

# Desktop Assistant

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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 cortana 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.*

*Voice assistants are the great innovation in the field of AI that can change the way of living of the people in a different manner. The voice assistant was first introduced on smartphones and after the popularity it got. It was widely accepted by all. Initially, the voice assistant was mostly being used in smartphones and laptops but now it is also coming as home automation and smart speakers. Many devices are becoming smarter in their own way to interact with human in an easy language. The Desktop based voice assistant are the programs that can recognize human voices and can respond via integrated voice system. This paper will define the working of a voice assistants, their main problems and limitations. In this paper it is described that the method of creating a voice assistant without using cloud services, which will allow the expansion of such devices in the future*

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## Introduction

Virtual assistants are used to control machines such as laptops and PCs. A virtual assistant is a computer programme that understands natural language and voice commands and helps users execute tasks.

Users can use only spoken instructions to ask their assistants questions, control home automation devices and media playback, and manage other basic chores such as email, to-do lists, open or close any application, send messages to anyone on Whatsapp, and so on. Other forms of voice assistants include:

- Personal Assistant with Intelligence
- Personal Assistant that is automated
- Digital Virtual Assistants
- Chat bot

Virtual assistants are incredibly valuable to humans nowadays. It simplifies human life by allowing users to run PCs or laptops using only voice commands. Virtual assistants take up less time. We save time and contribute to other projects by using a virtual assistant. Virtual assistants are usually cloud-based applications that require internet access. The flexibility of a virtual assistant is the ability to contract for only the services they require. Start with the fundamentals of Python to create a virtual assistant for your computer. Task-oriented virtual assistants The ability of a virtual assistant to comprehend and carry out requests. Virtual assistants are computer programmes that recognise vocal and written orders and carry out tasks for clients. Virtual assistants can understand and respond to human speech using synthesised voices. .

There are various voice assistants on the market, including Siri for the Apple TV remote, Google Assistant for the Pixel XL smartphones, Alexa as a smart speaker built on the Raspberry Pi, and Microsoft Cortana for Windows 10. We designed a virtual assistant for Windows in the same way we did for all other virtual assistants. This project makes use of Artificial Intelligence technologies. Use Python as a programming language since it has a large number of libraries. To receive speech requests, this software uses a microphone as an input device. To provide the output voice, the user and speaker are used as output devices. This method combines numerous technologies, including voice recognition, voice analysis, and language processing. Natural Processing language is used by virtual assistants to match user text or voice input to executable commands. When a user instructs a personal virtual assistant to execute a task, the voice impulses are transformed into digital signals using natural language. Virtual assistant scan offers a variety of services, including

- Showing weather condition.
- Scheduling appointment.
- Making travelling arrangements.
- Playmusic, movies, etc.
- Showing date-time.
- Managing emails.
- Open apps.

## Methodology



NLP is used by virtual assistants to match user text or voice input to commands that can be executed. When a user asks a question to a personal assistant, the natural language audio signal is translated into an executable command or digital data that the software can examine. Then, to discover an acceptable answer, this data is compared to software data. Virtual Assistant is a programme that allows you to run computers using your own commands. We use some Python installation packages to create virtual assistants, such as-

### 1) Speech recognition

The device converts speech input to text using Google's online speech recognition algorithm. Users can speak and get text in exchange for voice input from a particular corpus organised on a computer network server at the information centre, which is briefly stored in the system before being sent to Google Cloud for speech recognition. The voice assistant application receives and sends the same text.

### 2) Python Backend

Python Backend is used throughout the software. The Python Backend obtains output in exchange for voice input from users using a speech recognition module, and then determines whether the command is Context Extraction, API Call, or System Call. After that, the response is sent back to provide the needed output.

### 3) API calls

An Application Programming Interface (API) is a software intermediary that allows two apps to communicate with one another. To put it another way, API is a message carrier that sends the user's request to the provider and then returns the response to the user.

#### 4) Content Extraction

Context Extraction is a technique for extracting structured data from machine-readable documents that are unstructured or semi-structured. Natural language processing (NLP) is used to process human language documents in this activity. Content extraction includes activities such as automatic annotation and content extraction from various photos, video, and audio.

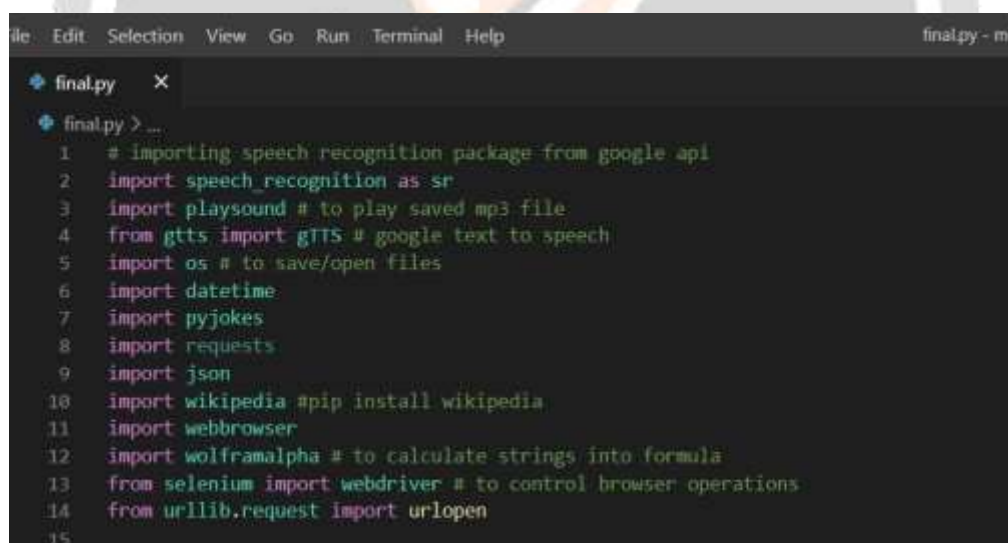
#### 5) System Calls

A programmatic approach is used in System Calls, in which a computer programme requests a service from the kernel of the operating system on which it is running, which may include functions related to hardware services such as accessing a hard disc drive, creating and executing new processes, and communicating with process scheduling. It serves as a vital link between the process and the operating system.

#### 6) Google-Text-to-Speech

Text-to-Speech is a technology that converts user-provided text into speech. To put it another way, a TTS Engine turns written text into phonemic representation, which is subsequently converted to waveforms, resulting in sound. TTS has progressed significantly and now includes a variety of languages given by third-party publishers.

### System Architecture



```

file Edit Selection View Go Run Terminal Help
final.py - max
final.py x
final.py > ...
1 # importing speech recognition package from google api
2 import speech_recognition as sr
3 import playsound # to play saved mp3 file
4 from gtts import gTTS # google text to speech
5 import os # to save/open files
6 import datetime
7 import pyjokes
8 import requests
9 import json
10 import wikipedia #pip install wikipedia
11 import webbrowser
12 import wolframalpha # to calculate strings into formula
13 from selenium import webdriver # to control browser operations
14 from urllib.request import urlopen
15

```

#### Wolfram Alpha

It uses Wolfram's algorithms, knowledgebase, and AI technologies to compute expert-level answers to any command.

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

#### Speech recognition

Speech recognition refers to the ability of a machine to understand human speech. In our project, we're using the Google Speech API in Python to create software that can command equipment. To recognise voice instructions, we'll need to install the Pyaudio Python library. The pip install Pyaudio command is used to install Pyaudio.

### gTTS-

Your audio questions command is converted to text using Google's text-to-speech products. gTTS converts the response from the look-up function you write to get the answer to the inquiry or command into an audio format. The Google Translate API is used by this package.

### Date-time

The Datetime package is used to display the current date and time. This datetime module includes Python support.

### Wikipedia

We all know Wikipedia is a fantastic and vast source of information, and we've utilised the Wikipedia module in our project to retrieve more information from Wikipedia or to conduct a Wikipedia search. Use pip install wikipedia to install the Wikipedia module.

### Webbrowser

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

### OS

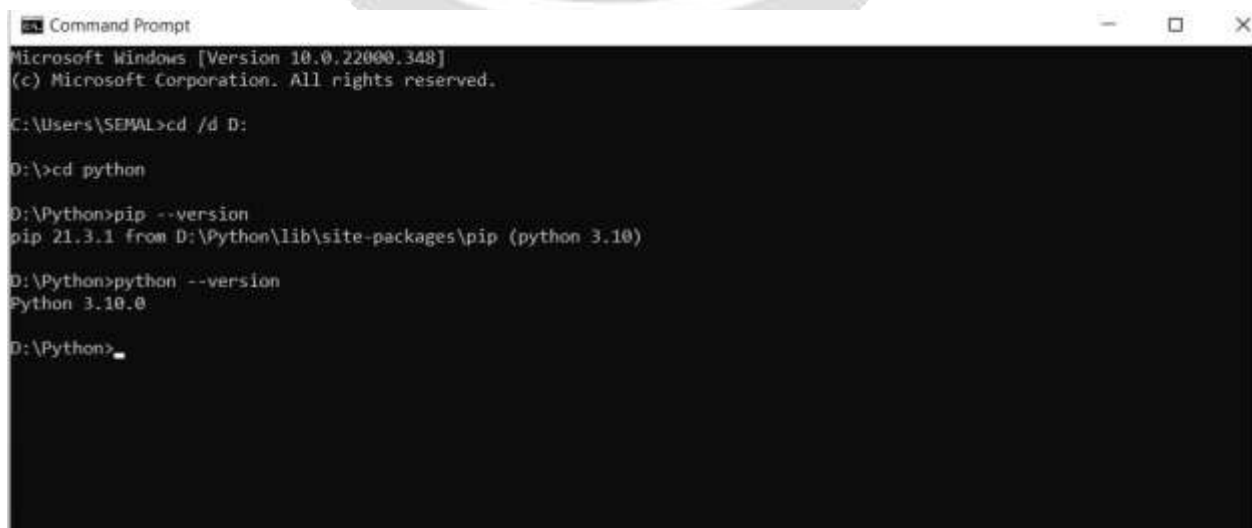
Python's OS module contains functions for dealing with the operating system. Python's standard utility modules include OS. This module allows you to use operating system-specific features.

Pyjokes-Pyjokes is used for collection 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.

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

Smtplib- The simple mail transfer protocol library 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 all the complexities of SMTP away. It provides a Simple Mail Transfer Protocol (SMTP) client implementation.

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



```
Command Prompt
Microsoft Windows [Version 10.0.22000.348]
(c) Microsoft Corporation. All rights reserved.

C:\Users\SEMAL>cd /d D:

D:\>cd python

D:\Python>pip --version
pip 21.3.1 from D:\Python\lib\site-packages\pip (python 3.10)

D:\Python>python --version
Python 3.10.0

D:\Python>
```

## Result

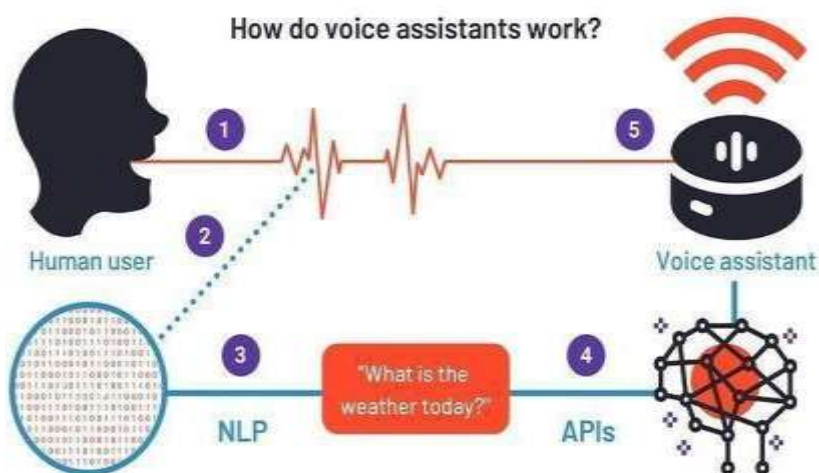
Virtual assistants take up less time. A virtual assistant is a piece of software that can interpret commands and carry out tasks specified by the client. NLP is used by virtual assistants to match speech or text input with executable commands. With the help of a virtual assistant, you may control your machine, such as a laptop or a PC. Because it is a quick process, it saves time. Because your virtual assistant works for you at set times, she is always available to you and can swiftly adjust to changing demands. Your virtual assistant will be accessible to assist you and, if their workload permits, others such as relatives and coworkers.

## Conclusion

We addressed Personal Virtual Assistant for Windows Using Python in this paper. Humans' lives are made easier by virtual assistants. The flexibility of a virtual assistant is the ability to contract for only the services they require. We build virtual assistants in Python for all Windows versions, just as Alexa, Cortana, Siri, and Google Assistant. This project makes use of Artificial Intelligence technologies. Virtual Personal Assistants can help you manage and organise your time effectively. Virtual personal assistants are also more dependable than human personal assistants since they are more portable, loyal, and accessible at all times. Our virtual assistant will provide you with recommendations and instructions, as well as learn more about you. This gadget is likely to be permanent.

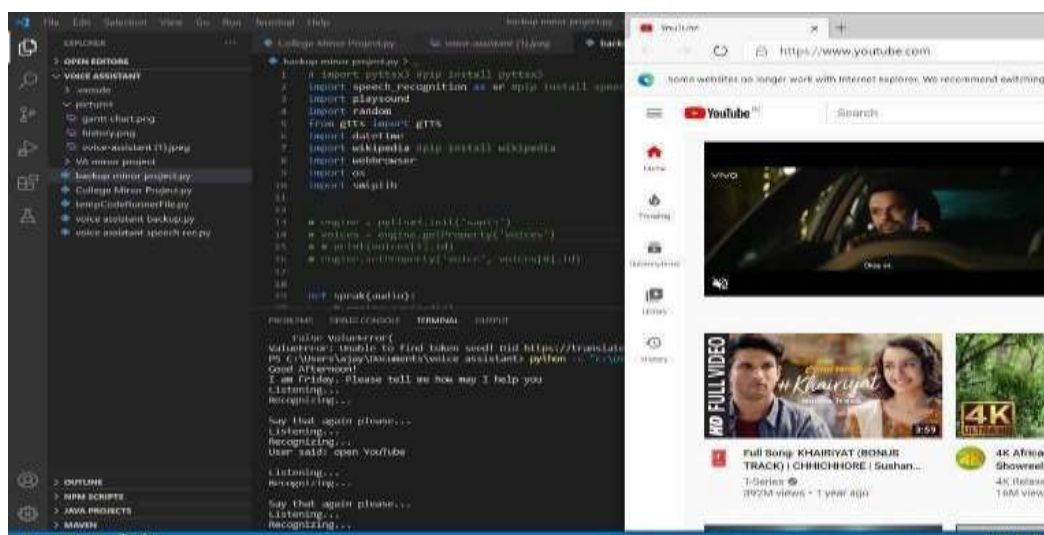
## Outcome

In this research, we created a voice assistant that can perform any task in exchange for requests from users without making any mistakes. We've added more functionality, such as listening to the user's speech solely and not being activated by background noise. This project's modular structure makes it simple to comprehend and adapt. We can expand the program's capabilities without affecting its functionality. All of the Python packages were installed, and the code was written using the Visual Studio Code Integrated Development Environment (IDE). This project utilises Python 3.x and data from the environment for varied noises.



## Summary

In this research, we created a voice assistant that can perform any task in exchange for requests from users without making any mistakes. We've added more functionality, such as listening to the user's speech solely and not being activated by background noise. This project's modular structure makes it simple to comprehend and adapt. We can expand the program's capabilities without affecting its functionality. All of the Python packages were installed, and the code was written using the Visual Studio Code Integrated Development Environment (IDE). This project uses Python 3.x with data from the environment Methodology.



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