**A Project**

on

**INTELLIGENT PERSONAL DESKTOP ASSISTANT**

***Submitted in partial fulfillment of the***
***requirement for the award of the degree of***

# Bachelor of Computer Science Engineering

GALGOTIAS UNIVERSITY
(Established under Galgotias University Uttar Pradesh Act No. 14 of 2011)

**Under The Supervision of**

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**INDIA**
**DEC 2021-2022**

# SCHOOL OF COMPUTING SCIENCE AND ENGINEERING
# GALGOTIAS UNIVERSITY, GREATER NOIDA

## CANDIDATE'S DECLARATION

I/We hereby certify that the work which is being presented in the thesis/project/dissertation, entitled **"INTELLIGENT PERSONAL DESTOP ASSISTANT."** in partial fulfillment of the requirements for the award of the B.tech Computer Science submitted in the School of Computing Science and Engineering of Galgotias University, Greater Noida, is an original work carried out during the period of month, Year to Month and Year, under the supervision of **Dr. Sreenarayanan Nm** ,Associate Professor, Department of Computer Science and Engineering/Computer Application and Information and Science, of School of Computing Science and Engineering , Galgotias University, Greater Noida .

The matter presented in the thesis/project/dissertation has not been submitted by me/us for the award of any other degree of this or any other places.

**Abhash Singh**

**Sarthak Shukla**

This is to certify that the above statement made by the candidates is correct to the best of my knowledge.

**Mr. Sreenarayanan Nm**

**Associate Professor**

## CERTIFICATE

The Final Thesis/Project/ Dissertation Viva-Voce examination of Abhash Singh , Sarthak Shukla has been held on _____ and his/her work is recommended for the award of B.tech Computer Science.

**Signature of Examiner(s)** **Signature of Supervisor(s)**

**Signature of Project Coordinator** **Signature of Dean**

Date: December , 2021
Place: Greater Noida

# Abstract

— Our default AI Voice is a smart personal assistant, a human language interface, automated software and Windows PC voice recognition software. It is an AI software that works by allowing you to interact with your computer using voice commands. It also allows you to do accurately convert speech to the text.

Our artificial intelligence assistant enables the user to control his computer using native language commands and simplifies your life. It will be a powerful personal and office production software. Unlike chat-bot, most importantly it works very well and helps you in performing tasks. It is a smart multi-functional software that offers a single windows environment to control your computer.

Desktop Voice Assistant assists end-user voice communication with a desktop computer and experience responds to user voice commands. Suggested the system has the ability to work offline communication on a desktop computer. It's called Desktop a clever voice-recognition assistant, i.e. takes a user input in voice or text format and processes it again returns the output in various ways as the action should be done or the search result told to the end-user.



***Keywords*— Voice Assistant, Speech Recognition, Internet, Speech Synthesis.**

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# Statement of Project Report Preparation

- Thesis title: DESKTOP ASSISTANT
- Degree for which the report is submitted: BACHELOR OF TECHNOLOGY
- Project Supervisor was referred to for preparing the report.
- Specifications regarding thesis format have been closely followed.
- The contents of the thesis have been organized based on the guidelines.
- The report has been prepared without resorting to plagiarism.
- All sources used have been cited appropriately.
- The report has not been submitted elsewhere for a degree

# VIRTUAL ASSISTANT
## Introduction

In today's era almost all tasks are digitalized. We have Smartphone in hands and it is nothing less than having world at your fingertips. These days we aren't even using fingers. We just speak of the task and it is done. There exist systems where we can say Text Dad, "I'll be late today." And the text is sent. That is the task of a Virtual Assistant. It also supports specialized task such as booking a flight, or finding cheapest book online from various e commerce sites and then providing an interface to book an order are helping automate search, discovery and online order operations. Virtual Assistants are software programs that help you ease your day to day tasks, such as showing weather report, creating reminders, making shopping lists etc. They can take commands via text (online chat bots) or by voice. Voice based intelligent assistants need an invoking word or wake word to activate the listener, followed by the command. For my project the wake word is JIA. We have so many virtual assistants, such as Apple's Siri, Amazon's Alexa and Microsoft's Cortana. For this project, wake word was chosen JIA. This system is designed to be used efficiently on desktops. Personal assistant software improves user productivity by managing routine tasks of the user and by providing information from online sources to the user. JIA is effortless to use. Call the wake word 'JIA' followed by the command. And within seconds, it gets executed. Voice searches have dominated over text search. Web searches conducted via mobile devices have only just overtaken those carried out using a computer and the analysts are already predicting that 50% of searches will be via voice by 2020.Virtual assistants are turning out to be smarter than ever. Allow your intelligent assistant to make email work for you. Detect intent, pick out important information, automate processes, and deliver personalized responses. This project was started on the premise that there is sufficient amount of openly available data and information on the web that can be utilized to build a virtual assistant that has access to making intelligent decisions for routine user activities

# BACKGROUND

There already exist a number of desktop virtual assistants. A few examples of current virtual assistants available in market are discussed in this section along with the tasks they can provide and their drawbacks.

## SIRI from Apple

SIRI is personal assistant software that interfaces with the user thru voice interface, recognizes commands and acts on them. It learns to adapt to user's speech and thus improves voice recognition over time. It also tries to converse with the user when it does not identify the user request. It integrates with calendar, contacts and music library applications on the device and also integrates with GPS and camera on the device. It uses location, temporal, social and task based contexts, to personalize the agent behavior specifically to the user at a given point of time. Supported Tasks

- Call someone from my contacts list
- Launch an application on my iPhone
- Send a text message to someone
- Set up a meeting on my calendar for 9am tomorrow
- Set an alarm for 5am tomorrow morning
- Play a specific song in my iTunes library
- Enter a new note

Drawback SIRI does not maintain a knowledge database of its own and its understanding comes from the information captured in domain models and data models.

# OBJECTIVES

Main objective of building personal assistant software (a virtual assistant) is using semantic data sources available on the web, user generated content and providing knowledge from knowledge databases. The main purpose of an intelligent virtual assistant is to answer questions that users may have. This may be done in a business environment, for example, on the business website, with a chat interface. On the mobile platform, the intelligent virtual assistant is available as a call-button operated service where a voice asks the user "What can I do for you?" and then responds to verbal input. Virtual assistants can tremendously save you time. We spend hours in online research and then making the report in our terms of understanding. JIA can do that for you. Provide a topic for research and continue with your tasks while JIA does the research. Another difficult task is to remember test dates, birthdates or anniversaries. It comes with a surprise when you enter the class and realize it is class test today. Just tell JIA in advance about your tests and she reminds you well in advance so you can prepare for the test. One of the main advantages of voice searches is their rapidity. In fact, voice is reputed to be four times faster than a written search: whereas we can write about 40 words per minute, we are capable of speaking around 150 during the same period of time15. In this respect, the ability of personal assistants to accurately recognize spoken words is a prerequisite for them to be adopted by consumers.

# PURPOSE, SCOPE AND APPILCABILITY

## Purpose

Purpose of virtual assistant is to being capable of voice interaction, music playback, making to-do lists, setting alarms, streaming podcasts, playing audiobooks, and providing weather, traffic, sports, and other real-time information, such as news.
Virtual assistants enable users to speak natural language voice commands in order to operate the device and its apps. There is an increased overall awareness and a higher level of comfort demonstrated specifically by millennial consumers. In this ever- evolving digital world where speed, efficiency, and convenience are constantly being optimized, it's clear that we are moving towards less screen interaction

## Scope

Voice assistants will continue to offer more individualized experiences as they get better at differentiating between voices. However, it's not just developers that need to address the complexity of developing for voice as brands also need to understand the capabilities of each device and integration and if it makes sense for their specific brand. They will also need to focus on maintaining a user experience that is

consistent within the coming years as complexity becomes more of a concern. This is because the visual interface with voice assistants is missing. Users simply cannot see or touch a voice interface.

## Applicability

The mass adoption of artificial intelligence in users' everyday lives is also fueling the shift towards voice. The number of IoT devices such as smart thermostats and speakers are giving voice assistants more utility in a connected user's life. Smart speakers are the number one way we are seeing voice being used. Many industry experts even predict that nearly every application will integrate voice technology in some way in the next 5 years.

The use of virtual assistants can also enhance the system of IoT (Internet of Things). Twenty years from now, Microsoft and its competitors will be offering personal digital assistants that will offer the services of a full-time employee usually reserved for the rich and famous.

# SURVEY OF TECHNOLOGY

## Python

Python is an OOPs (Object Oriented Programming) based, high level, interpreted programming language. It is a robust, highly useful language focused on rapid application development (RAD). Python helps in easy writing and execution of codes. Python can implement the same logic with as much as $1/5^{th}$ code as compared to other OOPs languages.

## Speech Recognition

This is a library for performing speech recognition, with support for several engines and APIs, online and offline. It supports APIs like Google Cloud Speech API, IBM Speech to Text, Microsoft Bing Voice Recognition etc.

# REQUIREMENT AND ANALYSIS

System Analysis is about complete understanding of existing systems and finding where the existing system fails. The solution is determined to resolve issues in the proposed system. It defines the system. The system is divided into smaller parts.
Their functions and inter relation of these modules are studied in system analysis. The complete analysis is followed below.

## Problem definition

Usually, user needs to manually manage multiple sets of applications to complete one task. For example, a user trying to make a travel plan needs to check for airport codes for nearby airports and then check travel sites for tickets between combinations of airports to reach the destination. There is need of a system that can manage tasks effortlessly.
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 way distinct from theirs. Also, they are easy to use on mobile devices than desktop systems. There is need of a virtual assistant that can understand English in Indian accent and work on desktop system.
.

# REQUIREMENT SPECIFICATION

Personal assistant software is required to act as an interface into the digital world by understanding user requests or commands and then translating into actions or recommendations based on agent's understanding of the world.
JIA focuses on relieving the user of entering text input and using voice as primary means of user input. Agent then applies voice recognition algorithms to this input and records the input. It then use this input to call one of the personal information management applications such as task list or calendar to record a new entry or to search about it on search engines like Google, Bing or Yahoo etc. Focus is on capturing the user input through voice, recognizing the input and then executing the tasks if the agent understands the task. Software takes this input in natural language, and so makes it easier for the user to input what he or she desires to be done.
Voice recognition software enables hands free use of the applications, lets users to query or command the agent through voice interface. This helps users to have access to the agent while performing other tasks and thus enhances value of the system itself. JIA also have ubiquitous connectivity through Wi-Fi or LAN connection, enabling distributed applications that can leverage other APIs exposed on the web without a need to store them locally.

## Virtual assistants must provide a wide variety of services. These include:

- Providing information such as weather, facts from e.g. Wikipedia etc.
- Set an alarm or make to-do lists and shopping lists.
- Remind you of birthdays and meetings.
- Play music from streaming services such as Saavn and Gaana.
- Play videos, TV shows or movies on televisions, streaming from e.g. Netflix or Hotstar.
- Book tickets for shows, travel and movies.

# Feasibility Study

Feasibility study can help you determine whether or not you should proceed with your project. It is essential to evaluate cost and benefit. It is essential to evaluate cost and benefit of the proposed system. Five types of feasibility study are taken into consideration.

1. **Technical feasibility:** It includes finding out technologies for the project, both hardware and software. For virtual assistant, user must have microphone to convey their message and a speaker to listen when system speaks. These are very cheap now a days and everyone generally possess them. Besides, system needs internet connection. While using JIA, make sure you have a steady internet connection. It is also not an issue in this era where almost every home or office has Wi-Fi.
2. **Operational feasibility:** It is the ease and simplicity of operation of proposed system. System does not require any special skill set for users to operate it. In fact, it is designed to be used by almost everyone. Kids who still don't know to write can read out problems for system and get answers.
3. **Economical feasibility:** Here, we find the total cost and benefit of the proposed system over current system. For this project, the main cost is documentation cost. User also would have to pay for microphone and speakers. Again, they are cheap and available. As far as maintenance is concerned, JIA won't cost too much.
4. **Organizational feasibility:** This shows the management and organizational structure of the project. This project is not built by a team. The management tasks are all to be carried out by a single person. That won't create any management issues and will increase the feasibility of the project.
5. **Cultural feasibility:** It deals with compatibility of the project with cultural environment. Virtual assistant is built in accordance with the general culture. The project is named JIA so as to represent Indian culture without undermining local beliefs.

This project is technically feasible with no external hardware requirements. Also it is simple in operation and does not cost training or repairs. Overall feasibility study of the project reveals that the goals of the proposed system are achievable. Decision is taken to proceed with the project.

# HARDWARE AND SOFTWARE REQUIREMENTS

The software is designed to be light-weighted so that it doesn't 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.

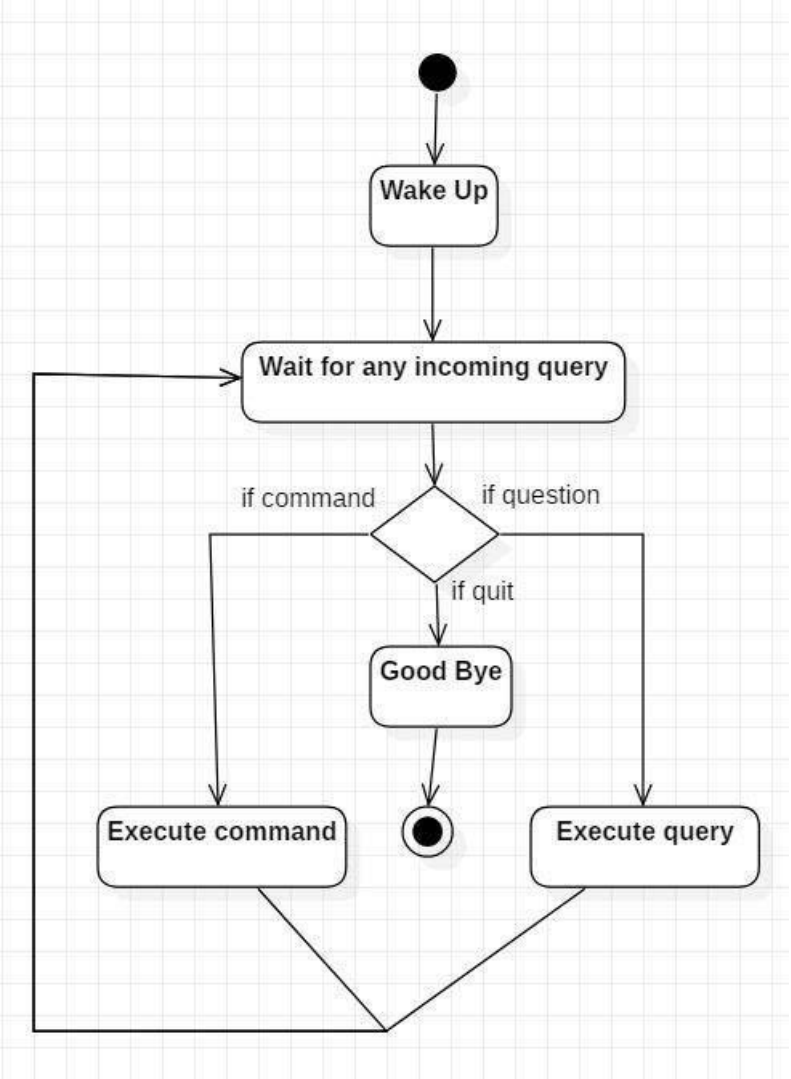
## Hardware:

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

## Software:

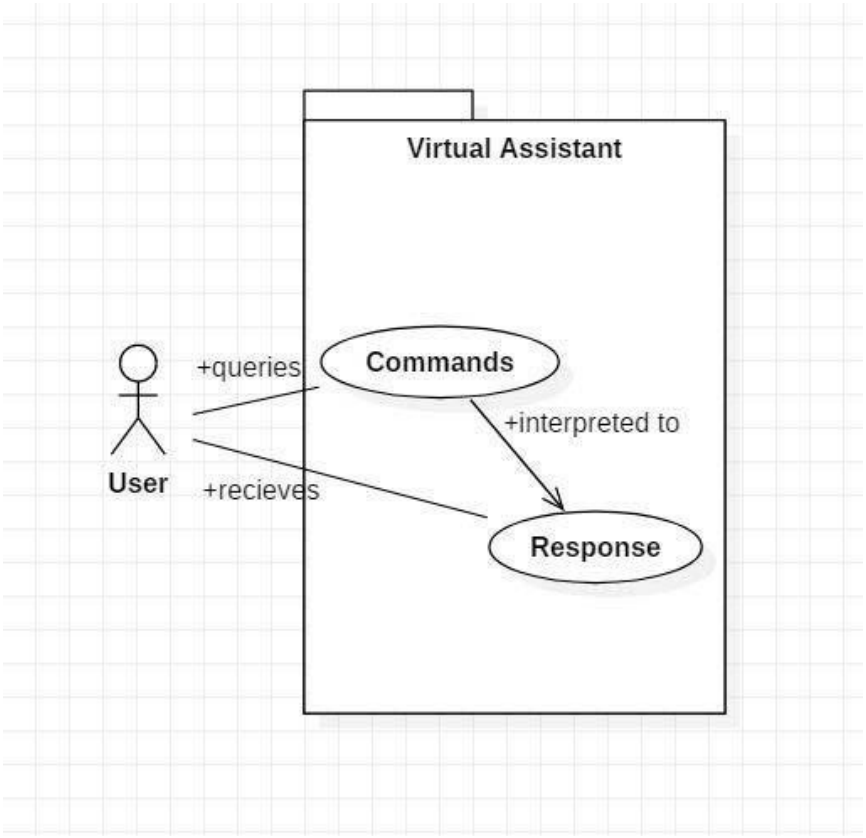
- Windows 7(32-bit) or above.
- Python 3.8 or later
- Chrome Driver
- Selenium Web Automation
- SQLite

# ACTIVITY DIAGRAM




Initially, the system is in idle mode. As it receives any wake up cal it begins execution.
The received command is identified whether it is a questionnaire or a task to be performed. Specific action is taken accordingly. After the Question is being answered or the task is being performed, the system waits for another command. This loop continues unless it receives quit command. At that moment, it goes back to sleep.

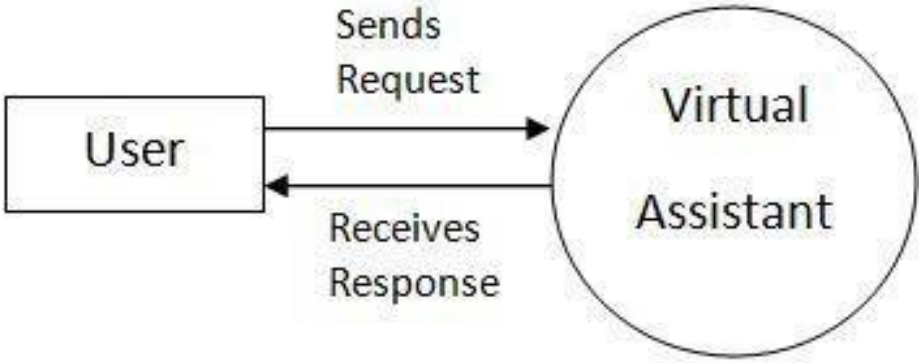
# USE CASE DIAGRAM




In this project there is only one user. The user queries command to the system. System then interprets it and fetches answer. The response is sent back to the user.

# DATA FLOW DIAGRAM

DFD Level 0 (Context Level Diagram)



# Literature review

This field of voice assistants with voice recognition has it see great progress or new things. This is especially so due to its demand on devices such as smartwatches or durability bands, speakers, Bluetooth ears, mobile phones, laptop or desktop, television, etc. Almost all digital devices are coming these days comes with helpful voice assistants to control the device by visualizing only speech. New set for Strategies are constantly being developed to improve automated voice search functionality.
As the amount of data grows exponentially it is now known like Big Data is the best way to improve virtual results helpers include our assistants in machine learning and train our devices according to their usage. Another great one equally important strategies are Artificial Intelligence,

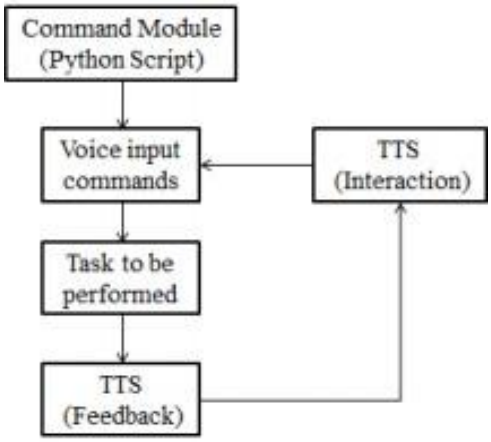
# System

## Architecture SPEECH RECOGNITION

## [2]

Google's speech recognition module Speech Recognition API imported via python using command "import speech_ accepted as sr" This module is used to detect voice provided as user input. This is a free API provided and supported by Google. This is a very simple API that helps to reduce the size of application.

The word provided as the first entry is converted to text using speech recognition module. The text is then processed to give the result of a question given to the user. The final step is conversion of the result of the processed question into speech which is the end result. Time consuming between both are STT because the system first has to listen to the user again different users are different, some are easier to understand.




(Fig . 2 -Flow Diagram)

# PYTTSX

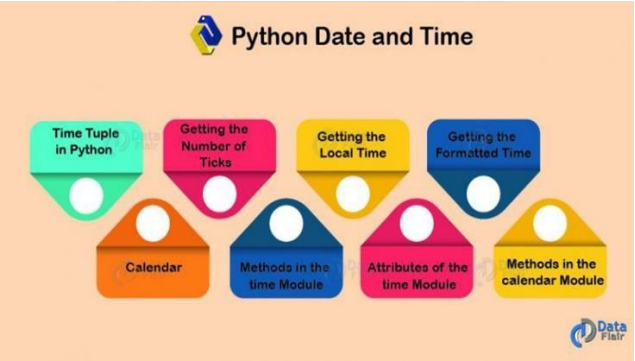
Pyttsx3 is an offline format used for writing speech Conversion to Python and supported by both Python 2 & 3. Performance and standby are also used in this module only. And some are not easily understood. This is a step in there our whole time of execution depends. When the conversation has turned write instructions for making orders and return results to them up in like SHA1, SHA256, SHA512 and MD5 to generate hashes to encrypt the texts for countering multiple attacks such as eavesdropping and eavesdropping attacks.

```
import pyttsx3
import pywin32_system32
def playVoice():
    engine = pyttsx3.init()
    engine.say("Ok")
    engine.runAndWait()
    input()
def main():
    playVoice()
    input()
if __name__ == '__main__':
    main()
```

(Fig . 3 – Code for pyttsx3)

# DATETIME [5]

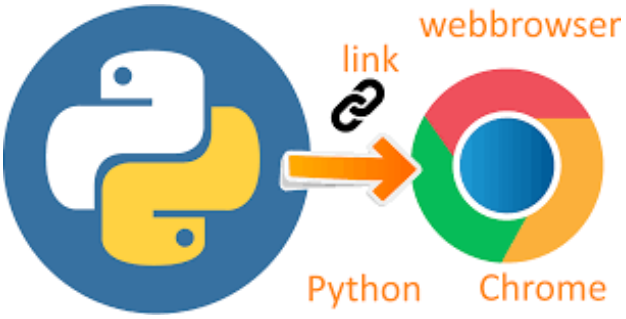
The Date Time module is imported to support the functionality of the date and time. For example, the user wants to know the. Current date and time or the user wants to schedule a task at a certain time. In short this module supports classes to manipulate date and time and perform operations according to it only. This is an essential module, especially in tasks where we want to keep a track of time. This module is very small in size and helps to control the size of our program. If the modules are too large or heavy then the system will lag and give slow responses.




(Fig . 4 – Date and Time)

# WEBBROWSER [6]

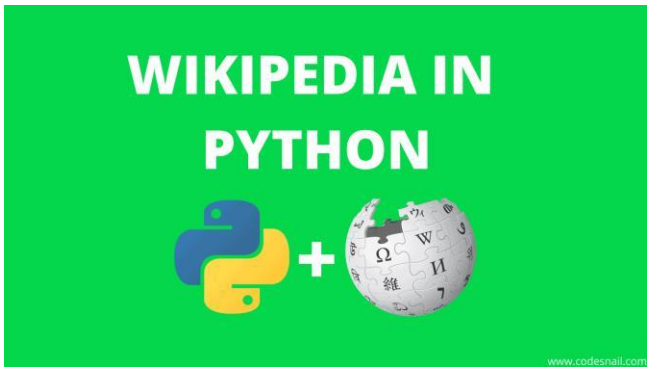
- This module allows the system to display web-based information to users. For example, the user wants to open any website and he gives input as “Open Google”. The input is processed using the web browser module and the user gets a browser with google opened in it. The browser which will be used is the default set web browser.




**(**Fig . 5-Python Linking with Browser)

# WIKIPEDIA

Wikipedia is a library in python which it possible for the virtual assistant to process the queries regarding Wikipedia and display the results to users. This is an online library and needs an internet connection to fetch the results. The no. of lines that the user wants to get as a result can be set manually.



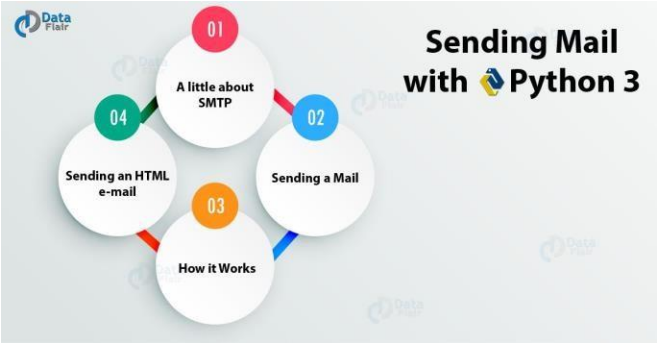

(Fig . 6- Wikipedia Module in Python)

# OS MODULE

OS Module provides an operating system dependent functionalities. If we want to perform operations on files like reading, writing, or manipulate paths, all these types of functionalities are available in an OS module. All the operations available raise an error "OSError" in case of any error like invalid names, paths, or arguments which may be incorrect or correct but just no accepted by the operating system.

# SMTPLIB

Python has this module for in the standard library for working with emails & email servers. The SMTPLIB defines an object known as "SMTP client session object" which is used to send mails by the user. There are 3 steps involved - initialize, sendmail(), quit. When the optional parameters which are host and port, are provided connect method is called with these arguments during the first step which is initialization




(Fig . 7 – Sending Mail with Python)

# DESIGN [12]

The overall design of our system consists of the following phases:

(a) Taking input from the user in the form of voice.

(b) Converting the speech into text to be processed by the assistant.

(c) The converted text is now processed to get the required results.

(d) The text contains one or two keywords that determine what query is to be executed. If the keyword doesn't match any of the queries in the code then the assistant asks the user to speak again.

(e) The result which is in the form of text is converted to speech again to give results to the user.

# Working of  Project

## How Jarvis Assistant helps you get things done

Jarvis is ready to help you get things done, anytime, anywhere. When you ask a question or tell it to do something, Assistant wants to respond to your request in the most helpful way possible - whether you want assistance with everyday tasks, controlling smart home devices, enjoying music or games, communicating with friends and family, getting quick answers or local information, or many other things.

## Understanding your request

If you interact with Assistant by voice, our speech recognition technology converts your request to text. Next, Assistant analyzes the text, in combination with useful information such as recent requests or the type of device you are using, to identify possible interpretations.

For example, if you say “Hey Jarvis”, stop," you might want to stop one of two timers that are running, music that’s playing, or a routine that’s running. You might also want to see search results for “Stop,” or something else entirely.

These main factors for ranking are weighted differently based on how you’re engaging Assistant and your personal preferences, as explained below.

## Choosing a provider

Assistant can respond to some types of requests by connecting you with responses provided by other creators and businesses, as well as responses from Google. For example, you can ask for a game from your favorite creator, "Hey Google, play [name of game]," and Assistant starts that game. You can also make a general request, “Hey Google, play a game,” which could be fulfilled by a number of different providers that have told Assistant they offer games. In situations where more than one provider can fulfill the request, Assistant selects a provider by applying the following rules in this order:

If you’ve chosen a provider, Assistant selects that provider. For example, you may have picked a preferred music provider through Assistant settings or setup flows, or your request may explicitly name a provider.

### (a) Information about your preferences

Depending on your Google Account settings, this data can include which providers you use most often or most recently, which apps are installed or open on your phone or other device, which providers you have linked to your Google Account, and other information about your activity on Google services.

### (b) Information about the provider

The quality of user experience from a provider, based on things like overall popularity, average user rating, how often the provider successfully responds to user queries, and if you have a subscription with that provider.

Eligible responses may be limited due to legal regulations that govern sensitive information or audiences. For example, all providers that participate in the Actions for Families program must ensure that their Actions comply with applicable laws like COPPA.

### Personalizing your results

The Google Assistant uses different types of information to make your experience more useful and relevant. Depending on your settings, the Assistant will reference data in your Google Account to get you what you need when you ask for help. For example, if you ask, “When is my next meeting?”, the Assistant answers your question using information from your Calendar. Or if you ask “Do I need an umbrella tomorrow?” the Assistant uses your current location to give you the most relevant answer. When you ask Google Assistant for something that requires personal information on a shared device, such as a smart display or smart speaker, the Assistant attempts to recognize you using technologies such as Voice Match or Face Match to protect your privacy.

Jarvis Assistant always uses other criteria, such as overall popularity and average user ratings for content, and not just your own activity to determine the best responses to your requests. When you access other services through Assistant, such as music or video streaming, those services may apply their own ranking systems and personalization criteria to respond to your requests.

## Providing the best response to fulfill your request

After the ranking process and any personalization is completed, Assistant then

responds with what it thinks is the best option, a list of options, or lets you know if it doesn’t understand your request.

If there are several highly ranked responses, Assistant may ask you for more information to clarify your intent, show you follow-up suggestions (on devices with screens), or let you know about related things you can ask.

## How Jarvis Assistant ranks results

In some cases, the best way Assistant can help with your request is to provide results from Google Search. For example, Assistant may show you Search results on phones or other devices with a screen if it thinks you want to see a wider set of results, or if no other response ranks higher.

Generally, when Assistant provides results from Google Search, those results are similar to what you would find if you searched for them in Google Search. Assistant applies limited algorithmic adjustments with the aim of providing results that are appropriate and helpful for Assistant users:

### How Google Assistant delivers news and podcasts

Trustworthy and timely information empowers people to better understand the world around them and make educated decisions. Google aims to make it easier to stay informed by using technology to organize what journalists are reporting about current issues and events. We don’t have an editorial point of view. Instead, Google Assistant is designed to connect you with a broad array of information and perspectives to help you develop your own point of view and make informed decisions.

All news providers must comply with our news content policies. In general, Google does not pay news providers for their content. However, in some cases Google licenses content from providers in order to bring you relevant, authoritative news content. We don't rank licensed news items higher than other similar news content. For more information about how Google brings news content to you through Google Assistant and other Google services, see How News Works.

## Keeping your information private and secure

When you use Google Assistant, you trust us with your data, and it’s our responsibility to protect and respect it. For more information about how Google

Assistant is built to keep your information private and secure, see the Assistant Privacy and Security page in the Google Safety Center. You can control many privacy options in Assistant settings, and by saying “Hey Google, turn on Guest Mode,” you can turn on Guest Mode for your shared devices whenever you don’t want Assistant interactions to be saved to your Google Account or used to personalize your experience. Guest Mode is available on Google speakers and Smart Displays in English, with more languages to follow.

# Result / Output

Listening…

Recognizing…
**User said:** Gaurav
######################
Welcome Mr. Gaurav
######################
Listening…
Recognizing…
**User said:** yes
Listening…
Recognizing…
**User said:** Gaurav in Wikipedia
Gaurav is an Indian and Nepalese male name. The name literally means pride.
== Notable people named Gaurav ==
**Gaurav S Bajaj, Indian television actor**
**Gaurav Bhatt, Indian Music Director, singer, songwriter.**
Listening…
Recognizing…
**User said:** open YouTube
Listening…
Recognizing…
**Unable to Recognizing your voice.**
Listening…
Recognizing…
**User said:** exit.

# Conclusion

Through this voice assistant, we have automated various services using a single line command. It eases most of the tasks of the user like searching the web, retrieving weather forecast details, vocabulary help and medical related queries. We aim to make this project a complete server assistant and make it smart enough to act as a replacement for a general server administration. The future plans include integrating Jarvis with mobile using React Native to provide a synchronised experience between the two connected devices. Further, in the long run, Jarvis is planned to feature auto deployment supporting elastic beanstalk, backup files, and all operations which a general Server Administrator does. The functionality would be seamless enough to replace the Server Administrator with Jarvis.

This paper has discussed voice recognition algorithms which are important in improving the voice recognition performance. The technique was able to authenticate the particular speaker based on the individual information that was included in the voice signal. The results show that these techniques could use effectively for voice recognition purposes. Several other techniques such as Liner Predictive Coding (LPC), Dynamic Time Wrapping (DTW), and Artificial Neural Network (ANN) are currently being investigated. The findings will be presented in future publications.

1. Jarvis is a digital and virtual assistant with artificial intelligency
2. It is very flexible and useful technology.
3. It provides a better interface to deal with it.

# Future scope

We plan to Integrate Jarvis with mobile using react native, to provide a synchronized experience between the two connected devices. Further, in the long run, Jarvis is planned to feature auto deployment supporting elastic beanstalk, backup files, and all operations which a general Server Administrator does. The functionality would be seamless enough to replace the Server Administrator with Jarvis.

## Functional Requirements:

- Linux Distribution
- Proper Internet Connection
- Github Credentials
- Docker installed
- Python 2.7
- Heroku CLI
- Mplayer for voice support (Text-to-Speech)
- Chromium-based browser, like Chrome, Edge
- Heroku Credentials
- Node JS with npm

## Is there any danger with AI?

Researchers working on the technology agree that a super intelligent AI is unlikely to reveal human emotions like anxiety or love. Moreover, there is no reason to expect AI to become malicious or caring intentionally. The risks involved with AI:

1. The AI is programmed to do something distressing – Artificial intelligence systems like autonomous weapons are programmed to kill. If these weapons are wrongly handled by people for bad things, these weapons could easily result in mass casualties. This is a serious risk for researchers, which is also present in narrow AI.
2. AI is programmed to do something advantageous, but it creates a harsh method to achieve its goal – This result can be seen when we fail to completely align the goals of AI with ours.

## Robots will protect us from disasters-

AI for robotics will allow people to point to the challenges in taking care of an aging population and enable longer independence. It will minimize the traffic accidents and deaths. It also enables disaster response for hazardous situations like the nuclear meltdown at the Fukushima power plant.

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