.replace('play','')
    talk("playing"+song)
    pywhatkit.playonyt(song)

elif "google" in text.lower():
    speak = speak + "Opening Google\n"
    webbrowser.open("https://google.com/")
    response(speak)

elif 'search' in text:
    search=text.replace('search for','')
    talk("Searching"+search)
    url="https://google.com/search?q= "+search
    webbrowser.get().open(url)

elif "don't listen" in text or "stop listening" in text or "do not listen" in text:
    talk("for how many seconds do you want me to sleep")
    a = int(rec_audio())
    time.sleep(a)
    speak = speak + " seconds completed. Now you can ask me anything"
    response(speak)

elif "exit" in text or "quit" in text:
    exit()

except:
    talk("I don't know that")
```

## Chapter -6 Results and Applications

### 6.1 Testing ( Test cases )

Test Case ID	Description	Input Data	Expected Result	Actual Result	Status
TC_01	Giving input to the assistant	Who are you ?	It should prompt message "Hello I'm an assistant"	"Hello I'm an assistant"	Pass
TC_02	Giving input to the assistant	Which time is it ?	It should prompt message "It is 2:10 p.m"	"It is 2:10 p.m"	Pass
TC_03	Giving input to the assistant	Why do you exist ?	It should prompt message "It is a secret"	"It is a secret."	Pass
TC_04	Giving input to the assistant	Which day is this ?	It should prompt message "Today is Saturday, June the 19th."	"Today is Saturday, June the 19th."	Pass
TC_05	Giving input to the assistant	"Who am I ?"	It should prompt message "You must probably be a human."	"You must probably be a human."	Pass
TC_06	Giving input to the assistant	"Open chrome"	It should prompt message "Opening google chrome" and open chrome window	"Opening google chrome" and chrome window is opened	Pass
TC_07	Giving input	Who is Jeff	It should	"Jeffrey	Pass

	to the assistant	Bezos ?	prompt message "Jeffrey Preston Bezos ( BAY-zohss; né Jorgensen; born January 12, 1964) is an American business magnate, media proprietor, and investor. Bezos is the founder and CEO of the multi-national technology company Amazon."	Preston Bezos ( BAY-zohss; né Jorgensen; born January 12, 1964) is an American business magnate, media proprietor, and investor. Bezos is the founder and CEO of the multi-national technology company Amazon."	
TC_08	Giving input to the assistant	"Assistant Open vscode"	It should prompt message "Opening vscode" and visual studio code editor will open	"Opening vscode" and visual studio code editor opened	Pass
TC_09	Giving input to the assistant	Open Google	It should prompt message "Opening google" and google window will open	Google window gets opened	Pass
TC_10	Giving input to the assistant	Assistant exit	It should stop executing itself	Program execution stopped	Pass

TC_11	Giving input to the assistant	Open YouTube	It should prompt message "Opening Youtube" and YouTube window will open	YouTube window gets opened	Pass
TC_12	Giving input to the assistant	Assistant don't listen me	It should prompt message "For how many seconds you want me to sleep ?" - 5 -seconds completed. Now you can ask me anything	"For how many seconds you want me to sleep ?" - 5 -seconds completed. Now you can ask me anything	Pass

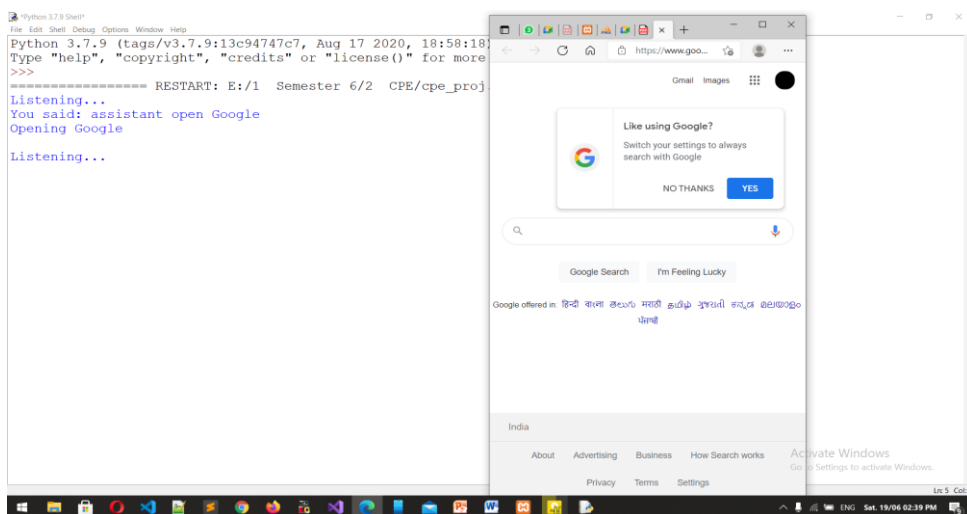
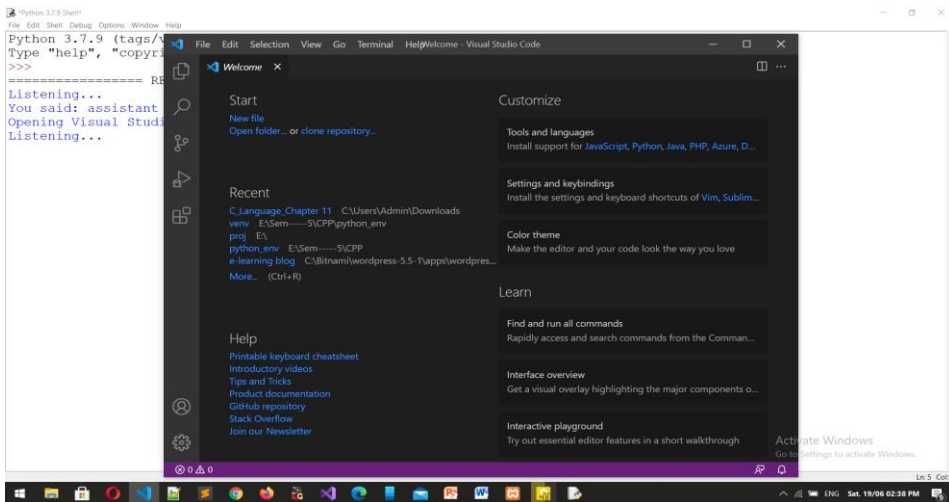
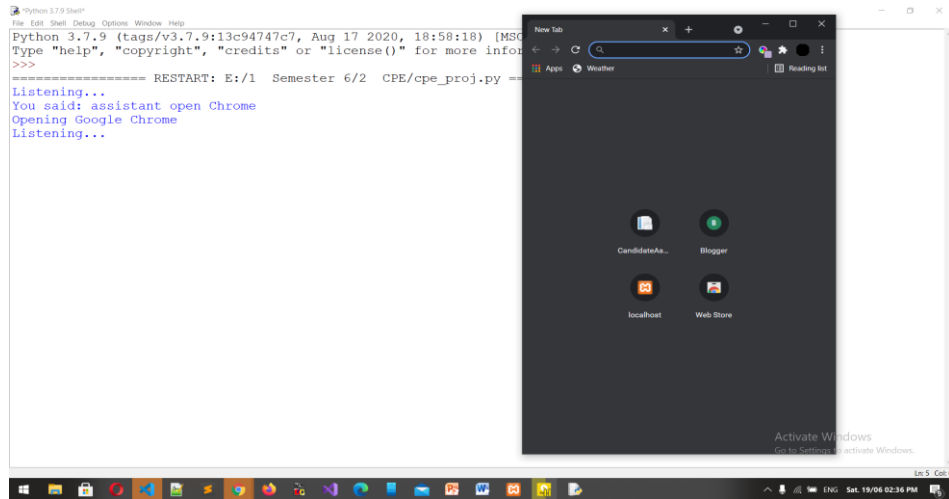
## 6.2 Snapshots

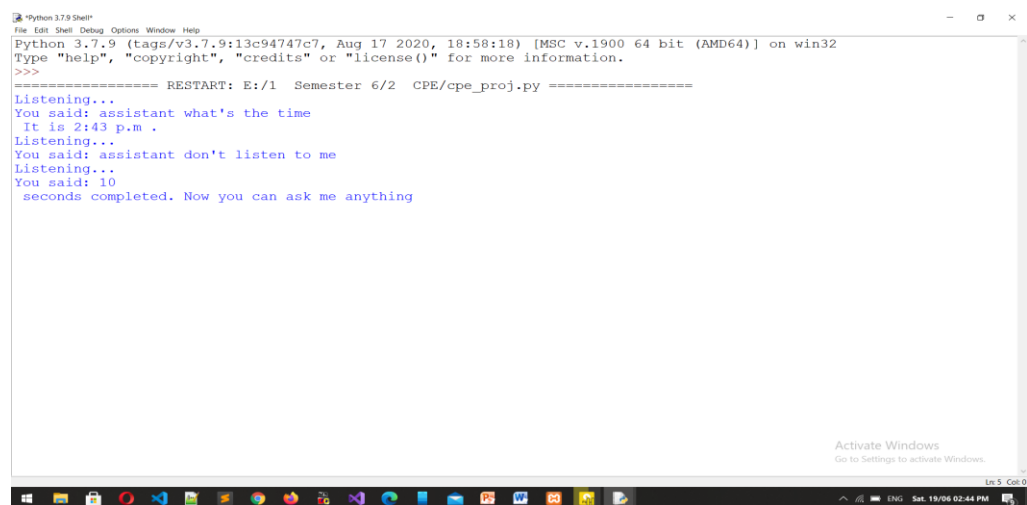
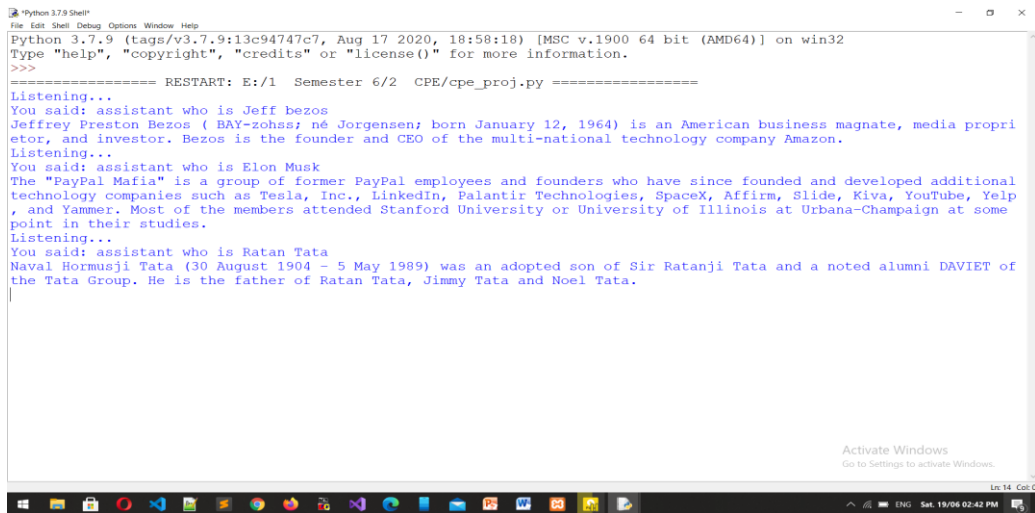
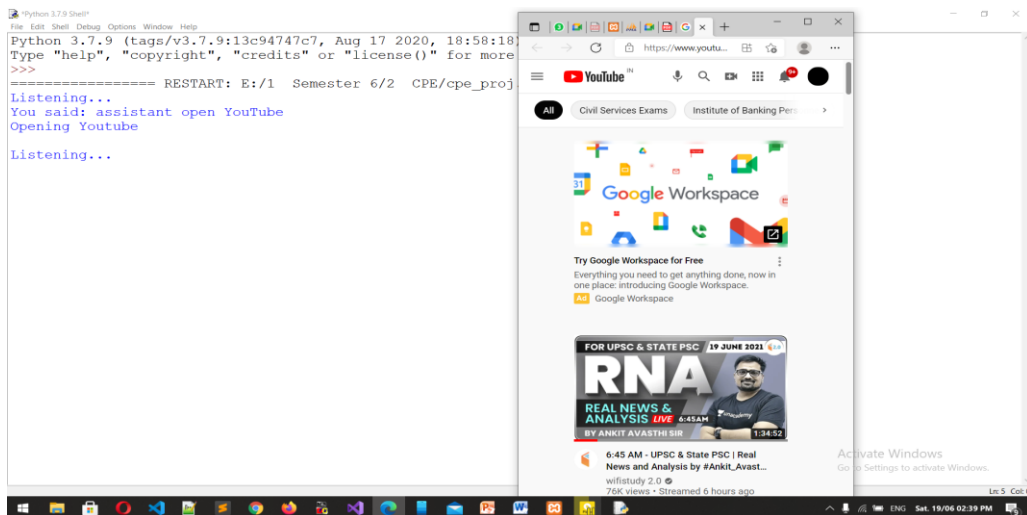
```

Python 3.7.9 Shell
File Edit Shell Debug Options Window Help
Python 3.7.9 (tags/v3.7.9:13c94747c7, Aug 17 2020, 18:58:18) [MSC v.1900 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: E:/1 Semester 6/2 CPE/cpe_proj.py =====
Listening...
You said: assistant what's the time
It is 2:33 p.m .
Listening...
You said: assistant who are you
Hello, I am an Assistant. Your Assistant. I am here to make your life easier.
You can command me to perform various tasks such as solving mathematical questions or opening
applications etcetera.
Listening...
You said: assistant why do you exist
It is a secret.
Listening...
You said: assistant which day is this
Today is Saturday, June the 19th.
Listening...
Assistant could not understand the audio
Listening...
You said: how are you
Listening...

```

## Capstone Project Execution And Report Writing (22060)





## 6.3 Applications

### 1. In-Car Systems :

Typically a manual control input, for example by means of a finger control on the steering-wheel, enables the speech recognition system and this is signalled to the driver by an audio prompt. Following the audio prompt, the system has a "listening window" during which it may accept a speech input for recognition.

### 2. Health Care :

In the health care sector, speech recognition can be implemented in front-end or back-end of the medical documentation process. Front-end speech recognition is where the provider dictates into a speech-recognition engine, the recognized words are displayed as they are spoken.

### 3. Military :

Substantial efforts have been devoted in the last decade to the test and evaluation of speech recognition in fighter aircraft. Of particular note have been the US program in speech recognition for the Advanced Fighter Technology Integration (AFTI)/F-16 aircraft (F-16 VISTA and other programs in the UK dealing with a variety of aircraft platforms.

### 4. Telephony and other domains :

ASR is now commonplace in the field of telephony and is becoming more widespread in the field of computer gaming and simulation. In telephony systems, ASR is now being predominantly used in **contact centres** by integrating it with IVR systems.

### 5. Usage in education and daily life :

For language learning, speech recognition can be useful for learning a second language. It can teach proper pronunciation, in addition to helping a person develop fluency with their speaking skills. Students who are blind or have very low vision can benefit from using the technology to convey words and then hear the computer recite them, as well as use a computer by commanding with their voice, instead of having to look at the screen and keyboard

### 6. People with disabilities :

People with disabilities can benefit from speech recognition programs. For individuals that are Deaf or Hard of Hearing, speech recognition software is used to automatically generate a closed-captioning of conversations such as discussions in conference rooms, classroom lectures or religious services.

## Chapter -7 Conclusions And future scope

### 7.1 Conclusion

Speech Recognition has become very important in today's world. With the advancements in technology and improvements in recognition algorithms, speech has become one of the primary source of input for many applications. Speech is the most efficient and natural way of communication. So, it is intuitive that speech recognition systems have found applications in various fields.

### 7.2 Future Enhancement

- The potential enhancements that can be made to the system are discussed below:

1. By increasing the training data samples using effective data collection mechanism the **domain of recognition can be increased**.
2. The system may be enhanced to make **work for online mode** by integrating it in web applications.
3. The system can be enhanced to apply on the **real time applications** using telephone. For this further research on particular domain is necessary.



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