A MINI-PROJECT REPORT

ON

"VIRTUAL DESKTOP ASSISTANT GUI"

BY

CHATURDHAN CHAUBEY (C 403)
MAHESH GAIKWAD (C 409)
VISHAL GAWALI (C 410)
ANJALI GUPTA (C 413)

Under the Guidance of
Prof. Dr. Jyoti Deshmukh

MANJARA CHARITABLE TRUST
RAJIV GANDHI INSTITUTE OF TECHNOLOGY
Juhu-Versova Link Road Versova, Andheri(W), Mumbai-53

Department of Artificial Intelligence & Data Science

University of Mumbai

MANJARA CHARITABLE TRUST

RAJIV GANDHI INSTITUTE OF TECHNOLOGY

Juhu-Versova Link Road Versova, Andheri(W), Mumbai-53

C E R T I F I C A T E

Department of Artificial Intelligence & Data Science

This is to certify that

CHATURDHAN CHAUBEY (C 403)
MAHESH GAIKWAD (C 409)
VISHAL GAWALI (C 410)
ANJALI GUPTA (C 413)

Have satisfactorily completed this project entitle
"VIRTUAL DESKTOP ASSISTANT GUI"

Towards the partial fulfilment of the

SECOND YEAR BACHELOR OF ENGINEERING
IN
ARTIFICIAL INTELLIGENCE & DATA SCIENCE

as laid by University of Mumbai.

Dr. Jyoti Deshmukh — **Guide**

Dr. Jyoti Deshmukh — **H.O.D**

Dr. Sanjay Bokade

Principal

Project Report Approval for S. E

This project report entitled "***VIRTUAL DESKTOP ASSISTANT GUI"*** by **CHATURDHAN CHAUBEY, MAHESH GAIKWAD, VISHAL GAWALI, ANJALI GUPTA** is approved for the degree of ***Second Year Bachelor of Artificial Intelligence and Data Science.***

Examiners:

1

2.

Date:
Place:

Declaration

We wish to state that the work embodied in this project titled **"VIRTUAL DESKTOP ASSISTANT GUI"** forms our own contribution to the work carried out under the guidance of "Prof. **Dr. Jyoti Deshmukh**" at the Rajiv Gandhi Institute of Technology.

I declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

CHATURDHAN CHAUBEY (C 403)

MAHESH GAIKWAD (C 409)

VISHAL GAWALI (C 410)

ANJALI GUPTA (C 413)

Abstract

Modern technology is constantly evolving, making it more challenging to understand and having an important effect on human lives in a number of ways. Life has gotten more sophisticated and intelligent on a daily basis. We are already familiar with various speech services, such as Siri and Google. Currently, our voice assistance programmed can function like automatic Chrome, start a social media website in a web browser, tell the time, and answer questions from Wikipedia, among other things.

This study explores how new technologies might be used to build an intelligent Virtual Assistant (VPA) that focuses on user-based data. It will examine instances of intelligent software which combines natural language processing that are now accessible, with various levels of support, and consider the viability of using one particular piece of software as a VPA. This uses natural language processing to enhance social communication by storing (and analysing) data in the context of the user. The concept of virtual personal assistants could soon be a reality, according to some new technology. A basic programme with natural language processing algorithms in the form of a VPA, with basic natural language processing and the ability to function without the need for other types of human input (or programming), has been shown to be feasible via user testing as well as experiments in this platform. An intelligent digital assistant (IPA) or intelligent digital assistant (IVA) might be a software driver that will do out applications and provide resources under supported user instructions as well. The term "chatbot" can also be utilised to address either general or particular artificially intelligent machines reached through online chat. Online chat services can occasionally only be used for fun. Some virtual assistants are equipped to understand spoken language and answer with synthetic voices. Users can use spoken commands to manage many basic duties like electronic mail, to-do lists, or deadlines, along with ask their assistants queries, control electrical devices, and play media.

Keywords*: Virtual Personal Assistant, Natural Human Language, Speech to text, Artificial Intelligence, Natural Language Processing, Machine Learning.*

CONTEST:

LIST OF FIGURES

LIST OF ALGORITHMS

CHAPTER 1

INTRODUCTION

1.1 Introduction:

People no longer rely on other people for assistance or services. Humans no longer need to ask for assistance from others since they can rely on a far more effective and dependable equipment to take care of their daily needs as a result of the world becoming increasingly digital. The computers, laptops, etc., became a staple of our daily lives and could perform both simple and complex programmes to cut down on monotonous labour and manpower waste. To solve the necessary difficulties quickly, virtual personal assistants have practically become a basic requirement in all electronic gadgets. VPA is more than simply a bot; it may facilitate the user's life in a number of ways. One of the VPA's more recent integrations is speech recognition. However, despite being only somewhat effective, it is not particularly helpful and is not used by the user because of its high error rate. Though the error rate of the next VPAs is only about 5%, it is still not sufficient to the point where it is a routine aspect of the user's life. Therefore, the project's goal is to create a voice-activated assistant (VPA) with a very low error rate. The In our rapidly expanding personal and professional lives, the employment of virtual assistants (VA) offers the user a quicker alternative to the same task completed in a laborious manner.

A virtual assistant is an intelligent programme that can carry out tasks or offer services for a person in response to requests or questions that arise in daily life. Some VAs use synthesised voices to grasp human thought and reply to it. Users can ask their VA system to respond to a query, regulate their household appliances, and take care of other necessary tasks via voice commands or written requests.

We are developing a virtual desktop assistant that can carry out several operations on a user's PC and has a graphical user interface (GUI). Using natural language processing (NLP) and speech recognition technology, the virtual assistant will be created to converse with users. Python programming language and a number of libraries, including Tkinter, Pyttsx3, PyAudio, and Speech Recognition, will be used to construct the project.

1.2 Organization of report:

Ch. 1: One of the main applications of the hidden Markov model concept is speech recognition. Given acoustic signals, speech recognition aims to recognise a series of words uttered by a speaker.

Ch.2: Literature Review:

Literature Review is a systematic and comprehensive analysis of books, scholarly articles, and other sources relevant to a specific topic providing a base of knowledge on a topic

Ch.3 Proposed System:

This may be whatever like getting movies, opening internal files , and so on. Tests are made via code with the help of books and online sources, with the aim to find best results and a more expertise of Voice Assistant.

Ch.4 Results & Discussion:

In this 'Virtual Desktop Virtual Voice Assistant with GUI using Python' we discussed about the implementation and design of Virtual Voice Assistance

CHAPTER 2

LITERATURE REVIEW

2.1 Survey existing system

Working on the Virtual Desktop Assistant was Vivek Vishal Singh. Each smart assistant company developer employs particular strategies and tactics in a particular order to enhance the system. One facilitator can appropriately integrate the sentences, another can add freely without more guidance or instructions, and others can respond but want to. Of course, no single person can perform all tasks in a uniform manner. The developer has focused the most on the collection of characteristics that the assistant solely depends on. Since all systems are built on machine learning techniques and consume enormous amounts of data collected from diverse sources before being taught, the source plays a crucial part in the systems' operation. The nature of the assistant can be the outcome as a result of the quantity of information from many sources. [1]

Working on the Virtual Desktop Assistant R Belvin, R. Burns, and C. Hein stated that most common speech recognition is “SIRI” which allows the end client to offer voice flexibility to end client and additionally responds to the client’s voice charges. With the support of the client with voice or content tools to be processed, it has features of intelligent speech recognition and returns the yield in various systems such as the operation to be done or the item to the end client [2]

Working on the Virtual Desktop Assistant T.J. Hazen, and Hetherington stated that virtual assistant, Cortana, is named after the Microsoft Artificial Intelligence (AI) device in the Halo video game. In this game, this fictional AI character provides resources such as back stories to aid the gamer. According to Wikipedia, this design was based on the Egyptian queen Nefertiti [3]

Research Gap- Earlier existing systems were only recognising English language for Assistance. we are trying to come up with regional and local languages for assistance to remove the barrier of English language and with the help of GUI we will make it user friendly.

2.2 Problem statement

As more and more people are working from home, there is an increasing need for a virtual desktop assistant that can help users navigate their desktops more efficiently. While voice assistants like Siri and Alexa have become ubiquitous on mobile devices, there is currently no widely available virtual assistant that provides a graphical user interface (GUI) for desktop computers.

2.3 Objectives

1) Using semantic web data sources, user-generated content, and knowledge from knowledge databases to construct personal assistant software.
2) To respond to any queries users may have. This could be carried out in a professional setting.

CHAPTER 3

PROPOSED SYSTEM

3.1 Algorithm:

Step 1: Install the relevant modules and libraries.

Step 2: Import the modules and libraries.

Step 3: The “Assistant” function/pyttsx3.

Step 4: Display the GUI Interface.

Step 5: If user press start button then go to step 4 else go to step 9

Step 4: The Greeting function.

Step 5: The Audio input/accepting verbal commands function using Speech Recognition.

Step 6: Compare the input command with database using NLP.

Step 7: Give the result using as voice output using pyttsx3 or if action is needed perform it.

Step 8: Go to step 4.

Step 9: Terminate / End.

3.2 System Architecture:

Fig.3.1 shows The basic architecture of speech recognition system : -

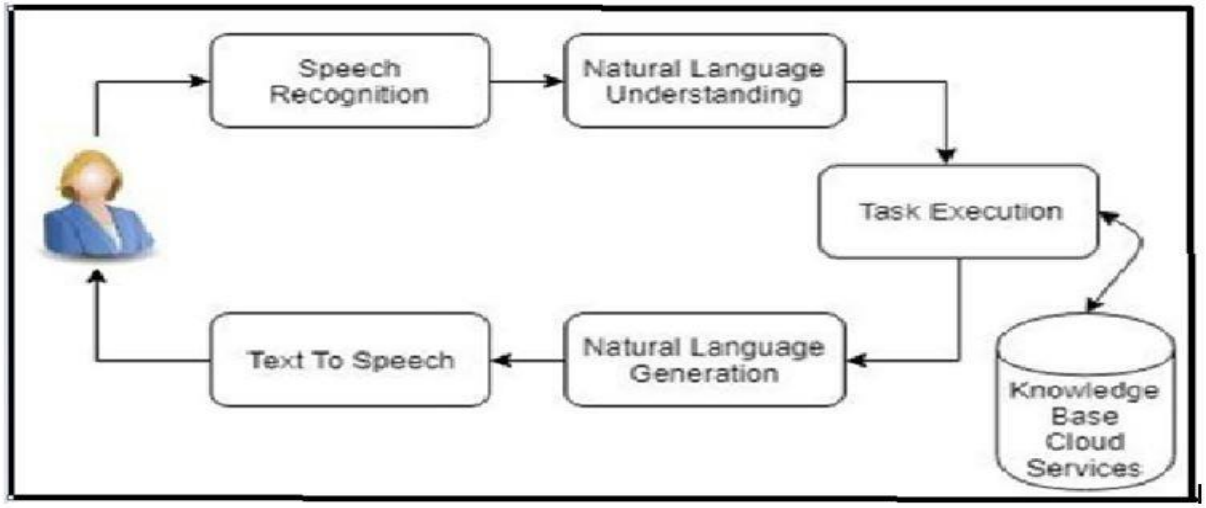

Fig.3.1 Speech Recognition Architecture

PYTTSX3: A piece of software used that converts audio to text. it doesn't understand just anything you might say.

Text Analysing: Converted text is just letters for computer. A piece of software converts text to something that is understandable for computer. The basic processing of VDA regarding voice command is shown. The user gives voice command to the microphone which converts it into an electronic signal. These signals are sent to speech recognition module which recognizes the voice and send to central processor to execute next command.

Natural Language Processing (NLP): NLP is an AI technique for interacting with intelligent systems using a natural language, like English. Processing of Natural Language is necessary when you want a robot or other intelligent system to follow your instructions, when you want a clinical expert system that uses dialogue to make decisions, etc.

Natural language processing involves these three steps:

1. Automatic Speech Recognition: To comprehend user-inputted commands
2. Artificial intelligence: Capturing all data on user interactions, behaviour, and relationships.
3. Inter Process Communication: To obtain crucial data from other software programmes.

Fig.3.2 shows The basic block diagram of speech recognition system : -

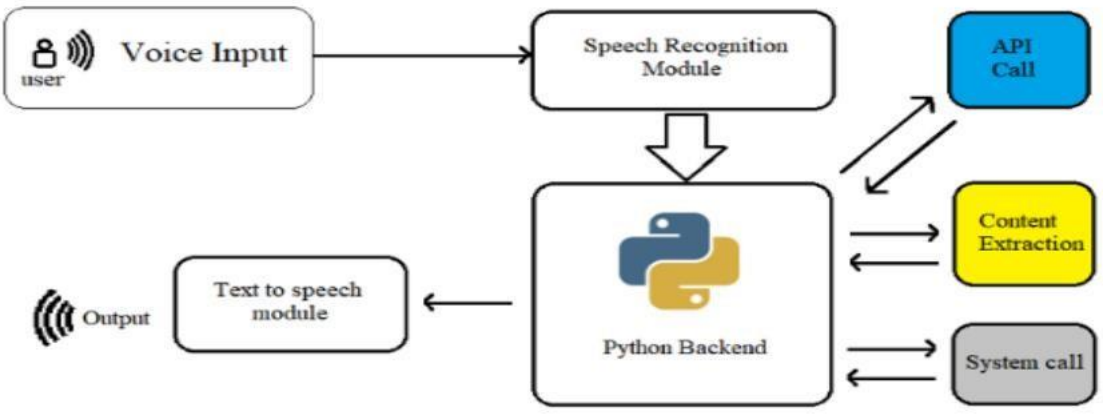

Fig.3.2:Block Diagram of System

This has been one of the most beneficial improvements in era. before (AI) we have been the ones who have been upgrading technology to do a assignment however now the gadget is itself able to counter new responsibilities and clear up it without need to involve the people to conform it.

3.3 Details of hardware and software

3.3.1 Hardware requirements

1) Processor - Pentium III 630MHz
2) RAM - 128 MB
3) Hard disk - 20 GB
4) Monitor - 15” colour monitor

3.3. 2 Software requirements

1) Operating System -Windows 98, Windows XP, Windows7, Linux
2) Language- Python, HTML
3) Database- MySQL, MySQL Connector
4) Browser- Any of Mozilla.

3.4 Steps for Natural Processing language:

Fig.3.3 shows the basic architecture of speech recognition system: -

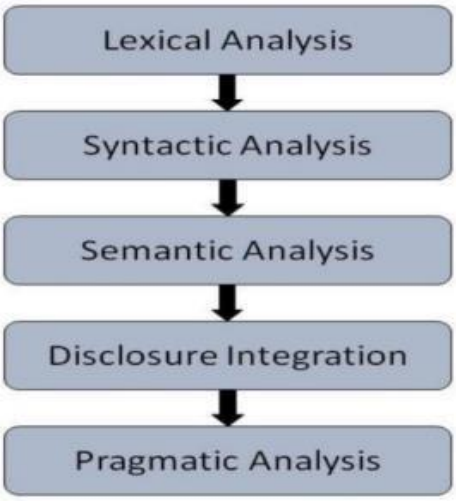

Fig 3.3 Natural language Processing

1. Lexical analysis: The process of transforming a string of characters (such as those found in a computer programme or web page) into a string of lexical tokens (strings having an assigned and then recognised meaning) is known as laxing or tokenization.

2. Syntactic analysis: The third stage of NLP is parsing, often known as syntax analysis. The goal of this stage is to determine the text's precise meaning, or dictionary meaning.

3. Semantic analysis is a tool that enables computers to comprehend a group of words in the same manner that people do. Understanding what the words actually mean and to what they relate depends on the context and the subject matter, which can occasionally be unclear.

4. Data confidentiality is protected through the disclosure analysis procedure. It entails restricting the quantity of specific information that is distributed and/or masking data using noise addition, data swapping, the creation of simulated or synthetic data, etc.

5. Analysis of pragmatics: It deals with outside knowledge, or information that is not contained in the documents or questions. By reinterpreting a pragmatics analysis that focuses on what was described by what it actually meant, the numerous facets of language that demand real-world knowledge are derived.

3.5 Methodology

Fig.3.4 shows the Imported module for virtual desktop assistance:

```
import speech_recognition as sr
import os
import sys
import re
import webbrowser
import smtplib
import requests
```

Fig:3.4 Imported Module

The voice module used this system is Google's API i.e., "import speech recognition as sr". This module is used to recognize the sound waves given by the user as input. This is a loose API this is supplied and supported by Google.

3.5.1 TTS & STT:

The input voice is first converted to text by using speech recognition module. The text is then processed to result of the voice by the user. The most time ingesting a number of the STT because the gadget first has to concentrate to the user and unique users have distinctive, a few are smooth to apprehend whilst a few are not without difficulty audible.

once the speech is converted to text executing commands and giving the consequences lower back to the user isn't always a time-eating.

3.5.2 PYTTSX3:

To convert text into speech in python the pyttsx3 module is used. This is an offline module. The module provides run and wait functionality.it is used to allow how much time the system will wait for another input of user. this is a module available in the python community for free that can be installed using the pip command.

3.5.3 DATETIME:

The Date-Time module is imported to support the date and time. for example, the consumer wants to recognize the modern- day date and time or the person desires to time table a venture at a sure time. In brief this module helps instructions to manipulate date and time and carry out operations according to it handiest. This is a critical module, mainly in tasks in which we need to keep a track of time.

3.5.4 WEBBROWSER:

Web-browser module is imported to display information from web to users. If the user wants to open browser and gives input as ‘Open Google’. Then input is processed using this module and the Google browser is opened. The browser which is set in code will open.

3.4.5 WIKIPEDIA:

Wikipedia is an online library in python which it possible for the virtual assistant to process the queries on Wikipedia and display it to the users. this library needs an internet connection. the number of lines that the user wants to get as a result can be set manually.

3.4.6 OS MODULE:

OS Module provides operating system dependent functionalities. if we want to perform operations of OS like data reading, data writing, or data manipulate paths then these types of functions are available in an OS module. When these operations raise an error like “OS Error” in case of any error like invalid names, paths, or arguments which may be incorrect or correct but just not accepted by the operating system.

3.4.7 SMTPLIB:

SMTPLIB is python's standard library which deals with emails. The SMTPLIB library sends mail using 'SMTP'. This is done using steps that are - initialize, send mail (), quit. When the optional parameters host and port are provided then connect method is called with these arguments during initialization.

3.4.8 DESIGN

The design consists of the following:

1) Taking voice as a input from user.
2) Conversion of the speech into text by the system.

3.5.9 TKINTER

1. It is a standard Python library used for creating GUI applications.
2. Python when combined with Tkinter Provides a fast and easy way to create GUI applications.
3. Tkinter provides a powerful object-oriented interface to the Tk GUI toolkit
4. Tkinter provides various controls, such as buttons, labels and text boxes used in a GUI application.
5. These controls are commonly called widgets.
6. All Tkinter widgets have access to specific geometry management methods, which have the purpose of Organizing widgets throughout the parent widget area.

CHAPTER 4

IMPLEMENTATION

4.1 Results:

Fig.4.1 shows The Source code for virtual Desktop Assistance:

```
# GUI CODE

root = Tk()

root.title("Virtual Desktop Assistant")

root.geometry("525x375")

root.iconbitmap(("D:\C406 Project\\GUI5.ico"))

img = ImageTk.PhotoImage(Image.open('D:\\C406 Project\\VDA7.JPEG'))

customtkinter.set_appearance_mode("dark")

imagepanel = Label(root, image=img)
imagepanel.pack(side='bottom', fill='both')

root.configure(bg="#00FFFF")

root.resizable(False, False)

F1 = Frame(root, bg="grey", borderwidth=8, relief=SUNKEN)
F1.pack(side=BOTTOM, fill="x")

F2 = Frame(root, borderwidth=8, bg="grey", relief=SUNKEN)
F2.pack(side=BOTTOM, fill="x")

l = Button(F1, text="Start Now",command=vda)
l.pack(pady=15)


l = Button(F1, text="Stop", command=sys.exit)
l.pack(pady=15)

root.mainloop()
```

Fig .4.1 Implemented Code

In this code we are trying to execute speech to text command, we have implemented exception handling by putting ‘try’ and ‘except’ command. We had installed Speech recognition library to take the voice input from the user which can be useful for speech recognition. And for creating a GUI we can use a python Tkinter module.

4.2 Output:

Fig.4.2 shows the Result of implemented code:

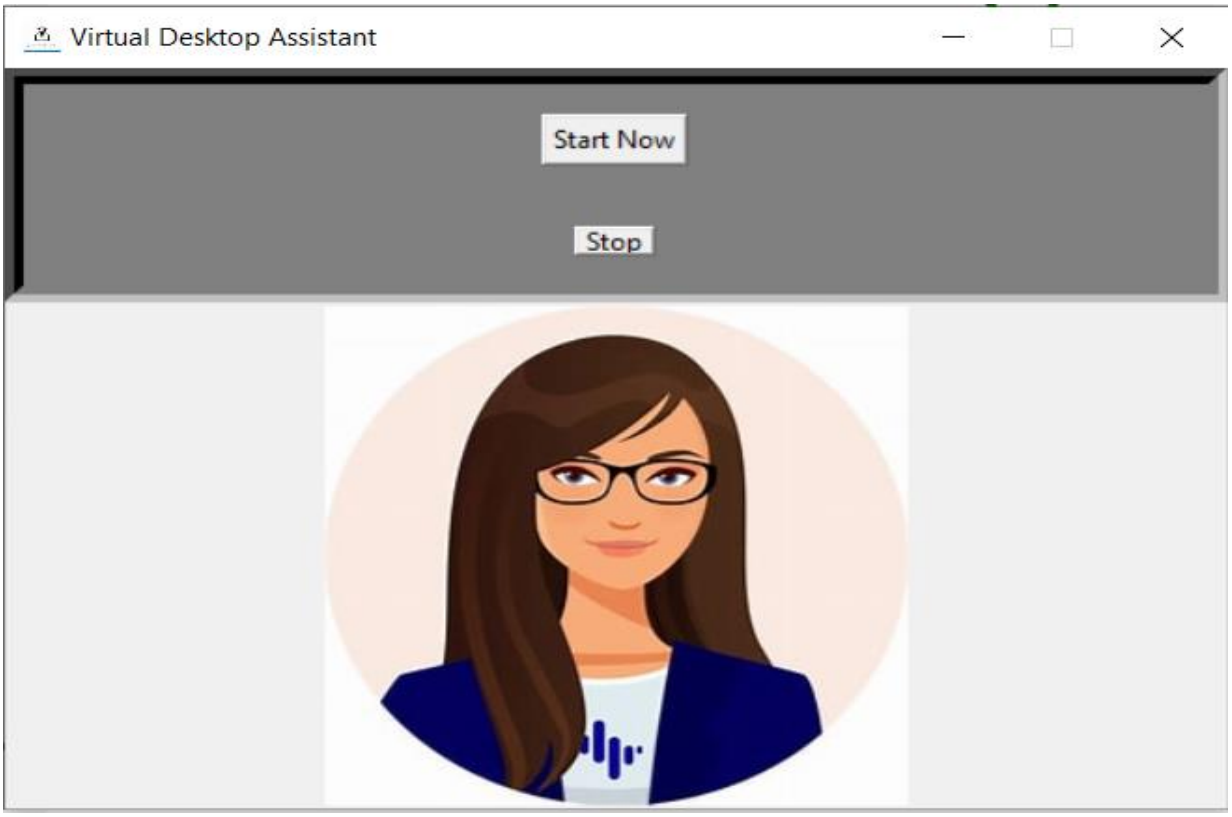

Fig .4.2 Output

We will give the output with GUI in speech as well as in text form as user can understand in any form of the format, he/she wants.

CHAPTER 5

Conclusion:

We spoke about the design and implementation of a virtual voice assistant with a GUI in this "Personal Desktop Virtual Voice Assistant with GUI Using Python" article. Py-Charm is an open-source programme used by this module. Due to the nature of the assignment, it is flexible and simple to add new features without affecting current machine functionality. In addition to responding to the user based on the query posed or the words uttered by the user, it is not hand work on human orders and establishes duties and operations. Greetings are sent so that the recipient can communicate with the voice assistant and feel more at ease. The utility need to also dispose of any kind of useless manual paintings required inside the consumer. the virtual desktop assistant with GUI is a useful and exciting project that will make life easier for computer users. The use of Python programming language and various libraries such as Tkinter, pyttsx3, speech recognition, and pyaudio make it possible to create a powerful virtual assistant that can perform various tasks. With the functionality and features of the virtual assistant, users will be able to interact with their computers in a more efficient and enjoyable way.

Future scope:

The virtual assistants that are perhaps already available are quick and responsive, but we still have a long way to go. The aides that are accessible today are nevertheless unreliable in urgent situations. The future of these assistants may see the integration of artificial intelligence, which includes machine learning, neural networks, and the internet of things, with virtual assistants. We can reach new heights thanks to this technology. The capabilities of digital assistants go much beyond what we have accomplished so far. Although Jarvis is a fictional digital assistant created by Iron Guy, most of us have seen it, and it has changed our expectations for what we can accomplish with their help.

REFERENCES:

[1] Dr. Vivek Vishal Singh, “Virtual Assistant using Python with GUI”, IEEE Transactions on Speech Recognition and Audio Processing, vol. 11, no. 2, pp. 49–78,2022

[2] R Belvin, R. Burns, and C. Hein, “Development of the HRL route navigation dialogue system,” in Proceedings of ACL-HLT, vol. 9, no. 5, pp. 57–87, 2001

[3] T.J. Hazen, and Hetherington, “JUPITER: A Telephone Based Conversational Interface for Weather Information,” IEEE Transactions on Speech and Audio Processing, vol. 8, no. 1, pp. 85–96, 2000.

ACKNOWLEDGEMENT

We wish to express our sincere gratitude to **Dr. Sanjay U. Bokade, Principal** and **Dr. Jyoti Deshmukh,** Head of Department of Artificial Intelligence & Data Science, Rajiv Gandhi Institute of Technology for providing us an opportunity to do our project work on **"VIRTUAL DESKTOP ASSISTANT GUI"**.

This project bears on imprint of many people. We sincerely thank our project guide **Prof. Dr. Jyoti Deshmukh** for her guidance and encouragement in carrying out this synopsis work.

Finally, we would like to thank our colleagues and friends who helped us in completing project work successfully.

1. **CHATURDHAN CHAUBEY (C 403)**
2. **MAHESH GAIKWAD (C 409)**
3. **VISHAL GAWALI (C 410)**
4. **ANJALI GUPTA (C 413)**