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Zira Voice Assistant- A Personalized Interactive Desktop Application

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Abstract: Since we know that python is a developing language so it is easy to write a voice assistant script in python. Day by day life became smarter and more connected to technology. We already know some voice services like google, Siri etc. Now in our Zira voice assistance system, it can act as a daily schedule reminder, send email, calculator, play music and a search tool. Our project works on voice input and provides voice output and displays text on screen. Our main voice help agenda makes people smarter and delivers faster results with a computer. Voice Help captures voice input with our microphone and transforms our voice into understandable computer language providing the necessary solutions and answers that the user asks. By doing this project, I realized that the concept of AI in all fields reduced human effort and time saving.

Keywords: AI, pyttsx3, Voice control, Python, Virtual Assistant Using Python.

I. INTRODUCTION

Today the development of artificial intelligence (AI) systems that can regulate the natural interaction of the human machine with voice, communication, body language, facial expressions, etc. Virtual Assistants software programs that help you simplify your daily activities, such as weather forecast, send email, show wikipedia, shopping list etc. They can take commands by voice. Voice assistants based on the word need an expensive word or a wake-up call to make the listener active, which is followed by a command. The facilitator can help reduce a person's effort and use the time while performing any task, eliminating the idea of typing completely and behaving like the other person we are talking to and asking to do the job. The assistant is no less than a human assistant but we can say that this is very effective and efficient to do any job. The libraries and packages used to make this helper focus on the problem and reduce time. With the help of voice-enabled virtual assistants, there will be no need to write long codes to get the job done, the system will do just that for us.

The functionalities include, Can send emails, Can read PDF, Can send text on WhatsApp, Can open command prompt, IDE you like, notepad etc. open websites like Google, YouTube etc., in a web browser, Can provide weather forecast, Can provide desktop reminders of your choice. There can be some basic discussion.

The tools and technologies used by PyCharm IDE for this project, and I created all the py files in PyCharm. Along with this I have used the following modules and libraries in my project i.e. pyttsx3, Speech Recognition, Datetime, Wikipedia, Smtplib, etc.

Fig. 1. Symbol of Zira Voice Assistant

II. BACKGROUND

A. History of Voice Assitants

Around 1990s, Because of IBM, digital speech recognition technology become a feature of the computer. This was the starting phase of this revolutionary technology, this formed the foundation of the modern voice assistant era which involves voice design and activation. Virtual assistance never be there until the 2010s. For the first time, after the launch of siri by apple in 2011 to today Virtual home assistance has come a long way .Later company has recognized that there is great demand for the voice technology so google had stepped into the industry by launching google now in 2012, and the next year in 2013 microsoft introduces Cortana at annual build developer conference. Later in 2014, amazon launched its innovation by launching amazon alexa which formed the way for the smart speaker revolution.

In 2015, there are many advancement took place which took this technology to the next level which includes integration of windows 10 on desktops and mobile phones by Microsoft, launching of amazon echo in US and amazon alexa skills kit. Now, in 2016, it was time for google to come in voice technologies and in the month of May 2016 google introduces the google assistant as part of messaging app, Allo. In the same year, Samsung acquires virtual assistant startup viv and with this the race begins among these top MNCs to provide the best voice assistance technology to the masses. The voice assistant mainly depends on these technology which include voice recognition, artificial intelligence (AI), and natural

language processing (NLP). The mixture allows the technology to understand questions, provide answers and complete tasks as commanded by the user.
It had been a time around 1960s that originated voice recognition technology, it has come a long way. Doesn't matter what one thinks about them, voice assistants have been working in most aspects of our lives.

B. Future Applications

With the change in technology, the world is changing and we are now taking this technology to its ultimate level to make the life of human at ease. With the advancement in technology, technologists are making the life of human easier. Voice assistance is one of the example among those technologies. Voice assistants will offer more personalized experiences as they get better at differentiating between different voices. Voice assistance also can be used to automate repeating work like marking calendar dates.
The rate of adaptation of artificial intelligence in people's life is one of the reason of shifting towards voice. The large number of IoT devices such as speakers is giving voice assistants more usage. People are using smart devices and speakers a lot to listen. According to the industry experts, almost every application will add voice technology in some way in the upcoming years. The use of virtual assistants can also stimulate the system of IoT (Internet of Things). After some years from now, Big MNCs like microsoft may be offer personal digital assistants which will offer the services to rich people of a full-time employee.

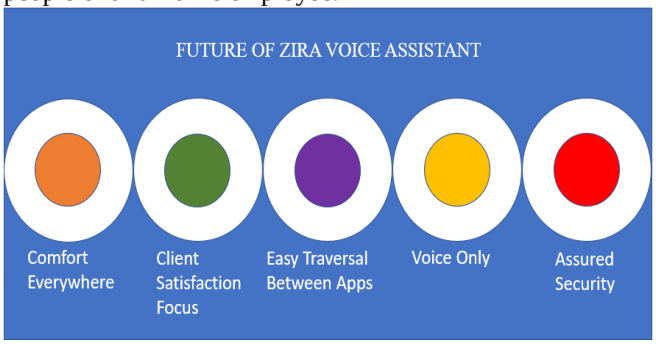

Fig.2. Future of Zira Voice Assistant

C. Aim of the study

The main aim of our project is to create personalized based voice assistance which will be intelligent enough to do daily task of a user. Our voice assistance will be capable of playing music, searching information, will greet you according to time, this will read news for you, it can act like strong password detector, this will help you to prepare for exams, and providing weather, sports, and other real-time information. Virtual assistants enable users to speak natural language voice commands in order to operate the device and its apps as shown in fig. 2.

III. PROPOSED DESIGN

Zira Voice Assistant (proposed symbol as shown in fig 1) will give us a wise idea about the smart assistant. It is able to understand the commands given by the users. Zira can understand all the commands given by the user through the voice and then it acts accordingly. Our Assistant can perform the most repeatedly asked tasks and which helps in making our works easier. Microphone is used for taking the voice input. After that it will say "OKAY" and it'll print the user said statement and will act accordingly.

In our voice assistant we have installed pyttsx3 to make Zira speak like a normal human. We have defined a function "Speak" whose primary task is to make the system speak. The Speech Recognition module is used here in which "speech_recognition.Microphone()" is used to take the voice input and pyttsx3 is used for converting the text to speech. Here "speech_recognition.Recognizer.recognize_google()" is used as the search engine here we can specify the language in which Zira can speak and we have stated English as the primary language.

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

Here voice[0] stands for male voice and voice[1] stands for female.

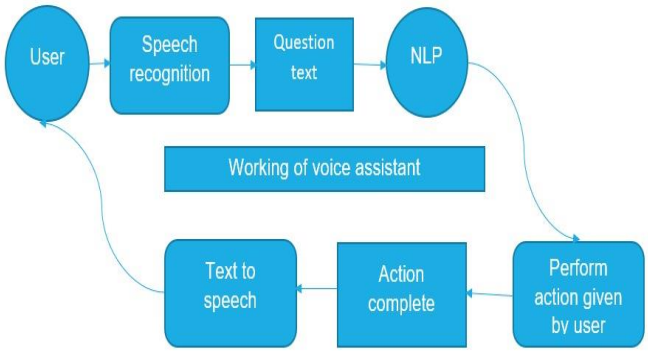

Fig.3. Workflow of Zira Voice Assistant

IV. PYTHON LIBRARIES USED IN ZIRA VOICE ASSISTANT

While creating Zira voice assistant we created in Python language and to add the features like greeting to the speaker, speech recognition, updating the date and the time, surfing the internet after we asked Zira to surf a particular thing's and many more thing's we used many Python libraries to create the Zira voice assistant and these are the list of the libraries used –

- pyttsx3
- speech_recognition
- datetime
- wikipedia
- webbrowser
- os
- smtplib

The first library that we used during the creation of the Zira voice assistant is pyttsx3 it helps the Zira voice assistant to convert the text into the speech and one of the best thing about this library is that we can use this library offline also once it is installed the library pyttsx3 gives us the two voice a male voice and a female voice. If we work on the Window we have to use sapi5.

Speech_recognition – The library is used for the voice recognition of a particular person who wants the Voice Zira

voice assistant to use for the personal use who doesn't want that it used by the others so this library uses raspberry pie with the help of external microphone to recognize the voice of the particular person and respond to the particular person only to use this library we have to install the speeh_recognition and then pip install pyaudio in the Windows.

datetime – The greeting by the Zira voice assistant to us is used by the datetime library it helps the voice to get updated by the date and the time so if we give the task to remind about a particular meeting on a particular date and a particular time so it reminds us the meeting by getting updated through date and time while using the library it shows the date in YYYY-MM-DD manner and the main function of this library is it is a combination which tells us in the manner of year, month, day, hour, minute, seconds, microseconds and time-zone currently we are experiencing.

Wikipedia – Wikipedia is the largest platform for searching a particular term or getting information of the particular term the world uses the Wikipedia so do the user also so we used the wikipedia library so the user gets easily excess to the Wikipedia so as to install the Wikipedia library we have to just "pip install wikipedia" we can install the Wikipedia library and use the library in the code

webbrowser – when we use the webbrowser library it is a very convenient and useful and it provide the interface of high level which helps the Zira voice assistant to display the web page that is asked by the Zira voice assistant to show up and it's the one of the major library that helps the voice assistant to show up the result asked to Zira voice assistant.

Os – The os is the library used by the Zira voice assistant so that if its asked by the owner that to open a file or copy a file move file Zira voice assistant will use the os library. It helps the Zira voice assistant to access the file in the PC and interact to the assistant. It is imported by using "import os".

smtplib - The smtplib library implies to the "send email to any internet machine " as we already told you that we are working on Zira voice assistant that it send email to the person that we asked for it for doing that we used the smtplib library so it helps assistant to send the email to person we asked we can already give the input for which the Zira voice assistant can use the Email Id so that is uses that Email whenever it is asked to mail a particular person.

These are some of the libraries which was used by us during the making of the Zira voice assistant which were available in the internet and helped our voice assistant.

V. TASK PERFORMED BY ZIRA

- We can change the voice assistant name from Zira to which ever we want.
- If asked for playing music it automatically opens spotify and if asked for play a video on youtube it will open youtube for you.
- It can search any kind of information related to anyone if asked for on Wikipedia.
- It can open Google for whichever purpose you want.
- It will greet you according to time, each time you run the code and will process on your command.
- It is able to read news whenever asked "Zira tell me today's news", or "What's today's news" form the websites provided in the code and all the text will also be printed on the screen.
- It can work as a strong password detector and tells the user if he needs make the password much complex.
- It's able to send mails to the username specified in the vocal input and it checks if the username is there in the dictionary specified in code. And then it asks what should I mail and then you need to just tell what you want to mail.
- It is also helpful in terms of exam preparation and can take you to the best educational sites.
- It's also able to perform offline tasks such as it can open VSCODE as required and can also open some files inside the PC itself.

VI. METHODOLOGY

Voice assistant which is basically a digital assistant reacts to voice commands and give relevant information or perform a particular function about his/her inquiry or requested by the user,
For example, A person can say "Zira, open a Youtube Or gmail.com. The voice assistant will listen to this commands and will react or respond accordingly. It will give relevant result by opening a youtube or gmail. com website. As soon as the user or person have finished their request, the voice assistant holds for some seconds to listen it then the users inquiry is sent to its database by the voice assistant to look or search for the inquiry

- Users request or inquiry gets chops into segregate commands which makes it easy to recognize by our voice assistant.
- Comparing with others inquiry, our inquiry is searched within the command list
- These commands are conveyed back by the command list to the voice assistant.
- As soon as it accepts the commands or receives the commands voice assistant will come to know what to do after that.
- Suppose the inquiry is unclear to proceed it, then the voice assistant would even request for query.
- Specifically voice assistant recognizes what we would like to receive.
- As soon as voice assistant recognize the command and make sure that it can proceed further, it will give relevant information requested by the person or user.

As shown in figure 4 shows the detailed workflow of the voice assistant.
(a) The work started by giving voice input i.e. audio commands by means of microphone. It will analyse the audio commands.

(b For the conversion of speech input to text system uses speech recognition.
(c) Search engine it may be anything like web browser will search for the specific commands. For example, getting information, operating internal files etc.
(d) Finally getting the output which will be displayed on the screen.

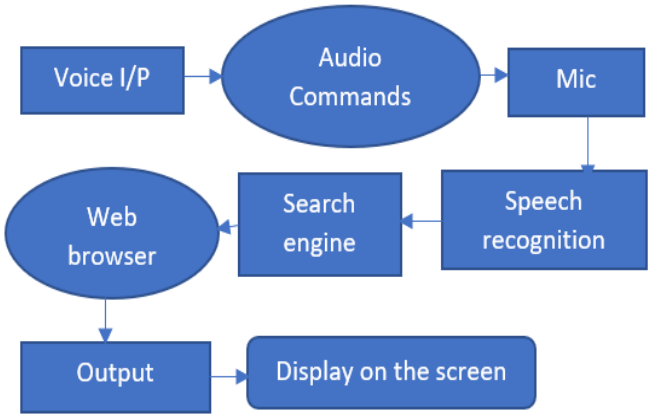

Fig. 4. Methodology

VII. COMPARISON BETWEEN ZIRA AND OTHER VOICE ASSISTANT

If we compare Zira voice assistant with any other voice assistant you will find some similarities with other voice assistants but you will find much difference with other voice assistants. Things to know about Siri, which is "speech interpretation and recognition Interface" is the first voice assistant introduced by the apple company. The major drawback as well as its upper hand on the other voice assistants is that it is not platform independent is that it only works in Apple product such as iphone, ipad, macbook, etc. the person who uses this product can use the SIRI whereas we are making the product which can be useful to everyone we accept that the artificial intelligence used in the SIRI is way to advance then our product but we are working on it.
Now let us talk about the next voice assistant which is google voice assistant it is one of the successful voice assistant in the market google voice assistant. The google voice assistant was created is 2014 inspired by the SIRI voice assistant but what google tried different from the Apple is that it company independent if we compare it to SIRI the first thing that comes in our mind is google voice assistant works on any other mobile phones where as it works on windows also whereas it has been successful throughout years. The important thing about google voice assistant is that in every updates we find something new google assistant is that whatever comes new in the market google add up that idea into the google voice assistant but the factors which differs us from the google voice assistant is that our product is based on desktop user and our product is platform independent. We can use the Zira voice assistant in the Linux also and also in the product which are not the high end device. Zira voice assistant is made for low end device and the device in which there is windows 7and the Linux device in which we cannot use Google voice assistant. We know that in many African countries and some Asian countries it is hard to find normal devices in such countries so our goal is that the person who use such low-end device can also use the voice assistant the only thing required to install the Zira voice assistant is that the desktop must have install the Python which can be run in the low-end devices.
In today's cruel world you cannot trust private companies the data that is getting stored while using the voice assistant. The more we use these voice assistant the more we give our personal information to these private companies and by that information we are getting such advertisement of such product that we are searching or the product we asked to search the voice assistant whereas in Zira voice assistant is a voice assistant which works when we install it in our desktop. It does not connect to any other server. In which the Data of the user remains personal with it. Zira voice assistant does not take the personal data of the particular individual that makes Zira voice assistant different other voice assistant. We are trying to add some things such as mail writing we ask Zira to write email in informal way but it writes the mail in the formal manner to whom we ask for and add some speech recognition technique which required some artificial intelligence.

Fig.5. Inspiration of Zira Voice Assistant

VIII. ASR WORKING

1. ASR which is called as Automatic Speech Recognition is the main fundamental or basis for the working of voice assistant.
2. It is the mechanism that permits humans to use their input comments or voices to interact with a computer in a way that it's variations resembles normal human conversation.
3. NLP which is called as Natural Language Processing is the most advanced version of recently developed ASR technology.
4. This variant allows real interaction between humans and machines. Although it has a long way to reach a height of development of technology we can see extraordinary results in form of intelligence smartphone like iPhone there is Siri.
5. In ASR, at initial stage recording of speech is done.
6. After that the device creates the wavefile which includes words whatever it listens.
7. Then we need to clean wavefile in a way that sound from the background should remove and regulate volume will be obtained.
8. Later it will breakdown into elements and it will be examined in sequences. Then these sequences are analysed or examined by ASR software.
9. Finally it executes analytical chances of expectations to search out the comments which get processed into the text content.

Fig.6. Working of ASR

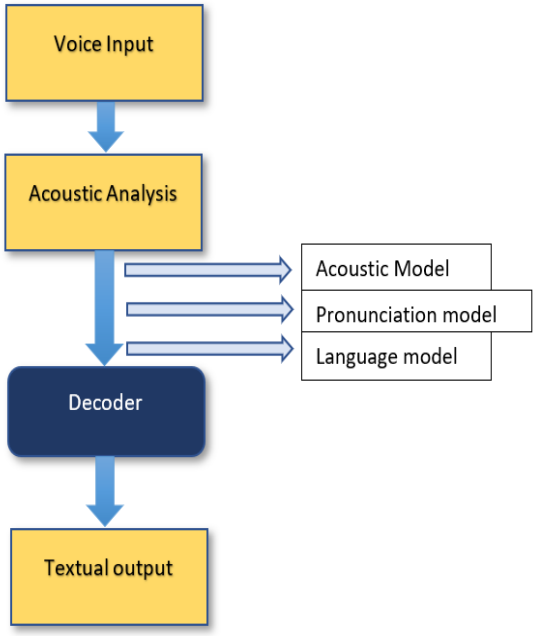

Fig. 7. Acoustic Analysis

IX. RESULTS

The Python Programming language is used for creating the code and these are few outputs which we have received in our Zira voice assistant by performing several operations.

a. Opening Google Output

As shown in Fig.8. We have asked Zira to Open Google. It receives the request and performs action on it.

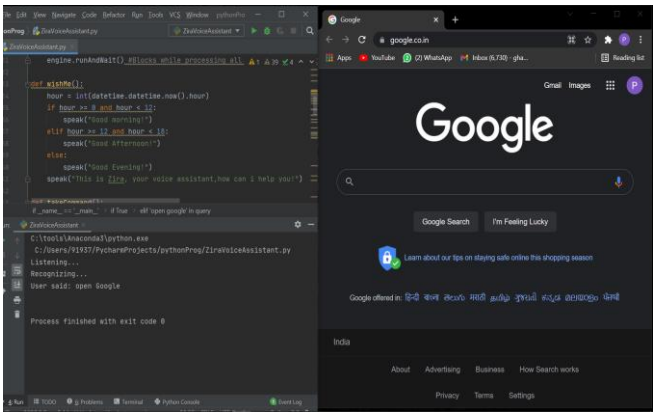

Fig.8. Output of screen for Google search

b. Opening Spotify

As shown in Fig.9. We have asked Zira to play music and Zira took action on it and open Spotify.

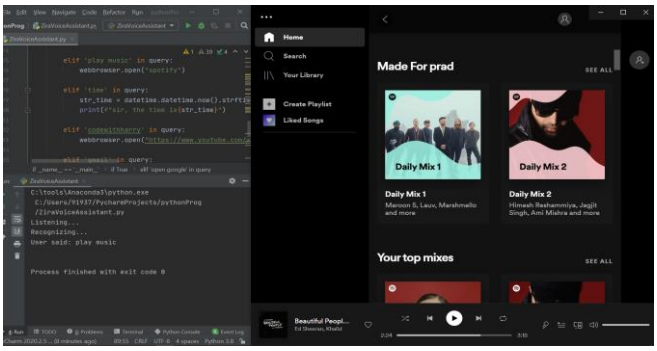

Fig.9. Output Screen Opening Spotify

c. Asking for Time

As shown in Fig.10. We have asked Zira for the time and she told the current time.

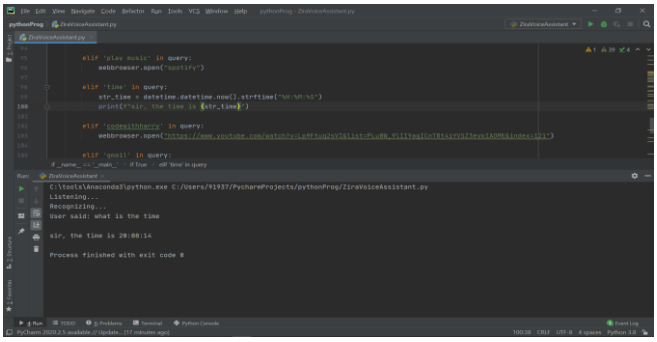

Fig.10. Output Screen Displaying Time

d. Current News

As shown in Fig.11. We have asked Zira for the current news, she receives the request and she reads the news.

Fig .11. Output Screen Reading News

e. Opening VsCode

As shown in Fig.12. We have asked Zira to Open VsCode.

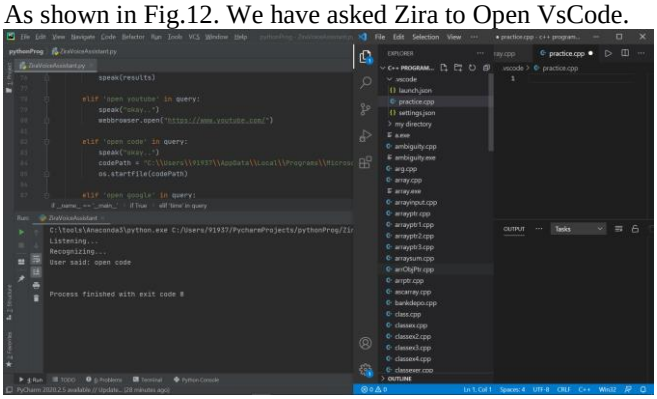

Fig.12. Output screen for opening Vscode

X. CONCLUSION

In Zira Voice Assistant we have implemented many things. It's very important and useful for Users. It's very easy to implement application. As well as it can be used in many fields as of Alexa is used.

Basic purpose of Zira is to be a Desktop Assistant and to Search whatever is the need of the user.

As of now there are many voice assistants in the market and in the last couple of years the implementation of voice assistance has been increased and now every company in the market is trying to have its own voice assistant.

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