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Jarvis Voice Assistant using Python

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ABSTRACT

We all are widely recognized approximately the maximum well-known utility of the iPhone i.e. "SIRI" which helps. The cease customers to speak with cease customers cellular with person's voice and it additionally responds to that commands. The comparable type of utility is advanced with the aid of using Google too that's known as "Google Voice Assistant Search" that's widely used for Android phones. But all this package wants Internet connectivity. It is referred to as Jarvis computing device Voice assistant with Voice Recognition Intelligence which takes enter from a person in the shape of voice and text, then technique on it after which returns the output with inside the Various shape like motion completed or the hunt result to the cease person. This voice Assistant is made so it's going to reduce the usage of a few enter gadgets like keyboard, mouse, contact pen. This will lessen each hardware value and area taken with the aid of using it.

KEYWORDS: *Online Information Services, Jarvis, Voice Assistant, Natural language processing, ice recognition, Artificial intelligence*

1. INTRODUCTION

There are [1] several things that we tend to face in our standard of living where we wish things to urge done by our computers victimization of our verbal commands rather than interacting with the system using the keyboard and mouse. Verbal command management over systems helps particularly folks with disabilities heaps in their daily work life and conjointly change them to keep up efficiency and contend. in conjunction with this, as we tend to board AN era of multitasking it becomes very necessary to finish a task quickly and travel to a different and voice-command-based system that helps everyone in a good way.

Google CEO Sundar Pichai says [3] 'we are currently witnessing a replacement shift in computing: the move from a mobile-first to AN AI-first world.' Also, in this new traditional it's safer for everyone to avoid physical interaction with workplace systems or systems that are available in contact with varied numbers of individuals. One resolution to all such reasonably issues or things is employing a voice assistant number of the crucial responsibilities supported via way of means of a maximum of the voice assistants are: Checking weather updates- knowing the weather before starting daily or designing a visit may be a quite common issue that most people do and along with your voice assistant you'll simply get the weather update of anyplace simply by asking it to urge the weather info for you.

Sending and checking emails- during this world of the web sending and checking emails is the most typical task that we tend to all perform a minimum of once daily and if you're a workplace migrant then mailing activities are certainly AN integral part of your life.[6,9]

where [3,9] you send and receive multiple emails. Currently imagine if you could mechanically maintain your mail sphere and obtain away from doing redundant mailing activities and conjointly instead of holdup typewriting mails, you'll speak out the content of the mail and let your assistant sort it for you. It will certainly save time as a result of as humans we {will we can} solely sort forty words per minute whereas we can speak one hundred fifty words per minute. Search Wikipedia- looking out Wikipedia is additionally AN integral part of our lives and with voice assistants, we are applicant this task. Streaming music and gap applications are different fundamental activities that we are able simply to do with our voice assistants. The world is tilting towards the victimization of voice assistants.

According to ComScore,five-hundredths of all searches are going to be voice searches by 2020. Voice searches are going to be utilized by the lots within the not-too-distant future as a result of the simplest thanks to realizing a solution is to verbalize and raise a matter. in keeping with Google between 20 to the twenty-fifth of mobile queries are voice searches.21% of mobile voice search users aforementioned they use voice search as a result of they don't like typewriting on their mobile device (Source: Statista 2015). In keeping with Kleiner Perkins Caufield and Byers (KPCB) web trends, as of could 2016, one in five searches on AN Android app within the U.S. were through speech. [6]

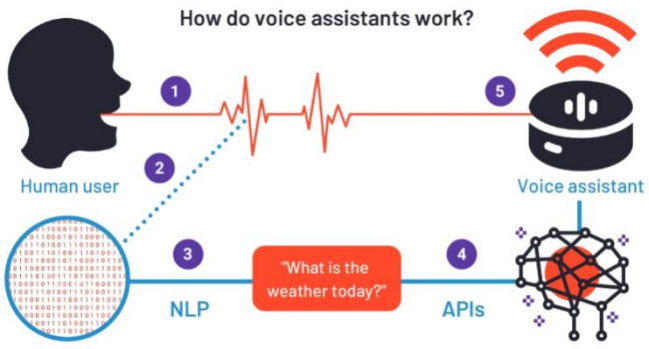

Fig 1. The architecture of Personal Assistant with Voice Control

2. LITERATURE SURVEY

This discipline of digital assistants having speech reputation has visible a few fundamental improvements or innovations. that is regularly mainly due to its call for gadgets like smartwatches or health bands, speakers, Bluetooth earphones, cell telephones, computers or desktops, television, etc. maximum the virtual gadgets that rectangular degree coming nowadays rectangular degree returning with voice assistants that facilitate to govern the tool with speech reputation solely. a modern set of strategies is being advanced continually to decorate the overall performance of voice computerized search [2]

As the amount of statistics is growing exponentially presently famous as big statistics the only way to enhance the effects of digital assistants is to encompass our assistants with the device getting to know and educating our gadgets constant with their uses. Extraordinary fundamental strategies that rectangular degree similarly essential rectangular degree pc science, Internet of Things, big statistics get right of entry to and management, etc.

Machine Learning [1] is truly hard and fast for pc science. This has been one of the most beneficial improvements in an era. Before AI we have a propensity to have been the ones UN business enterprise had been upgrading era to do an undertaking but presently the device is itself equipped to counter new responsibilities and remedy it even as now no longer was given to contain the people to adopt it.

With the usage of voice assistants [2,3,8], we can adjust the undertaking truly, simply provide the entrance to the device inside the speech type and each one of the responsibilities is going to be completed via way of means of it converting your speech into textual content shape to getting rid of key phrases from that textual content and execute the question to provide effects to the user.

This has been beneficial in everyday existence style. From cell telephones to personal computers to mechanical industries those assistant's rectangular degrees in appreciably call for automating responsibilities and growing efficiency [3]

3. PROPOSED WORK

The projected device can have the following functionality:

(a) The device can maintain listening for instructions and additionally the listening time is changeable and can be adjusted to meet the needs of the consumer.

(b) If the device isn't always capable of acquiring records from the consumer enter it's going to maintain

asking another time to copy till the required no. of times.

(c) The device could have every male and female voice consistent with consumer needs.

(d) Alternatives supported inside the modern-day model include taking elements in music, emails, texts, seeking on Wikipedia, or hole device mounted applications, hole something on the web browser, etc.

(e) If the device isn't always capable of acquiring records from the consumer enter it's going to maintain asking another time to copy till the required no. of times.

(f) the device isn't always equipped to acquire records from the consumer enter it's going to maintain asking once more to copy till the specified no. of times.

(g) The device could have every male and woman's voice constantly with consumer requirements [7]

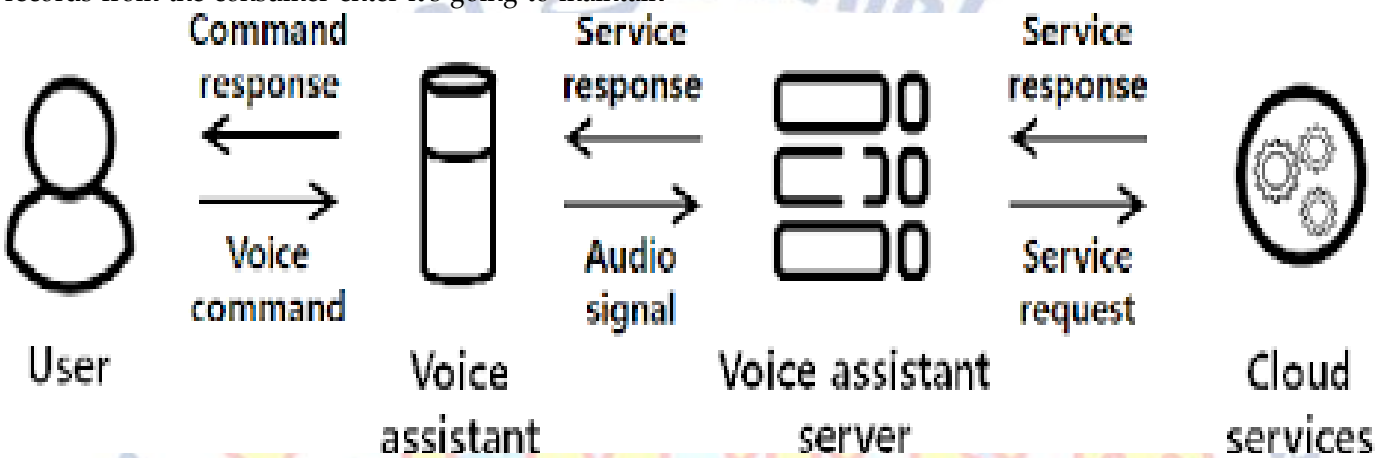

Fig 2. The architecture of Personal Assistant with Voice Control

The overall system architecture consists of Phases:

(a) Voice format data collection.

(b) Conversion to text & Voice analysis

(c) Processed the stored data.

(d) From the processed text output, it generates speech

In the start, information is often gathered within the kind of speech and kept as an input for the subsequent section of the system process. The input speech is repeatedly analyzed and translated to text victimization STT [1] evaluated and processed victimization Python Script to see the action to be taken in response to the user's demand. Finally, when the system has detected the solution, the output is made by basic text-to-speech conversion utilizing TTS [2]

4. METHODOLOGY

At graduation, we have got a bent to shape our application able to the utilization of gadget voice with the assistance of sapi5 and pyttsx3. Pyttsx3 can also be a text-to-speech conversion library in Python. Now not like definitely distinctive libraries, it works offline and is similar temperament with each Python 2 and three. The Speech Application Programming Interface or SAPI is a diploma API evolved through Microsoft to permit the usage of speech popularity and speech synthesis inside Windows applications. Then we have got a bent to stipulate the talk function to differ this technique to talk the outputs. at that time, we're visiting outline a characteristic to want voice instructions the utilization of the gadget microphone. The foremost function is then made public during which all of the competencies of this technique rectangular degree are made public.

The planned system is meant to possess the following functionality:

(a) The Jarvis asked the user for input and keeps listening for orders. The time for a hearing is visiting be set up in step with the user's control

(b) If the assistant fails to grasp the command it's visiting keep asking the user to repeat the command once again} and yet again.

(c) This assistant is visiting be bespoken to possess either male or female voice in step with user's demand.

(d) the current version of the assistant supports choices like Checking weather updates, deed and checking emails, Searching Wikipedia, Stream music, Open applications, Text messages, checking dates and times, taking notes, show notes, Open YouTube, etc.

Streaming Music: The user can command Jarvis to play a music track and it's going to execute a command and search into it from the song Folder.

Read the latest news from headlines: Jarvis will examine out latest headlines from the knowledge retailers of the required topics you care about or need information

Keep Tabs on the traffic & the weather: Jarvis can research the weather forecast or alert you if there is an accident that will delay your morning journey.

Set Reminders/timers: You'll be able to tell Jarvis to wake you up daily morning at 4 a.m.

Answer the following questions: Jarvis can look up simple information, solve mathematical problems, or tell you a joke

However, Alexa, Sleek, and homey aren't the sole ones altogether of most home automation systems that reply to user voice directions. Castles has been around since late 2012, however, its huge hub and Kinetic voice management programmer will solely be used on a Windows machine

Modules Imported:

WIKIPEDIA

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

SPEECH RECOGNITION

The speech popularity module that used this method is Google's Speech Recognition API that's imported in python the usage of the command "import speech popularity as sr". This module is employed to apprehend the voice that's given as entered with the help of using the user. This is often a loose API this can be furnished and supported with the help of using Google. This is a mild API that facilitates lowering the size of our application.

TTS & STT

The voice that's given as entering is first transformed to textual format the usage of the speech reputation module. The textual content is then processed to present the top results of the question given via way of means of the person. The final step is the conversion of the tip results of the processed question to speech which is the end output. most time eating some of them is STT because of the fact the gadget first needs to concentrate on the person and exclusive customers have exclusive, some are clean to apprehend at the same time as some aren't simply audible. This is often the step upon which our general execution time depends. Once the speech is transformed into textual content executing instructions and giving the outcomes again to the person isn't a time-eating step.

PYTTSX3

The pyttsx3 offline library is used in Python for TTS conversion and is supported by both Python 2 and Python 3.The run and wait functionality is additionally during this module only. It determines what quantity of time the system will sit up for another input or in other words the interval between inputs. This can be a free module available within the python community which may be installed using the pip command rather like other modules.

DATETIME

The Date Time module is imported to assist the potential of the date and time. For instance, the buyer desires to understand the cutting date and time or the patron desires to agenda a mission at a positive time. Briefly, this module helps lessons to control date and time and perform operations in line with it only. This is a critical module, especially in duties during which we'd like to carry the music of your time. This module might be very small long and allows us to manipulate the size of our program. If the modules are too huge or heavy then the gadget will lag and deliver sluggish responses.

WEBBROWSER

This module enables the computer to show consumers internet-based full records. For example, if the customer wants to access any website, he might write "Open Google." The input is processed through the use of the internet browser module, and the consumer receives a browser with Google open in it. The browser that will soon be used is the default internet browser.

DESIGN

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.

OS MODULE

OS Module provides a software-dependent functionality. If we would like to perform operations on files like reading, writing, or manipulating paths, these varieties of functionalities are available in an OS module. All the operations available raise miscalculation "Error" just in case of any error like invalid names, paths, or arguments that can be incorrect or correct but just not accepted by the software system. SMTPLIB Python includes this module within that popular library for work with mails and e-mail servers. The SMTPLIB specifies an item called the "SMTP customer consultation item," whichis needed to give emails to the user. There arethree-stepinvolvedin initializing, sendingmail(), and quitting. When the non-compulsory parameters which could be host and port, are furnished join technique is understood like those arguments at some stage in the first step that's initialization [6].

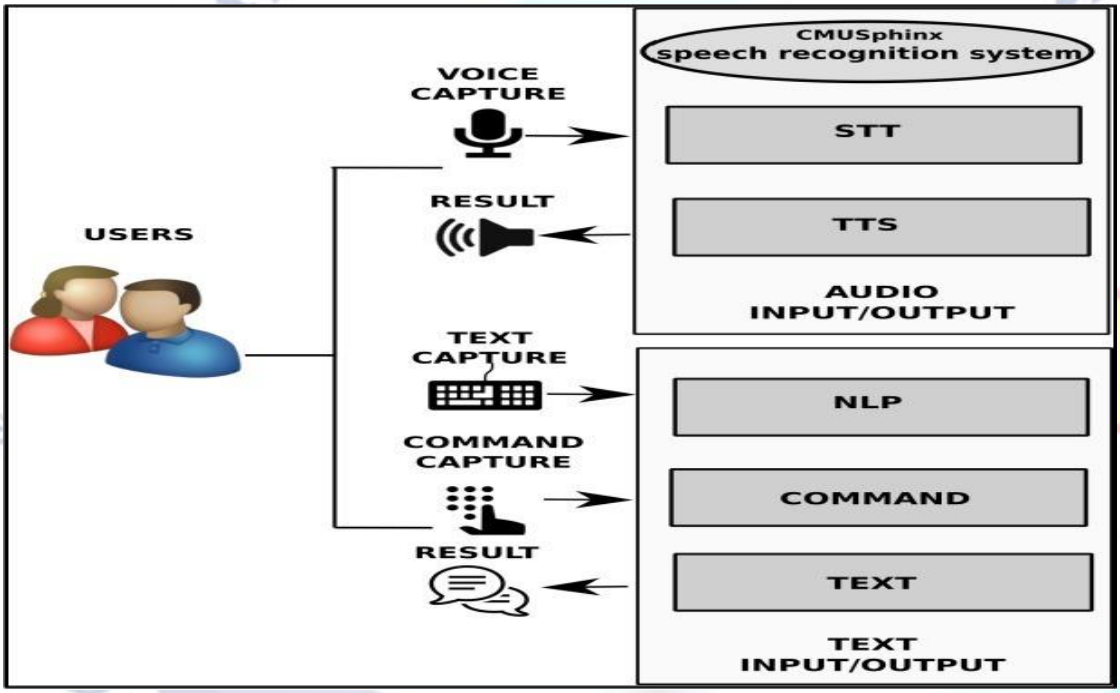

Fig 3. Data flow diagram

Data Flow Sequence:

a) Initialize device: Initialize the device by calling its name.

b) Task Manager Conversion: The task manager handles speech-to-text and text-to-speech conversions.

c) Service Manager: Analysis of commands and matching them with web service adapter and cloud server

d) Execute Command: After finding the match for the given command, run the respective python script.

5. EXPERIMENTAL RESULTS

We have tested our program with various inputs and go for the results. Following are some of the screenshots of the results

Fig 4: According to the user command output of Play Music

Stream music: When you ask Jarvis to play music, it then does so from the File Explorer Song Folder.

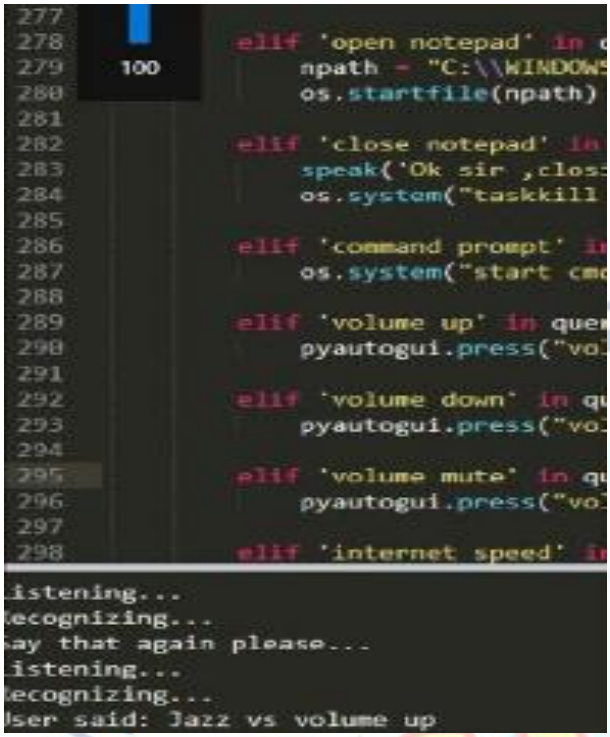

Fig .5. increase or decrease volume by voice command

Fig 6: According to the user command output of Calculator

Do the Calculation: Jarvis can do calculations just give the command do some calculation and give sum numbers to add, subtract, multiply, etc.

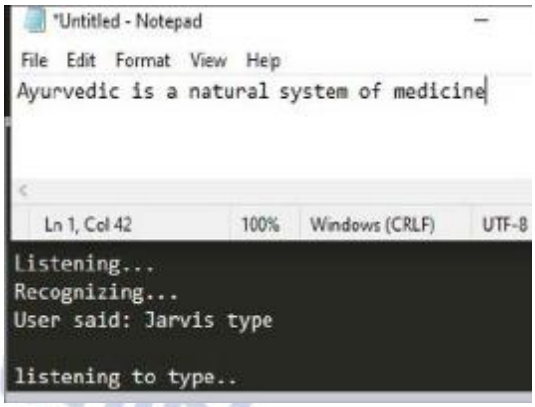

Fig 7: According to the user command output of Automatic Typer

Give the command to Jarvis to open notepad then speak Type then whatever you say verbally is getting typed on opened window.

6. RESULT IN DISCUSSION

As every field within the generated interface is speech-enabled, the made system has equipped associate interface during which the user can choose the produce Program possibility and should begin constructing the programmer by voice. With the use of voice commands, the user may input programmer information using this interface. The database will be queried for the small print depending on the user's voice input and made available to the user. When the user presses the start coding button in the provided interface, the system automatically pulls information from the database and makes them available to the user.

7. CONCLUSION

The current version of our assistant has some good features and is a style well responsive but there's a lot that's yet to be improved. The understanding and reliability of our assistants are often improved more. the longer-term development of the assistant includes merging NLP, Machine learning, and IoT with it. By incorporating these technologies with our assistant, we'll be able to achieve better results. What the virtual assistants are ready to do is way beyond what we've

8. SCOPE FOR FUTURE WORK

Based on the results of the survey, we recommend that an Android application be created that meets the needs of a variety of consumers. The user wants to use the voice

assistant to make their life easier, thus by incorporating the functions listed below, the user is aided

1. Make JARVIS more self-contained and build a new skill in it.
2. A JARVIS Android app might also be created.
3. Construct more Jarvis voice terminals.
4. To ensure security, voice commands are frequently encrypted.

Conflict of interest statement

Authors declare that they do not have any conflict of interest.

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