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PERSONAL VIRTUAL ASSISTANT FOR WINDOWS USING PYTHON

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ABSTRACT

The main goal of Artificial intelligence (AI) is the realization of natural dialogue between humans and machines. There are many IT companies have used the dialogue systems technology to establish various kinds of Virtual Personal Assistants (VPAs) based on their applications and areas for increasing interaction between human and machine, such as Microsoft's Cortana, Apple's Siri, Amazon Alexa, Google Assistant. As like Microsoft cortona we have created our own virtual personal assistant only for windows using python which is able to access on any windows explorer such as windows 7,8,10. We use python as a programming language because it have a major libraries which is use to execute commands. By using python installer packages our personal virtual assistant recognize the user voice and process on it.

Keywords: Voice Assistant, A.I., Desktop Assistant, Python, Machine Learning.

I. INTRODUCTION

Virtual assistant is used to run machine like laptop or PC's on your own command. Virtual assistant is an application program that understands natural language and voice commands to complete tasks for the users. Virtual assistant is used to perform a typical task like showing datetime, managing emails, open apps, etc. on your command. Nowdays virtual assistant is very useful to human. It makes human life easier like operate PC's or laptop on only voice command. Virtual assistant is a less time consuming. By using virtual assistant we saves our time and contribute in other works. Virtual assistants are typically cloud-based program that requires internet connected devices. Virtual assistant is the flexibility to contract for just the services they need. For creating virtual assistant for your computer go from basics python. Virtual assistants are task-oriented. Virtual assistants ability to understand and perform requests. Virtual assistants is a software that understands verbal and written commands and completes task assigned by clients. Virtual assistants are able to interpret human speech and respond via synthesized voices. There are several voice assistants in market like Siri for apple TV remote, Google Assistant for pixel XL smartphones, Alexa as a smart speaker which is developed by using Raspberry Pi, Microsoft Cortona for windows 10. As like this all virtual assistants we also created a virtual assistant for windows. We use Artificial Intelligence technology for this project. Also use python as a programming language, because python offers a good major libraries. For this software use microphone as input device to receive voice requests from user and speaker as output device to give the output voice. This process is the combination of several different technologies like voice recognition, voice analysis and language processing. Virtual assistant use Natural Processing language to match user text or voice input to executable commands. When a user give a command to personal virtual assistant to perform a task, the natural language is converted the audio signals into digital signals

Virtual assistants can provide several services which includes,

- Showing weather condition.
- Scheduling appointment.
- Making travelling arrangements.
- Play music, movies, etc.
- Showing datetime.
- Managing emails.
- Open apps.

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II. LITERATURE REVIEW

In the existing system of virtual assistant there are several virtual assistants in market by using Artificial Intelligence technology. Many companies have used the dialogue systems technology to establish various kinds of Virtual Personal Assistants (VPAs) based on their applications and areas, such as Microsoft's Cortona for Windows and Espeak for Linux, Siri for Apple, Google Assistants For Android.[1]

The first digital virtual assistant installed on a smartphone of apple was Siri, It was introduced as a feature of the iphone in 2011. Aim of that virtual assistant was to add in tasks such as sending a text message, making phone calls, checking the weather or setting up an alarm. Over time, it has developed to provide restaurant locations , search the internet, and provide driving directions. In 2014 Cortona virtual assistnats was developed by Microsoft. Cortona uses Bing search engine for performing tasks like answering questions for the users, setting remainder, etc. In 2016 Google Assistant was developed by google. It is primarily available for mobiles and smart home devices. Google Assistants via chat on google messaging app and via voice on google smart home speaker.[7]

Cortona was developed by Microsoft as personal virtual assistant for windows, iOS, android, etc. In windows operating system Cortona works only for windows 10. It was released for windows 10 in 2015. In windows 10 Cortona is in Icon form on taskbar next to the search bar for use the cortona application we try to setup for activate the Cortona in our laptop or PC's. It is easy to search but it takes more time to setup. It is very time consuming. It works in windows only for windows 10. It is not helpul for other windows version or explorer like windows 7, 8, etc. Therefore for other versions of windows we try to make the personal virtual assistant which is able to access on any windows explorer such as windows 7,8,10. In this project we use Python as a programming language and pycharm as a platform on which we execute our code for virtual assistant. We create the personal virtual assistants web application in the form of .exe file which is easy to get in any laptop or PC's and use it, for showing datetimes, managing emails, playing music, videos, open apps, etc. In our virtual assistant user can able to train or update it by their own needs to do some tasks.

III. SYSTEM ARCHITECTURE

```
import subprocess
from typing import List, Any, Union

import wolframalpha
import pyttsx3
import json
import speech_recognition as sr
import datetime
import wikipedia
import webbrowser
import os
import winshell
import pyjokes
import smtplib
import ctypes
import time
import requests
```

Fig.1 Modules Imported.

- **IMPORTED MODULES**

A. Subprocess:- This module is used for getting system subprocess details which are used in various commands i.e Shutdown, Sleep, etc. This module comes built-in with Python

B. WolframAlpha:- It is used to compute expert-level answers of any command using Wolfram's algorithms, knowledgebase and AI technology.

C. pyttsx3:- pyttsx3 is a text-to-speech conversion library in Python. It works offline and is compatible with python like Python 2 and 3 works without internet connection or delay. The text-to-speech features for this pyttsx3 module are based on python languages installed in your operating system. It is a very easy to use tool which converts the entered text into speech.

D. JSON:- JSON stands for JavaScript Object Notation. JSON is a lightweight format for storing and transporting data. JSON is often used when data is sent from a server to a web page. JSON is "self-describing" and easy to understand

E. Speech recognition:- Speech recognition means that when humans are speaking, a machine understands it. In our project we are using Google Speech API in Python to make software which is used to run machines on command. We need to install the Pyaudio python package for recognize the voice commands. Pyaudio can be installed by using pip install Pyaudio command.

F. gTTS:-Google's text-to-speech packages, gTTS converts your audio questions command to text. The response from the look-up function that you write for fetching answer to the question or command is converted in an audio form by gTTS. This package interface with Google Translate's API.

G. Datetime:- Datetime package is used to showing Date and Time. This datetime module comes built-in with Python.

H. Wikipedia:- We all know Wikipedia is a great and huge source of knowledge just like GeeksforGeeks or any other sources we have used the Wikipedia module in our project to get more information from Wikipedia or to perform a Wikipedia search. To install this Wikipedia module use pip install wikipedia.

I. webbrowser:- To perform Web Search. This module comes built-in with Python.

J. OS:- The OS module in Python provides functions for interacting with the operating system. OS comes under Python's standard utility modules. This module provides a portable way of using operating system dependent functionality.

K. Winshell:- The winshell module is a light wrapper around the Windows shell functionality. It includes helpful functions for accessing special folders, for using the shell's file copy, rename & delete functionality, and a certain amount of support for structured storage. winshell is tested on all versions of Python from 2.4 to 3.2 (2.5+ for context management).

L. Pyjokes:- Pyjokes is used for collection Python Jokes over the Internet. Pyjokes is add in our project because it adds jokes in our project . It is very interesting. Pyjokes is the one line joke which makes our project interesting.

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M. Pyaudio:- PyAudio is a set of Python bindings for PortAudio, a cross-platform C++ library interfacing with audio drivers.

N. Smtplib:- The *smtplib* is a Python library for sending emails using the Simple Mail Transfer Protocol (SMTP). The smtplib is a built-in module in python; do not need to install it. It abstracts away all the complexities of SMTP. It provides a Simple Mail Transfer Protocol (SMTP) client implementation.

O. ctypes:- ctypes is a built-in powerful Python feature to create and manipulate C data types in Python, it is enables you not only for call functions in dynamically linked libraries but also used for low-level memory manipulation. It allows wrapping these libraries in pure Python.

P. Requests:- Requests module allows u to send http requests using python. Requests is used for making GET and POST requests. It abstracts the complexities of making requests behind a beautiful, simple API.

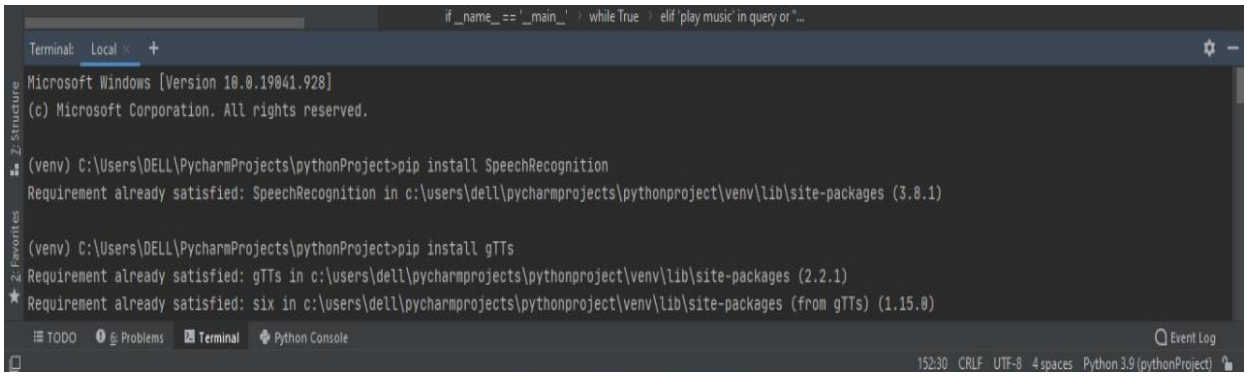

Fig. 2 Install python packages.

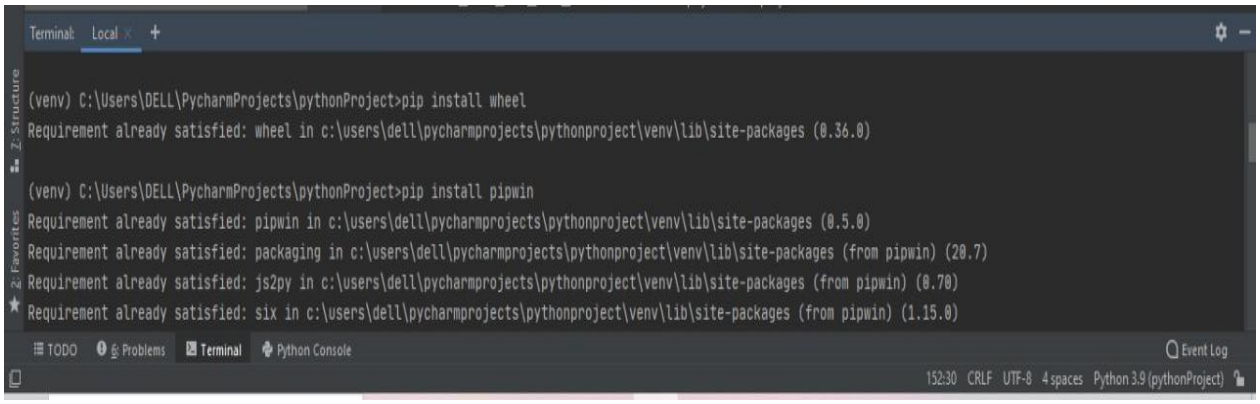

Fig. 3 Install pipwin packages.

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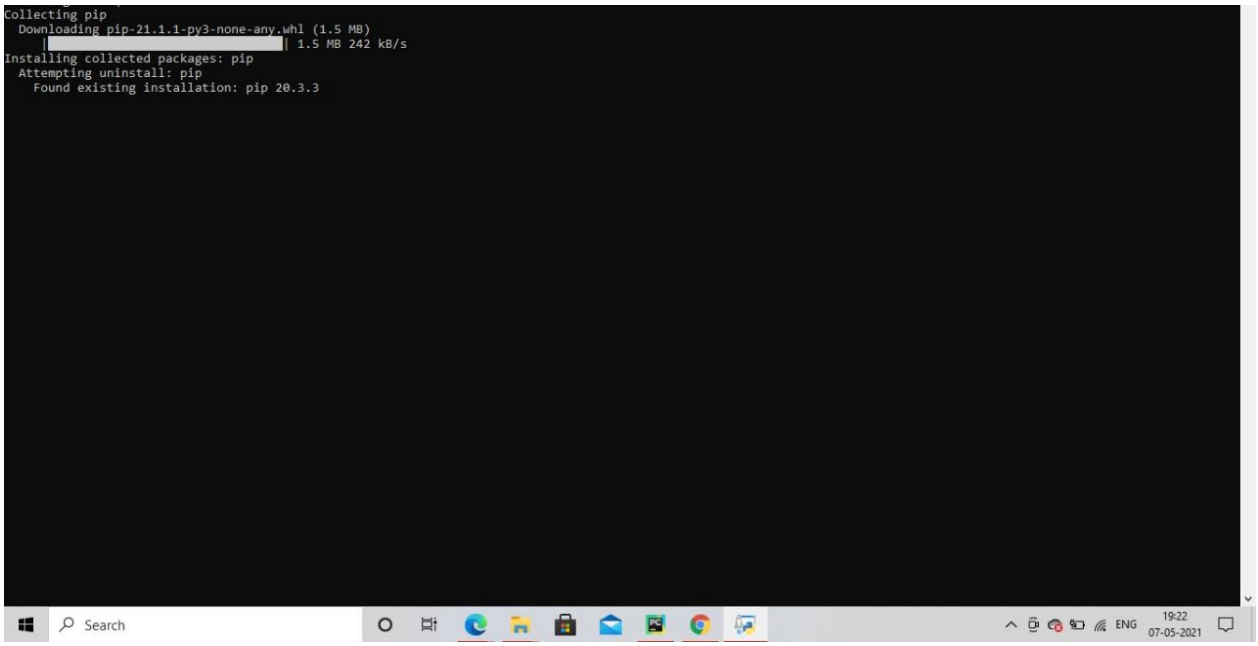

Fig. 4 Install collected packages: pip.

IV. METHODOLOGY

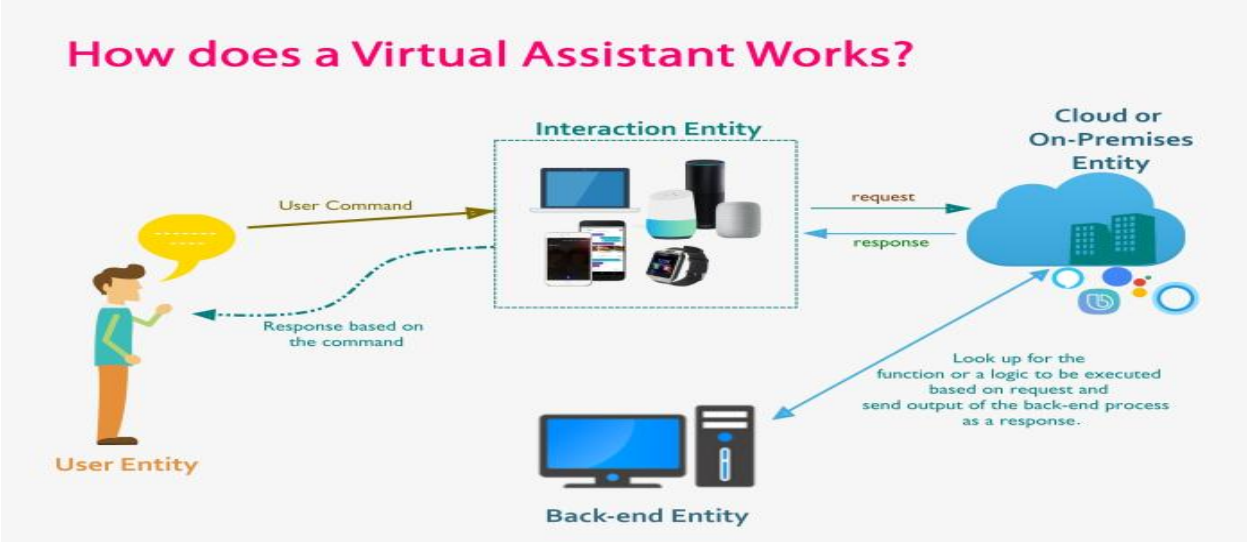

Fig. 5 Working of virtual assistant.

Virtual assistants use natural language processing (NLP) to match user text or voice input to executable commands. When a user asks a question to personal assistant to perform a task, then natural language audio signal is converted into executable command or digital data that can be analyzed by the software. Then this data is compared with a data of the software to find a suitable answer. Virtual Assistant is used to run machines on your own commands. For making virtual assistant we use some python installer packages like Speech recognition, gTTS, pipwin, etc. Speech recognition is the process of converting audio into text. This is commonly used in voice assistants like Alexa, Siri, etc. Python provides an API called SpeechRecognition to allow us to convert voice or audio command into text for further processing. By above diagram, Firstly users give the command to the interaction entities like laptop, PC's this interaction entities listen the command and

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recognize it. For further analyzing process campare this command with cloud in which we already store data. After matching request the output is generated in the text as well as voice form if the request is match with cloud data. Look up for the function or a logic to be executed based on request and send output of the backend process as a response.

Implementation

Listening

Recognizing

The command is printed =open YouTube

Open YouTube App

Listening

Recognizing

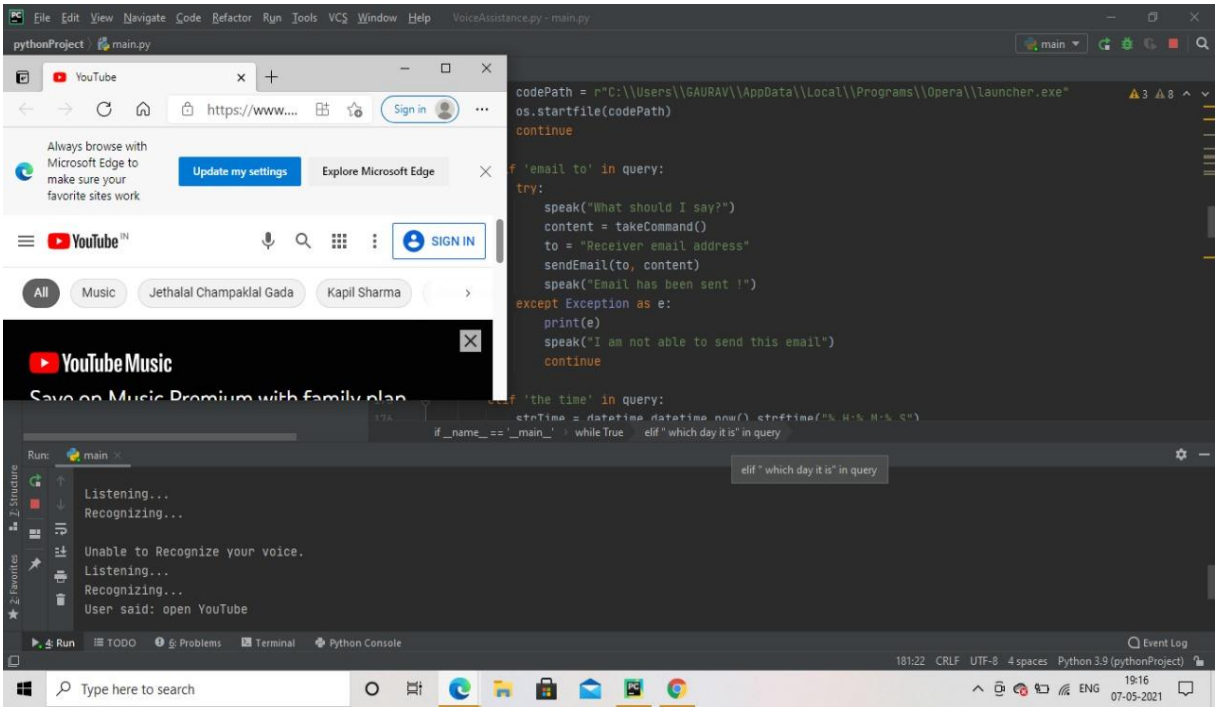

Fig. 6 Output snapshot.

V. RESULTS AND DISCUSSION

Virtual assistant is a less time consuming. Virtual assistant is a software that understands verbal or written commands and complete task assigned by client. Virtual assistant use natural language processing (NLP) to match user voice or text input with executable commands. With the help of virtual assistant you able to run your machine like laptop or PC's on your own command. It is the fast process, therefore it saves time. Virtual assistant is working for you at set times, so always available to you and able to adapt to changing needs quickly. Virtual assistant will be available to you and, should their workload enable, help others too, such as family and colleagues.

VI. CONCLUSION

In this paper we have discussed about Personal Virtual Assistant For Windows Using Python. Virtual assistant makes life easier to humans. virtual assistant is the flexibility to contract for just the services they need. As like Alexa, Cortona, Siri, Google assistant we also make virtual assistant using python for all windows versions. We use Artificial Intelligence technology for this project. Virtual Personal Assistants are effective way to manage or

organize your schedule. Virtual Personal assistants are also reliable than Human Personal Assistant because, virtual personal Assistants are more portable, loyal and available to use anytime. Our virtual assistant will be intimate you with suggestions and taking instructions, and will know more about you. We can expect this device to be permanent.

VII. REFERENCES

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