Kamala Education Society's

Pratibha College of Commerce & Computer Studies, Chinch wad, Pune-19

A Project Report On : "Alpha assistant"

Developed by,

4934: Mr. Samarth Math

4896: Mr. Rahul Jain

SYBBA (CA)

Under

Savitribai Phule Pune University

(2020-2021)

Certificate

This is to certify that **"Mr. Samarth math and Mr. Rahul Jain" has**/ have satisfactorily completed the **Python Project titled "Alpha Assistant" for S. Y. BCA** under the **Savitribai Phule Pune University** in the academic year **2020-2021.**

Pro. Snehal Varadi	**Prof. Hemalata Chavan**	**Dr. BabaSahebSangale**
Project Guide	**Head of Department**	**Principal**

Internal Examiner	**External Examiner**

ACKNOWLEDGEMENT

Any efforts to produce successful creation require the help Guidance and support of many people and their experience. We would like to express our sincere and heartfelt gratitude to all of them.

We would like to take this opportunity to thanks all the people who have directly or indirectly helped this project. We would like to thank our guide Prof. Snehal Varadi for her valuable guidance.

DATE:

INDEX:

ABSTRACT

A personal voice assistant is the software that can perform task and provide different services to the individual as per the individual's dictated commands. This is done through a synchronous process involving recognition of speech patterns and then, responding via synthetic speech. Through these assistants a user can automate tasks ranging from but not limited to mailing, tasks management and media playback, endless number of tasks can be done by this. As the technology is developing day by day people are becoming more dependent on it, one of the mostly used platform is computer. We all want to make the use of these computers more comfortable, traditional way to give a command to the computer is through keyboard but a more convenient way is to input the command through voice. Giving input through voice is not only beneficial for the normal people but also for those who are visually impaired who are not able to give the input by using a keyboard. For this purpose, there is a need of a voice assistant which can not only take command through voice but also execute the desired instructions and give output either in the form of voice or any other means.

INTRODUCTION

The usage of virtual assistants is expanding rapidly after 2017, more and more products are coming into the market. Due to advancement in the technology many different features are being added in the mobile phone and desktops. To use them with more convenient and fun way we require a means of input which is faster and reliable at the same time. In our project we use voice command to input the data into the system for that the microphone is used. After taking the input there is a requirement to understand the audio signal for this Google Speech Recognition is used.

• The project aims to develop a personal assistant for windows sytem. Alpha assistant draws its inspiration from virtual assistants like Cortona for windows, and Siri for iOS.

• A personal assistant, Alpha assistant is designed to assist the user and for carrying out day to day activities such as searching queries, searching on Wikipedia, playing songs, sending emails, general human conversation, and many other tasks.

• It makes it easy and fun to carry out simple tasks of day-to-day life just by giving commands, it is easy to use, and anyone can use it without programming knowledge.

• Virtual assistants enable users to speak natural language voice commands to operate the device and its apps.

PROBLEM STATEMENT

The voice assistant is design to make the work easier of the user.The biggest disadvantage of this system is that confidential data can be accessed by unauthorized user so the privacy can be breached. Due to this, the confidentiality, integrity and availability (CIA) of user data is affected. Looking to this problem the security featuresof our assistant is the main priority which is that we have made a personal customized assistant which doesn’t track your activities. it can become accessible to the mass market-to both law enforcement and private consumers.

THE AIM:

• To develop a Desktop application which will interact user with voice command to perform operations.

• To help users have more command over their operations as they can customize their assistant and have control over their privacy. For Example, music play service, searching on Google, Wikipedia, YouTube etc.

Virtual assistants can tremendously save you time. We spend hours in online research and then making the report in our terms of understanding

THE OBJECTIVE:

It is not a convenient way for users with completely manually input. The common way of communication used by people in daily life is through the speech

• To handle incoming as well as outgoing operations using voice command

It will ease most of the work of the user as a complete task can be done on a single command

LITERATURE SURVEY

1 - REFERENCES - Android Based Automated Smart Wheel Chair, TECHNIQUES - Android voice command used to move Wheel Chair. COMMENTS - It works over Wi-Fi and use extra HW to control Wheel Chair,No Concept of Call/SMS handling.

2 - REFERENCES Optimal Driving System For Two Wheelers . TECHNIQUES - Implementation of an optimal driving system by using wireless helmet. COMMENTS - Focused on Driver safety, Voice commands not used.

3 – REFERENCES Speech-to-TextBased Life Log System for Smartphones. TECHNIQUES - Microphone of Smartphone, STT (Speech-To-Text). COMMENTS - User areable to search life log sound files using Text.

4 – REFERENCES - Voice control of home appliances using Android. TECHNIQUES - Voice command are used to ON/OFF home appliance. COMMENTS - Need extra HW to ON/OFF electrical appliance

5 – REFERENCES - Voice Helper: A Mobile Assistive System for Visually Impaired persons. TECHNIQUES - Support of voice command for Visually Impaired Persons. COMMENTS - Call and SMS are not handled through voice

6. REFERENCES - Android phone controlled voice gesture and touch screen operated wheel chair. TECHNIQUES - Voice and Gesture recognition through Android, Motor control through Signal conditioning. COMMENTS - Control the rotation of wheelchair based upon voice and gesture movements

7- REFERENCES - Enabling universal voice control on android. TECHNIQUES - Used to launch android application via voice commands. COMMENTS - Call/SMS is not handled through voice.

8 – REFERENCES - A Remote Computer control system using speech recognition technologies of mobile devices. TECHNIQUES - TTS(text to speech). COMMENTS - Functions through google server.

9 – REFERENCES - Smart phone environment control and monitoring system for android OS based robot platform. TECHNIQUES - Cortex A8 series, S5PV210 embedded processor. COMMENTS - Android OS based robot platform and smart phone operated control and monitoring system

10 – REFERENCES - Isere:- An android application for the assistance of visually impaired. TECHNIQUES - Android application (Isere). COMMENTS - Serves as virtual eye by providing sense of seeing to blind person.

PROJECT SCOPE

The existing systems Are costly & people have issues with voice recognition & it had privacy issues so to overcome these problems we have now our own voice controlled personal assistant which contains all these various activities Presently, Alpha is being developed as a virtual assistant.

Among the Various roles played by Alpha are:

1. Search Engine with voice interactions

2. Play Music, Open YouTube

3. Tell Jokes.

4. tells Time and Date.

5. Replies How Are You.

6. Reads Information from Wikipedia

LIMITATIONS

Our Alpha Assistant Is in Its First Phase So it's not a Top notch product

Artificial Intelligence Is Not Used to Enhance the Experience

Its A Desktop Application & Not Used in Mobiles & It is not a Physical Product Like Amazon Echo

It is Dependent On the User Inputs Means it can only do things where the assistant is given pre-defined codes to do it.

EXISTING SYSTEM

The existing systems available like Cortona and Alexa Are very much costly. They are not available at the affordable price for many people.

We already have multiple virtual assistants. But we hardly use it. There are number of people who have issues in voice recognition. These systems can understand English phrases, but they fail to recognize in our accent. Our way of pronunciation is distinct from theirs. There is need of a virtual assistant that can understand English in Indian accent and work on desktop system.

some examples -

Google Assistant, Siri, Bixby in Android, iPhone and Samsung devices, respectively present on smartphones, smart speakers and other smart devices.

some brands have started adding Voice Assistant to the primary mode of communication - their apps and websites. Flipkart, Amazon have added in-app voice assistant and to their websites as well.

LIMITATIONS OF EXISTING SYSTEM

VOICE ASSISTANT PRIVACY CONCERNS

Privacy is a huge concern, especially when it comes to smart speakers; they always listen for their wake word, posing a huge privacy concern. The crucial detail that is often missed out is the difference between listening and recording. Once these speakers or voice assistants get activated using the wake word, they start recording the audio. These audio clips are sent to Google or Amazon. These tech giants have exposed these audio recordings to humans, albeit in an anonymized manner yet, a significant infringement on privacy. There have already been numerous cases where such recordings have led to privacy issues.

Accuracy

Voice Assistants don't always understand what's spoken. There could be many reasons behind these- sometimes it could be because of how we say, our accent can cause that. While sometimes, it could be because the voice assistant simply doesn't know what to do with your question because it doesn't have any instruction related to your query.

Lack of vernacular Support

Speech recognition, perhaps the most critical component of a Voice Assistant, is not available for a lot of languages spoken around the world. The problem is not only limited to speech recognition but also extends to other critical functional areas of Voice Assistants. Countries like India, with a massive Indic speaking population and lack of quality ASR model for vernacular languages, are often a limiting factor in providing a good voice experience. In India, voice assistants will not be a source of convenience but are actually a necessity.

Costly

The existing systems available like Crotona and Alexa Are very much costly. They are not available at the affordable price for many people.

FEATURES

Presently, Alpha is being developed as a virtual assistant.

Among the Various roles played by Alpha are:

1. Search Engine with voice interactions

2. Play Music, Open YouTube

3. Tell Jokes.

4. tells Time And Date.

5. Replies How Are You.

6. Reads Information from Wikipedia

SECURITY

We Do Not Store Any Data from Your Desktop or The User Experience, so in that way It's Secure And Privacy Is Protected & There Is No Leak Of data

HARDWARE AND SOFTWARE REQUIREMENTS:

The software is designed to be light weighted so that it does not be a burden on the machine running it. This system is being build keeping in mind the generally available hardware and software compatibility. Here are the minimum hardware and software requirement for virtual assistant.

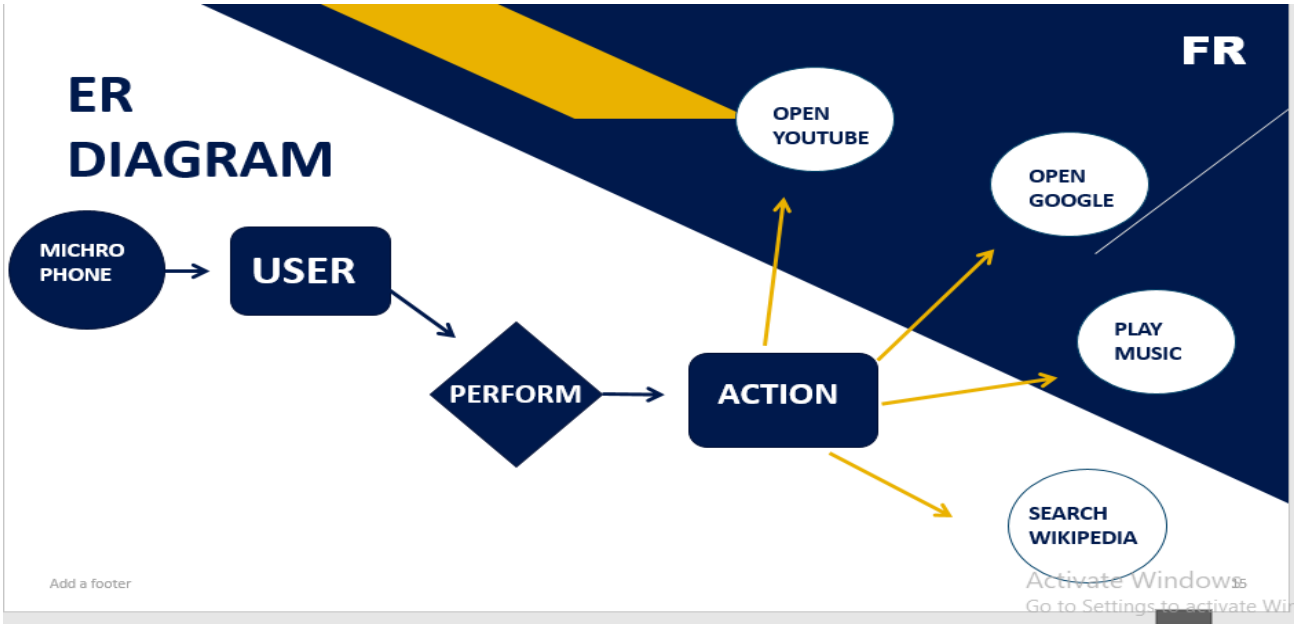
Hardware:

- Pentium-pro processor or later.
- RAM 512MB or more.

Software:

- Windows 7(32-bit) or above.
- Python Version 3
- Tkinter

ER DIAGRAM



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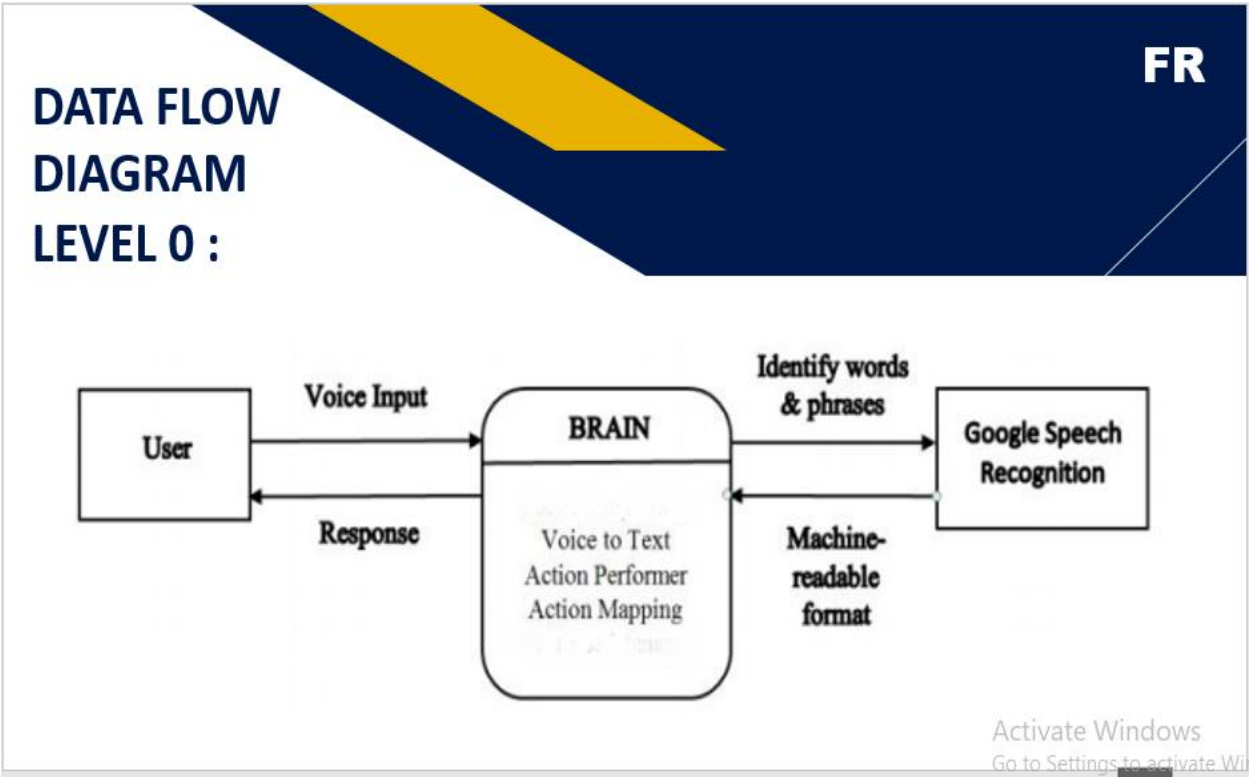
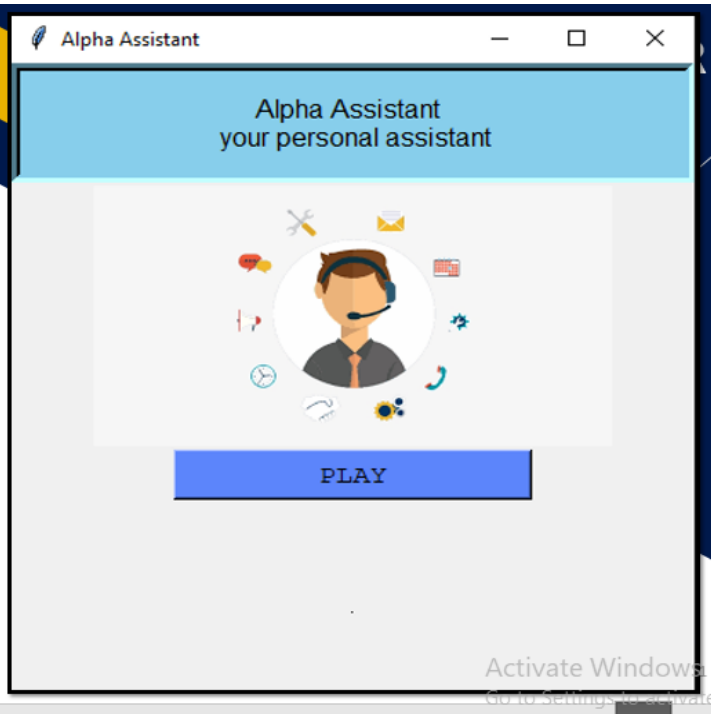
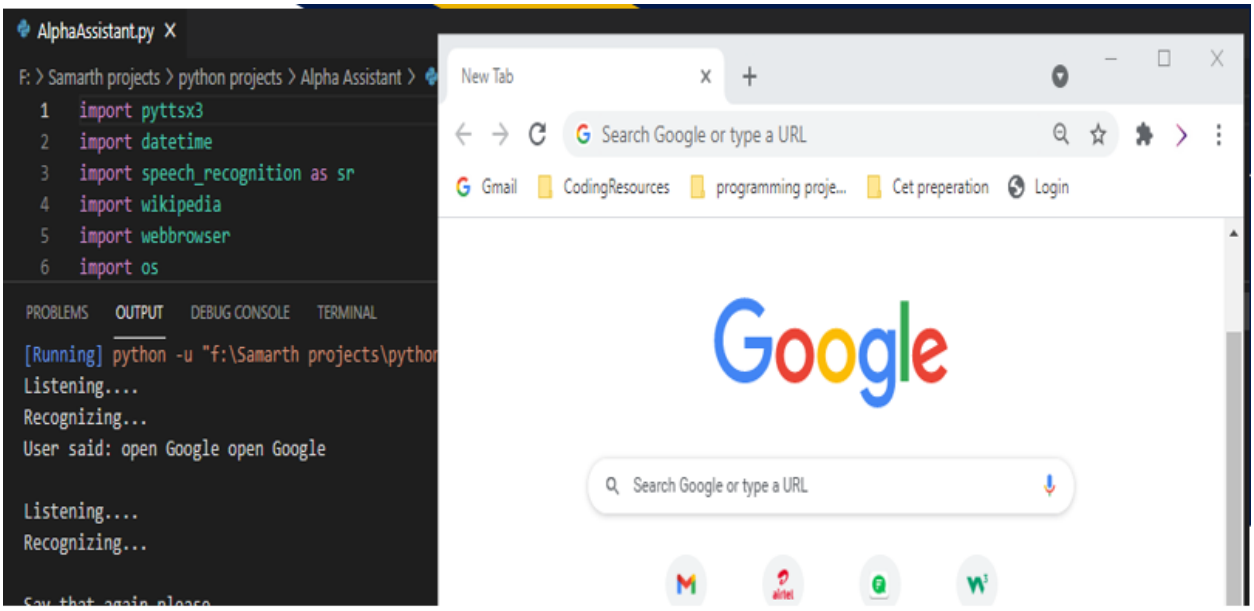


INPUT & OUTPUT RESULTS:

OUTPUT SCREEN:

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2 import datetime
3 import speech_recognition as sr
4 import wikipedia
5 import webbrowser
6 import os
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
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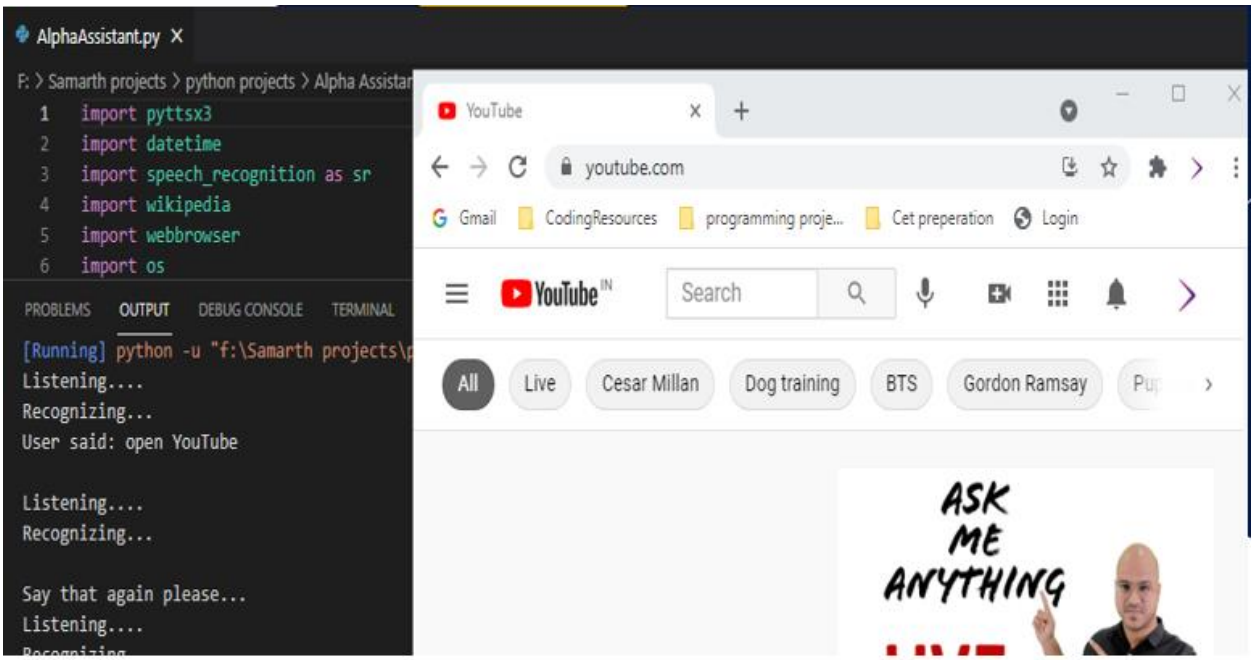
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Listening....
Recognizing...
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All
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Cesar Millan
Dog training
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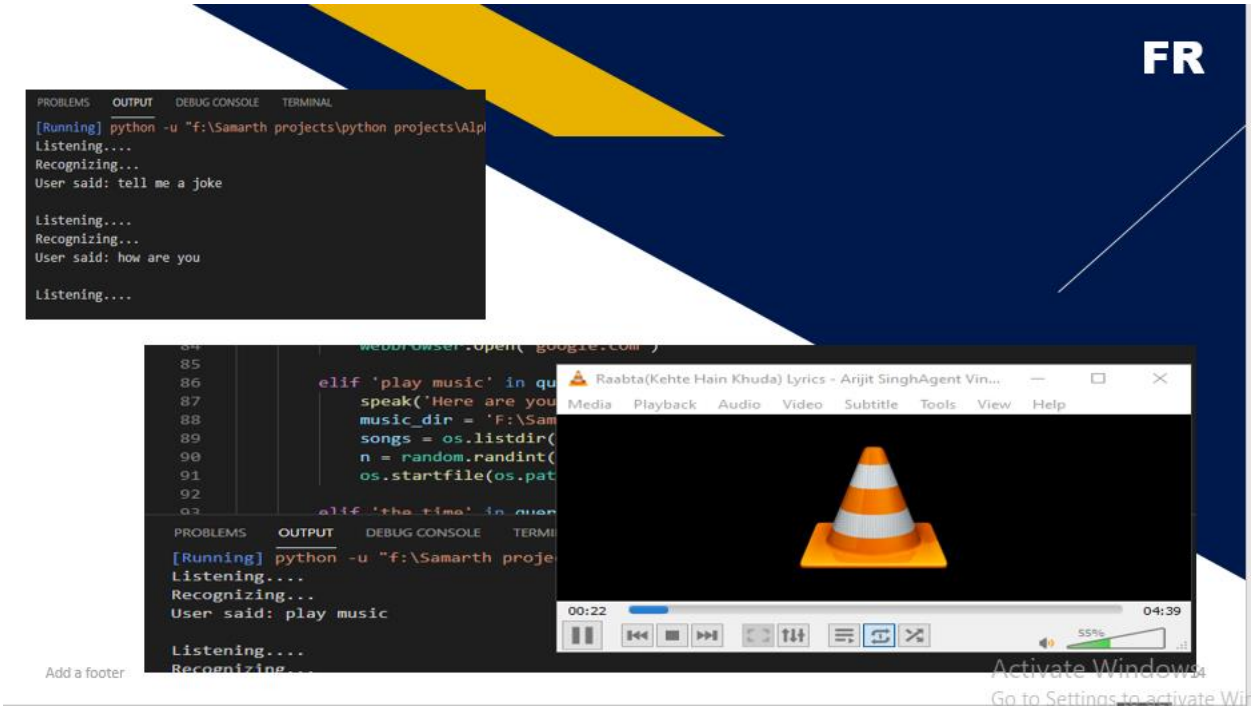
Gordon Ramsay
ASK ME ANYTHING



Reports Testing:

1.1 Unit Test:

It is software component testing. It is lowest level testing. Unit is a module. The purpose of unit testing is to ensure that the program or the component is reliable & meets requirement.

1.2 Integration Test:

The objective of this testing is to demonstrate that the software modules which comprised of interfaces, interact in a correct & stable manner. Consideration is also given to user expectation regarding the look, the feel & the performance of the application under the testing.

Test cases

Test Case ID	Test Case Name	Sub Test Case ID	Steps to Execute	Expected Result	Actual Result	Pass/Fail
Test_001	"SAPI5" Microsoft API	test_0.1	use speak function	speak with female voice	speak with female vc	PASS
		test_0.2	use speak function	speak with male voice	speak with male voic	PASS
Test_002	take command fun()	test_0.1	speech recognition	take microphone input	take microphone inpu	PASS
		test_0.2	cammand "open youtube'	will open youtube	will open youtube	PASS
		test_0.3	cammand "open google"	will open google	will open google	PASS
		test_0.4	cammand "play music"	will play music	will play music	PASS
		test_0.5	cammand " tell me joke"	willtell you joke	willtell you joke	PASS
Test_003	Wishme fun()	test_0.1	click on play buttion	good morning	good morning	PASS
test_004	GUI Tkinter	test_0.1	run program	launch GUI window	launch GUI window	PASS

More Security

Using this system as a framework, the system can be expanded to features security. Security is important these days so it can be combined with this system to give more advanced security features. In this, the voice authentication technology can be implemented for more security.

Face Recognition

This assistant can have a unique face recognition technique through which only the authorized user can provide the command to the assistant and can perform their various tasks on system.

Mobile Version

We plan to Integrate Alpha with mobile to provide a synchronized experience between the two connected devices.

Design Improvements

As the future improvement, the potential work that can be implemented ranging from adding more functions to offering the user a more comprehensive, convenient program, refining the logic to make the program more humanized and easy to use, increase the database capacity and add more possible keywords, responses and data in this program, interface optimization and etc.

Improved Interface

Interface optimization, the interface can be further improved to make it nice to the users. Currently the interface design meets the basic requirement to present everything for this program, and the users are able to interact with the program through this interface, but the interface can always be optimized and more suitable constructed.

CONCLUSION

we have presented the system designs and use cases of Smart Voice Assistant, a universal voice control assistant on Desktop. This system is designed in such a method wherein the user can accommodate to it effortlessly. Our proposed system Alpha a personal voice assistant can be implemented using speech recognition module thus makes the system more secure and robust. Speech recognition technology is a key technology which will provide a new way of human interaction with machine or tools. The advantage of voice commands over multi-touch when interacting with a screen non-visually is that it does not require targets to be located and thus avoids the problems with pointing, it saves time. This can do variety of tasks like tell you the time, open application, tell some jokes, updates about the stock and the endless tasks for the user. Thus making one's life comfortable and at the same time remotely accessible via voice commands. Voice assistants have had a huge change in user' s interaction with technologies embedded in their devices. Like any other technology of such magnitude, they have altered the basic genome of the sphere in which they operate. While this has largely created a better world with drastic benefits for communities, which were before kept in dark with reference to technological innovations, they have posed new kind of threats with respect to user's privacy and security.

Bibliography

The following books & Websites are referred for project study

1. Geeks for Geeks.
2. YouTube – how to use pyttsx3 library in python.
3. Python documentation for speech recognition.