

VIRTUAL ASSISTANT USING PYTHON

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ABSTRACT

In this digital, world, day-to-day life become smarter and easier with the advancement to the technology. This also include virtual assistant which helps to do many task only by telling the task. In this voice command is given as input and output is the result of the task in the form of voice or\and display on the screen, sometimes picture also. Input is given through microphone (Bluetooth wired are assembled). There are many famous virtual assistant such Amazon → Alexa , Apple → siri, Microsoft → Cortana , Samsung → Bixby.

That are widely used smartly by the people and some even support multi language. A virtual assistant is a combined technology speech recognition ,pyttsx(convert text to speech),command processing and various functionalities time,remainder,alarm etc. Virtual assistant is capable of conversation with human (chat bot), daily scheduler, reminder, note writer, calculator , jokes , web content , Alarm, opening and closing of application and file etc. It also connects to the internet to provide result to the user's questions.

Keywords: Virtual assistant using python, Virtual assistant, Internet ,Python.

1.INTRODUCTION

In this country, we all are moving towards automation the scope from manual is shifting towards automation. Early computer require interaction using manual that is typing but in now a days due to introduction of voice interaction application such as apple - size, Microsoft → Cortana, amazon-alexa , google assistant, the interacting become voice controlled.

In this we only have to speak our required command and the command gets executed. It not only supports command and its relevant output but also it behaves like a human while interacting with it.

Some system are complex and hard to type the commands like car's monitor we don't able to drive and type the desired command for the desired output so in this situation virtual assistant plays an important role.

Virtual assistant supports many day-to-day tasks like setting remainders , taking notes , setting alarm , opening application and files , music operations. Generally it works by taking voice command in the form of vices with the help of microphone then it process the command and gives the required output and convert the output text into voice output.

In a study it is found that speaking is three times faster than typing on computer using keyboard or on-screen 40 wpm while speaking rate is 120-150 wpm so it would be beneficial to implement voice command instead of typing command , and also it faster the task completion

.Our project is defined to works on desktop and it is based on pattern based recognition later it will include NLP(natural language processing) and it will developed for different platform in both online and offline mode.

2.LITERATURE SURVEY

With several significant breakthroughs over the years, voice assistants have a long history. On smartphones and wearable technology, voice assistant for dictation, search, and voice commands has become a standard function. In order to offer general information (theory and concepts) concerning voice control, virtual assistants, fields of

application, and other topics, the study is based on an incomplete review of the literature. There are many examples in daily life of intelligent programs that are currently on the market that have the ability to process natural language in a range of roles.

Bell Laboratories developed Audrey, the first speech recognition system, in 1952. Audrey was relatively technologically illiterate and constrained, understanding only ten digits, spoken by specific persons (Pieraccini, 2012). A decade or so later, IBM created and unveiled its Shoebox Machine. 16 different spoken words, including all ten numbers from "0" to "9," as well as calculations like "plus" and "minus," were recognized and responded to by the device. Only in English by a designated speaker, the Shoebox Machine recognized and responded to 16 spoken words, including the ten digits from "0" through "9".

Later, these restrictions proved to be troublesome, which raised doubts about voice recognition. The Hidden Markov Model (HMM) was introduced around 1970. (Rabiner,1989). The HMM significantly changed the process of creating a workable voice recognition programme. With the use of HMM, voice recognition technology began calculating the likelihood that sounds could represent words. Due to the method's ability to increase the number of comprehensible words to a few thousand, the possibility of being able to recognize an infinite number of words has now become imminent. Because of the options for observation distribution in each model stage, practically any sort of data can be accurately modelled.

Apple Inc. introduced the first voice command system that was widely usable when it released the Siri virtual personal assistant in 2011. (Bostic, 2013). Siri, an intelligent bot, is now a regular feature on Apple's mobile devices and is regarded as a key component of them. Siri is a personal assistant that employs natural language processing to respond to inquiries and delegate tasks to web services, which are then completed on the user's behalf.

Similar to this, Zabaware Inc. developed the chatbot HAL to serve as a virtual assistant for computer users. In an effort to arrange the data provided to it, the bot also makes use of natural language processing algorithms to communicate with the user and record what the user says. IBM has made significant investments in this area and developed Watson, a system designed to compete on the Jeopardy! television programme. This system defeated the two most talented human participants on the show, demonstrating the current capabilities of intelligent systems with natural language recognition.

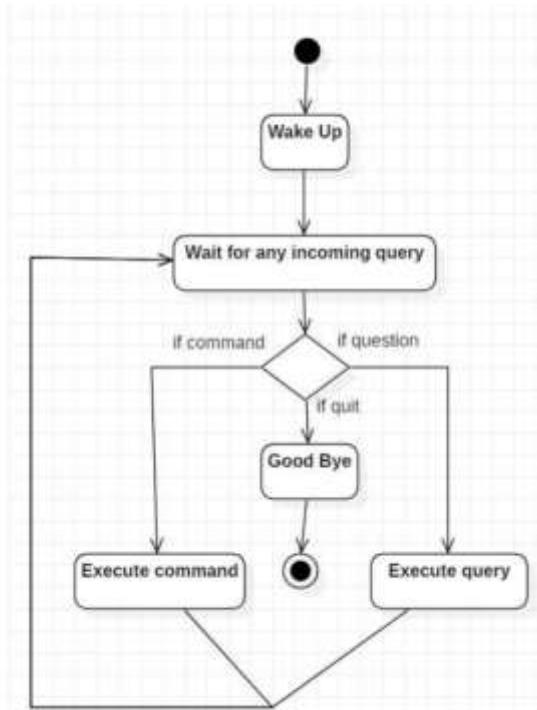
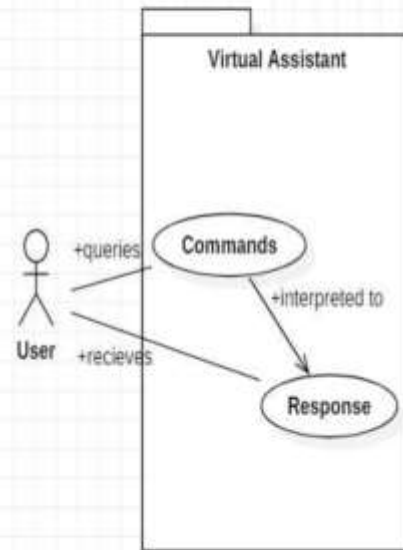
The chatbot Kari, who serves as a virtual girlfriend, stands in contrast to these positions. This system interacts with the user and attempts to start a social conversation with them by employing techniques similar to natural language processing. With the aid of algorithms created to aid the programme learn from its inputs, the software aims to give personal companionship and to replicate human interaction as accurately as possible.

3. System architecture

Overall view of virtual assistant has following parts→

- 1→ Data collection is the form of speech of input.
- 2→ Input voice analysis and conversion to text.
- 3→ Data storing and further processing to get required output
- 4→ Generating speech from the text generated by processing of data

Below are the figure of activity diagram and use case diagram which depicts the working of the virtual assistant -

ACTIVITY DIAGRAM**USE CASE DIAGRAM****3.1.Problem Definition**

The existing voice assistants use pattern recognition techniques which has lack of accuracy, lack of context and misinterpretations. It requires internet and take larger time and cost. They also use storing of data in database servers which leads to increase in time and space complexity. They is also increase privacy risks as when we gives command it is related to the person such as when he sleep, bank details , address , contacts so existing system can be a risk for any person's privacy. If we wants to add a customize command and result such as command → tell my friend name , Results→ your friend name is RAM is not support as commands are prebuilt.

3.2.Proposed System

Our proposed system of virtual assistant will solve some issues of existing system and also include some new features, we are currently using pattern recognition in future we integrate NPL(Natural Language Processing). Our project will work in both online and offline mode (with some limitations). There will be no data base server, we only storing data in the local storage and then processing. As data are locally stored it will also eliminate problems of person's privacy. This project will also support customized command and result so we can also add our own command and their results.

4.METHODOLOGY

Speech Recognition is a technique used by virtual assistants to translate voice input into actionable commands. Natural language audio signals are translated into executable commands or digital data that may be processed by the software when a user requests their personal assistant to complete a task.

Next this to find an acceptable response, data are compared with software data. Machines can be operated using your own commands by using a virtual assistant. We employ a variety of Python installer packages, such as Speech recognition, Wikipedia, web browser, pysttx3, etc., to create virtual assistants. Using speech recognition, audio can be turned into text.

5. Conclusion

In this essay, we talked about using Python to create a personal virtual assistant for Windows. Humans' lives are made easier by virtual assistants. The freedom to only hire a virtual assistant for the services they require. We also create virtual assistants using Python for all Windows versions, just like Alexa, Cortona, Siri, and Google Assistant. For this project, we make use of artificial intelligence technology. Using a virtual personal assistant to manage or Schedule your activities. Because they are more movable, dependable, and always accessible, virtual personal assistants are more dependable than human personal assistants. Our virtual assistant will learn more about you and inform you of suggestions as well as take commands. This device will likely always be present.

6. References

- [1] https://en.m.wikipedia.org/wiki/Virtual_assistant
- [2] pypi.org
- [3] [javatpoint.com](https://www.javatpoint.com)
- [4] <https://www.google.com/amp/s/www.techtarget.com/searchcustomerexperience/definition/virtual-assistant-AI-assistant%3famp=1>
- [5] <https://www.google.com/amp/s/www.predictiveanalyticstoday.com/top-intelligent-personal-assistants-automated-personal-assistants/amp/>
- [6] <https://www.google.com/amp/s/www.productivitygladiator.com/blog/dictating-is-3x-faster-than-typing-start-talking%3fformat=amp>
- [7] [https://www.ibm.com/cloud/learn/natural-language-processing#:~:text=Natural%20language%20processing%20\(NLP\)%20refers,same%20way%20human%20beings%20can.](https://www.ibm.com/cloud/learn/natural-language-processing#:~:text=Natural%20language%20processing%20(NLP)%20refers,same%20way%20human%20beings%20can.)