

# AI Based Virtual Voice Assistant For Automation

Dr. R. Athilingam<sup>1</sup>, N. Divagar<sup>2</sup>, M. Prakash<sup>3</sup>, J. Niranjana Balji<sup>4</sup>

<sup>1, 2, 3, 4</sup> Dept of Electronics And Communication Engineering

<sup>1, 2, 3, 4</sup> Nadar Saraswathi College of Engineering and Technology, Theni, Tamil Nadu, India

**Abstract-** The instructions for the assistant can be handled according to the user's needs. So, we're utilising Python to make scripting easier for this project. The process of transforming voice to text is known as speech recognition. This is often utilised in voice assistants such as Alexa, Siri, and others. Speech Recognition is a Python API that allows us to turn voice into text. Making my own helper was a fun project. With a single voice command, you can now send out emails without typing a single word, search on Google without opening the browser, and perform a variety of other daily chores, such as playing music or starting your favourite IDE. In the current circumstances, technological advancements are such that they can accomplish any activity with the same efficiency, if not more effectively, than we can. Programming this project taught me that the notion of Artificial Intelligent(AI) in any industry reduces human work and saves time.

**Keywords-** virtual voice assistant, python voice assistant, Text to speech, Mac voice assistant, offline Voice assistant.

## I. INTRODUCTION

When Artificial Intelligence is combined with machines, it demonstrates the ability to think like a person. In this example, a computer system is built in such a way that human interaction is almost always necessary. Because Python is a new language, creating a Voice Assistant script in Python is straightforward [10,11]. The assistant's instructions can be tailored to the user's need. Alexa, Siri, and other voice assistants use speech recognition. Speech Recognition is a Python API that allows us to transform speech into text. Making my own helper was a fun project. With a single voice command, you can now send out emails without typing a single word, search on Google without opening the browser, and perform a variety of other daily chores, such as playing music or starting your favourite IDE. In the current circumstances, technological advancements are such that they can accomplish any activity with the same efficacy than we can. Programming this project taught me that the notion of AI in any industry reduces human work and saves time. Because the voice assistant use Artificial Intelligence, the results it produces are extremely accurate and efficient. By removing the idea of typing totally and acting as another individual to whom we are chatting and requesting to complete a task, the

assistant can help to reduce human effort and time spent on any activity [1, 2]. The assistant is better than a human helper, but it is more effective and efficient at completing any duty. The libraries and packages used to create this aid focus on time complexity and time reduction. It has the ability to send emails, read PDF files, and so on. It can send text messages using WhatsApp [3]. This article is prepared with the reference structure of the reference articles [14, 15, 16]

It may launch the command prompt, your preferred IDE, notepad, and so on. It is capable of playing music. It can perform Wikipedia searches on your behalf. It can open websites such as Google, YouTube, and others on a web browser. It may give you a weather prediction as well as desktop reminders. It is possible to hold a primitive chat. It can also lock and unlock using facial recognition [6, 7]. PyCharm IDE was used to develop this project, and all py files were produced in PyCharm. In addition, I utilised the following modules and libraries in my project. Speech Recognition, Datetime, Wikipedia, Smtplib, pywhatkit, pyjokes, pyPDF2, pyautogui, PyQt, and many more.



Fig 1. Timeline of the voice assistants.

Functionalities of this project includes face verification security system, the user can customise the commands, it can sent the mails with file attachments, it can access the registered smart devices, it can managed all linked social accounts, etc.,

## II. LITERATURE SURVEY

There have been significant breakthroughs and innovations in the field of virtual assistants (VAs) with speech recognition. This is owing to the rising demand for smartwatches or fitness bands, smart speakers, Bluetooth earbuds, smart mobile phones, AI-powered laptops or desktop computers, televisions, and other devices [8, 9]. Almost every

digital product on the market now has a voice assistant that allows the user to control the device solely through speech recognition. To improve the performance of voice automated search, a new set of AI techniques is always being developed. As the amount of information grows dramatically, a simple way to enhance the outcomes of virtual assistants is to include machine learning into our assistants and educate our gadgets consistent with their usage [10, 11]. Ai technology, the Internet - Of - things, Big Data access, and so on are all important new techniques. We will easily automate the task with the use of voice assistants; simply provide the input to the machine in the form of speech and it will perform all of the tasks, from converting voice speech into text form to extracting Keywords are extracted from the text, and the query is run to return data to the user.

This is really useful in today's day-to-day life.

From smart phones to personal computers to the automation and mechanical sectors, For automating activities and increasing productivity, these types of helpers are in high demand.

**Cortana-** It is a Microsoft voice assistant it works only in the Microsoft devices, and it necessary the internet connection to execute the voice commands.

**Siri-** This is an apple based voice assistant which was compatible only with the apple products, and it also requires the internet connection to start the process.

### III. PRESENT SYSTEM

Many existing voice assistants, such as Alexa, Siri, Google Assistant, and Cortana, leverage the notion of language processing and speech recognition. They listen to the command supplied by the user and conduct that specific function in a highly efficient and effective manner. Because these voice assistants use Artificial Intelligence, the results they provide are extremely precise and efficient. These assistants can help to reduce human effort and time spent on any work by reducing the need for typing and acting as another person with whom we are conversing and asking a job be completed. These assistants are no less than human assistants, but they are more effective and efficient at completing any work. The algorithm utilised to create these assistants focuses on time complexity and reduces time.

However, to utilise these assistants, one must have an account (such as a Google account for Google Assistant or a Microsoft account for Cortana) and must have an online connection because these assistants will only operate with an

internet connection. They are compatible with a wide range of devices, including phones, computers, and speakers. The existing voice assistant has recognised the limited number of commands and in this existing work only recognises the preset for their performed works online. And some of the features won't work in other operating systems and the data has been collected.

### IV. PROPOSED SYSTEM

Making my assistant was a worthwhile project. It is now possible to send emails along with the attachments without typing a single word, search on Google without opening the browser, and conduct many more daily tasks, such as playing music or launching your favourite IDE, creating a new file in a particular path, hide and unhide the folders, switching the windows, connecting the mobile devices, with a single voice command. And we name our assistant as RYUK.

RYUK is different from other standard voice assistants in that it is designed for the desktop and does not require users to register an account in order to use it. It also does not require an online connection to obtain instructions for any work that was previously completed offline. And some task needs an internet connection to make that work using the voice assistant. Our voice assistant works in two operating systems the Windows operating system and the Mac operating system and some of the outcome and work process differs between windows and Mac operating system. PyCharm is the IDE used in this project. PyCharm was used to produce all of the python files, and it was also used to install all of the essential packages. pyttsx3, SpeechRecognition, Datetime, Wikipedia, Smtplib, pywhatkit, pyjokes, pyPDF2, pyautogui, PyQt, and other modules and libraries were used in this project.

In this voice assistant system has high features in Mac operating system we giving addition features like showing number grid system to perform some additional task for example opening some files which was not in the voice command and it perform some of tasks and it has some additional features. With the advancement, RYUK can perform any task with the same effectiveness. Making this project taught me that the concept of AI in any industry reduces human work and saves time. This project's functionalities include the ability to send emails, read PDF files, send text messages via WhatsApp, and launch command prompt, your preferred IDE, notepad, and so on. It can play music and look up information on Wikipedia for you. It can use a web browser to open websites like Google, YouTube, and others. It may provide you a weather prediction as well as desktop reminders. It is feasible to have a simple conversation.

And finally in this voice assistant the commands can be customisable by the user who can use this.

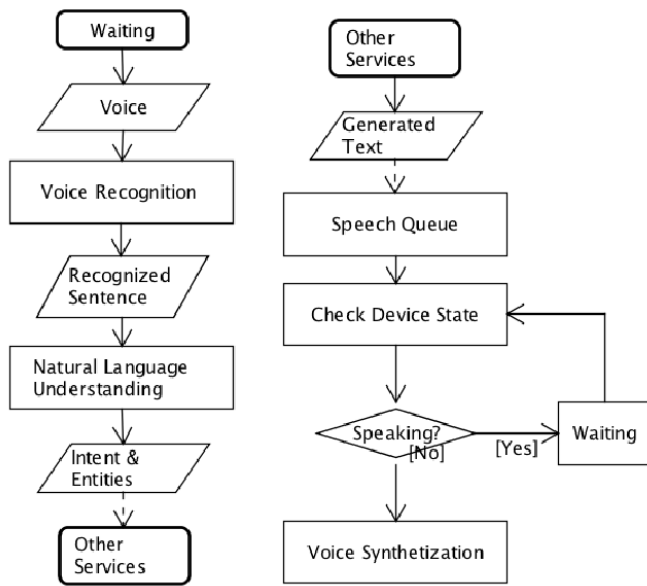


Fig 2. Flowchart for voice flow algorithm.

The proposed system would have the following functionality:

- The system will continue to listen for orders, and the time spent listening is flexible and may be adjusted to meet the needs of the user.
- In any instance, if the system is unable to gather information from the user input, it will keep requesting to repeat the process until the necessary number of times is reached.
- Many features are supported in the proposed current version, such as playing music, accessing emails, text messaging, searching on Wikipedia, or launching and accessing system installed apps, opening anything in a web browser, and so on.
- The system will continue to listen for orders, and the duration of the listening may be adjusted to meet the needs of the user.
- If the system is unable to acquire information from human input, it will repeatedly ask to repeat until the target number of times is reached.

### V. SYSTEM DESIGN

The data flow for RYUK is as follow:

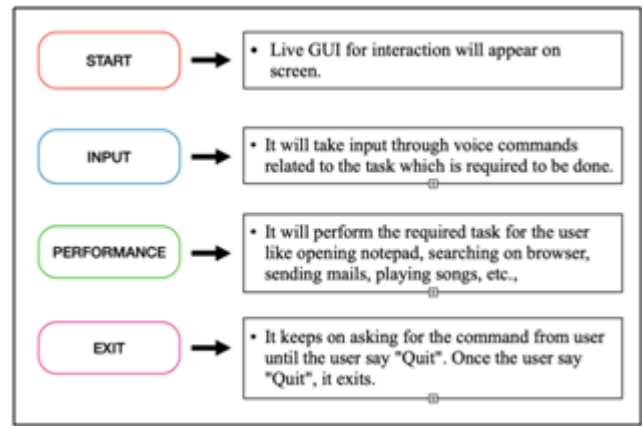


Fig 3. Data flow of the voice assistant RYUK.

The system is designed using the concept of Artificial Intelligence and with the help of necessary packages of Python. Python provides many libraries and packages to perform the tasks, for example, pyPDF2 can be used to read PDFs. The data in this project is nothing but user input, whatever the user says, the assistant performs the task accordingly. The user input is nothing specific but the list of tasks which a user wants to get performed in human language i.e. English.

### VI. SYSTEM STRUCTURES

The program's voice recognition module is Google's Speech Recognition API, which is loaded into Python using the command "import speech recognition as sr." This module is used to acknowledge the user's voice input, and some of the modules that are utilised are mentioned below.

- **pyttsx3:** It is a python library which converts text to speech.
- **pywhatkit:** It is python library to send WhatsApp message at a particular time with some additional features.
- **Datetime:** This library provides us the actual date and time.
- **Wikipedia:** It is a python module for searching anything on Wikipedia.
- **Smtplib:** Simple mail transfer protocol that allows us to send mails and to route mails between mail servers.
- **pyPDF2:** It is a python module which can read, split, merge any PDF.
- **Webbrowser:** It provides interface for displaying web-based documents to users.
- **Pyautogui:** It is a python libraries for graphical user interface.

- **os:** It represents Operating System related functionality.

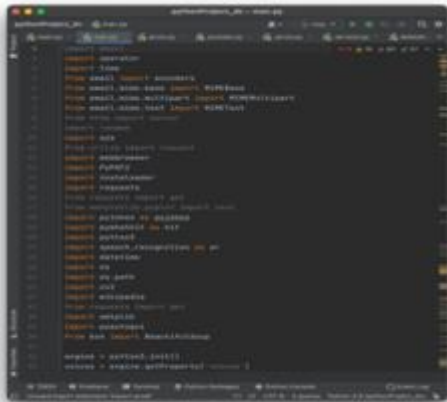


Fig 4. Imported Modules and Libraries.

- **sys:** It allows operating on the interpreter as it provides access to the variables and functions that usually interact strongly with the interpreter.

**VII. RESULTS AND DISCUSSION**

In this project there are the results for two operating systems i.e, windows operating system, Mac operating system.



Fig 5: open any application using voice command

From the above figure 5 the user says open any application it will opens the application.



Fig 6: shows number grid using voice command

From the figure 6 the number grid shows to perform some other critical tasks which was not performed by the voice for example : from the number grid we need to open a

particular file but it not has any orders in voice commands then the number grid helps to perform the task.

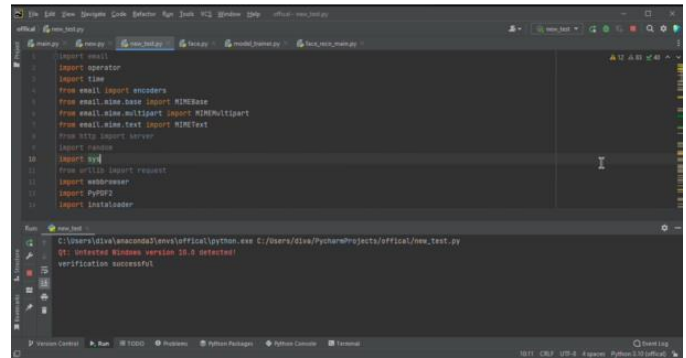


Fig 7: face verification unlock system.

From the figure 7 the system startup the security system wake up by using the face it unlock the voice assistant.

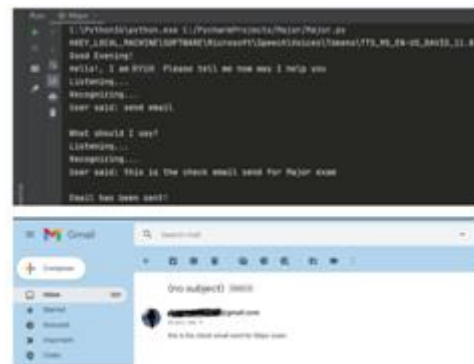


Fig 8: Sends mail to anyone with or without file attachments by using voice.

From the figure 8 it sends mail to the user said mail id and it asks to attach the file in it. If we gives all the requirements the mail will sent to the recipient with the file attachments.

**VIII. CONCLUSION**

RYUK is a very helpful voice assistant without any doubt as it saves time of the user by conversational interactions, its effectiveness and efficiency. But while working on this project we realised some scope of enhancement in the future which are mentioned below.

The scope of the future work is to make RYUK to learn more on its own and develop a new skill in it, RYUK android app can also be developed, voice commands can be encrypted to maintain security.

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