Virtual Assistant Using Python

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ABSTRACT:
In this modern era, day to day life became smarter and interlinked with technology. We already know some voice assistance like google, Siri. etc. Now in our voice assistance system, it can act as a basic daily schedule reminder, note writer, calculator and a search tool. This project works on voice input and give output through voice and displays the text on the screen. The main agenda of our voice assistance makes people smart and give instant and computed results. The voice assistance takes the voice input through our microphone (Bluetooth and wired microphone) and it converts our voice into computer understandable language gives the required solutions and answers which are asked by the user. This assistance connects with the World Wide Web to provide results that the user has questioned. Natural Language processing algorithm helps computer machines to engage in communication using natural human language in many forms.

I.   INTRODUCTION:
Almost all duties are now digitalized in today's world. We have a Smartphone in our hands, and it's like having the entire world at our fingertips. We don't even use our fingers anymore. We only mention the work, and it is completed. There are procedures in place where we can text Dad and say, "I'll be late today." The text has now been sent. A Virtual Assistant's job is to do the same. It also helps automate search, discovery, and online purchase processes by supporting specific tasks such as booking a trip or locating the cheapest book online from numerous e-commerce sites and then giving an interface to place an order. Virtual assistants are software programs that assist you with day-to-day duties such as weather forecasting, setting reminders, and preparing shopping lists, among other things. They can accept text (online chat bots) or voice commands. To activate the listener, voice-based intelligent assistants require an invoking phrase or wake word, followed by the command. The wake word for my project is OM.

There are a plethora of virtual assistants available, including Apple's Siri, Amazon's Alexa, and Microsoft's Cortana. OM was picked as the wake word for this project. This system is intended to be used on desktop computers. Personal assistant software helps users be more productive by handling their everyday chores and providing them with information from web sources. It's simple to utilize Omniscient. The order should be followed by the wake word 'OM.' and it's done in a matter of seconds. Voice searches have surpassed text searches in popularity. Web searches performed on mobile devices have just recently surpassed those conducted on 2 computers, and researchers project that by 2022, 50 percent of searches will be conducted by voice. Virtual assistants are proving to be more intelligent than ever. Allow your intelligent assistant to do the heavy lifting for you when it comes to email. Detect intent, extract key data, automate procedures, and provide personalized experiences. This project was based on the presumption that there is enough freely available data and knowledge on the internet to develop a virtual assistant capable of making intelligent judgments for ordinary user task.

II.   RELATED WORK:
All the things are already pre-existing on internet**.**This project was based on the presumption that there is enough freely available data and knowledge on the internet to develop a virtual assistant capable of making intelligent judgments for ordinary user tasks.

SIRI from Apple
SIRI is a voice-activated personal assistant that interacts with the user, detects instructions, and acts on them. It enhances voice recognition over time by learning to adapt to the user's speech. When it can't figure out what the user wants, it attempts to talk to them.
It works with the device's calendar, contacts, and music library applications, as well as the device's GPS and camera. It makes use of spatial, temporal,

social, and task-based contexts to tailor agent behavior to the user at any given time.

ReQall

ReQall is a personal assistant application that operates on cellphones with the Apple iOS or Android operating systems. It aids the user in recalling notes and duties in the context of a certain location and time. It collects user inputs and translates them to instructions, and it keeps track of the current stack of user tasks in order to provide proactivesuggestions based on changes in the environment. It may also provide information to the user depending on theircontext, as well asfilter information for them based on their acquired knowledge of the importance of that information.

SYSTEM DESIGN AND IMPLEMENTATION:
• We have asystem user that has access to their keys and values.It may be used to store any type of user information. For example, the value for the key "name" also be "Om".
• Some keys maybe kept safe by the user. He may enable lock and create a password there (voice clip).
• A single user has the ability to ask several questions. Each inquiry will be assigned an ID so that it can be distinguished from the query and its response. A user may have a large number of duties. These should each have their own id and status, which indicates their present condition.
• A job should have a priority value and a category, depending on whether it is a parent or child task of an older task.
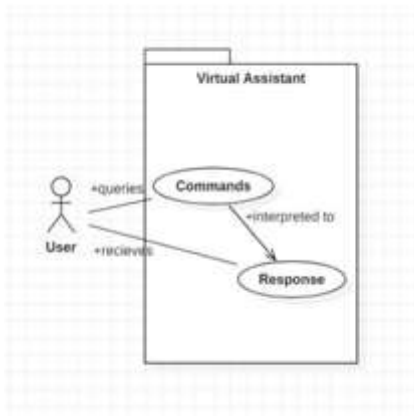
SYSTEMINTERFACE DESIGN:

Fig: Use Case Diagram.

Above diagram shows that thereisonlyoneuser. Theuser queriescommandtothesystem. System then interprets it and fetches answer. The response is sent back to the user.
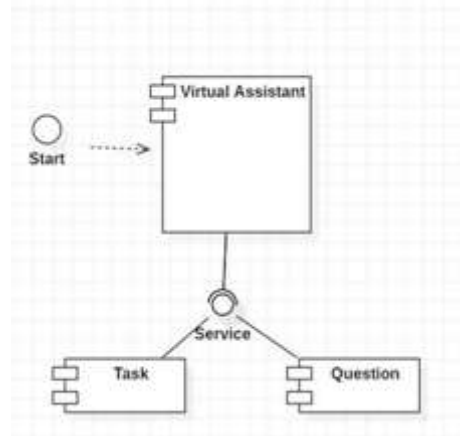

Fig: Component Diagram

The maincomponent here istheVirtualAssistant.Itprovidestwospecific service, executing Task or Answering your question.

Purpose:
Voice interaction, music playback, establishing to-do lists, setting alarms, streaming YouTube, playing audiobooks, and delivering weather, sports, and other real-time information, such as news, are all capabilities of virtual assistants. Virtual assistants allow users to control their devices and apps using natural language voice commands.Millennial customers, in particular, have showed an enhanced general awareness and a higher degree of comfort. We are clearly moving away from screen engagement in an ever-evolving digital environment where speed, efficiency, and convenience are continually being maximized.

Scope:
As voice assistants improve in distinguishing between voices, they will be able to provide more personalized experiences. Developers aren't the only ones who must deal with the complexities of building for voice; companies must also understand the capabilities of each device and integration, as well as if it makes sense for their brand. They'll also have to concentrate on keeping a consistent user experience in the future years, as complexity becomes more of a worry. This is due to the lack of a visual interface for voice assistants. A voice interface cannot be seen or touched.

Applicability:

The widespread usage of artificial intelligence in people's daily lives is also accelerating the move to speech.

Voice assistants are becoming increasingly useful in the lives of connected users as the number of IoT devices such as smart thermostats and speakers grows. The most common method we see speech being used is through smart speakers. Many industry analysts believe that over the next five years, practically every application will use speech technology in some capacity.The usage of virtual assistants can also help to improve the IoT system (Internet of Things). Microsoft and its competitors will provide personal digital assistants in 20 years that will provide the services of a full-time employee often reserved for the wealthy and famous.

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.

1.   Problem Definition:

In most cases, a user must manually manage many sets of programs in order to execute a single operation. A user planning a trip, for example, should look up airport codes for neighboring airports and then search travel sites for tickets between airport combinations to go to their destination. There is a requirement for a system that can simply handle duties.

We already have a number of virtual assistants on staff. However, we barely ever utilize it. A large proportion of people struggle with speech recognition. These systems are capable of understanding English sentences, but they are unable to distinguish our dialect. Our pronunciation differs significantly from theirs. They are also more user-friendly on mobile devices than desktop systems. A virtual assistant who can interpret English with an Indian accent and work on a desktop system is required.

When a virtual assistant is unable to effectively answer inquiries, it is due to a lack of context or an understanding of the question's purpose. It can only answer relevant queries through thorough optimization integrating both humans and machine learning. Continually maintaining robust quality control procedures will also aid in reducing the possibility of the virtual assistant picking up unwanted negative habits. In order for them to function well, they must be given a tremendous volume of data.

Virtual assistants should be able to model complicated task relationships and utilize these models to suggest user-friendly plans. When a task includes several sub-tasks, each of which might have its own sub-tasks, it must be tested to determine the best pathways. There may be several options to choose from in this instance, and it should be able to consider user preferences, other ongoing activities, and priorities when making a recommendation.

2. Requirement Specification:

Personal assistant software must operate as a portal into the digital world, recognizing user requests or commands and turning them into actions or recommendations based on the agent's knowledge of the world.

Omniscient focuses on removing the need for the user to type text input and instead relying on speech as the primary mode of user input. The agent then records the input after applying voice recognition techniques to it. It then uses this information to contact one of the personal information management programs, such as a task list or calendar, to create a new entry or to do a search on Google, Bing, or Yahoo, among others. The emphasis is on gathering user input through speech, identifying it, and then completing tasks if the agent understands them. Software interprets this data in normal language, making it easier for the user to specify what he or she wants done.

Speech recognition software allows users to interact with programs without using their hands, allowing them to question or command the agent using a voice interface. This allows users to interact with the agent while conducting other tasks, increasing the system's value. OMNISCIENT also has ubiquitous connectivity through Wi-Fi or LAN, allowing dispersed applications to use other APIs available on the web without having to save them locally. Virtual assistants must be able to do a wide range of tasks. These are some of them:

• Providinginformationsuchasweather,factsfrom e.g.Wikipedia etc.
• Setanalarmor maketo-dolistsandshoppinglists.
• Remindyouofbirthdaysandmeetings.
• PlaymusicfromstreamingservicessuchasSaavna ndGaana.
• Real time information of date, time and locations.
• Sends emergency alerts to closest person with location.

Feasibility Study:

A feasibility study can assist you in deciding whether or not to pursue your project. It is critical to weigh the costs and benefits. It is critical to assess the proposed system's cost and benefit. There are five different types of feasibility studies that are considered.

Technical Feasibility:

It entails researching project technology, including hardware and software. To utilize a virtual assistant, you'll need a microphone to send your message and a speaker to listen to what the system says. These are quite inexpensive these days, and almost everyone owns one. Furthermore, the system requires an internet connection. Make sure you have a stable internet connection when using OMNISCIENT. It's also not an issue in this day and age, when practically every house and workplace has access to the internet.

Operational Feasibility:

It is the suggested system's ease and simplicity of operation. Users do not require any specific skills to run the system. In reality, it is intended for practically everyone to use. Children who do not yet know how to write can read out issues to the system and receive responses.

Economic Feasibility:

The entire cost and benefit of the proposed system vs the present system are calculated here. The cost of paperwork is the most significant expense in this project. A microphone and speakers would also be charged to the user.They are inexpensive and readily accessible once again. OMNISCIENT will not be prohibitively expensive to maintain.

OrganizationalFeasibility:

This diagram depicts the project's management and organizational structure. This project was created by a group of people. A single individual will be in charge of all managerial duties. This will not cause any management concerns and will boost the project's feasibility.

Cultural Feasibility:

It is concerned with the project's compatibility with the surrounding cultural context. The virtual assistant is designed to fit in with the broader society. To depict Indian culture without damaging local beliefs, the initiative is named OM (ॐ).

This project is theoretically practical and does not need any additional hardware. It is very simple to use and does not require any training or maintenance. The planned system's aims are attainable, according to the project's overall feasibility analysis. The decision is made to move on with the project.

Hardware and Software Requirements:

The program is meant to be lightweight so that it does not put a strain on the computer that runs it. The hardware and software compatibility of this system is being taken into consideration. The following is a list of virtual assistant hardware and software requirements.

Hardware Specification:
• Pentium-proprocessororlat.
• Ram 2-Gb or more.

Software Used:
• Windows10(32-bit)orabove.
• VS Code.
• Python3.9.6or later
• ChromeDriver

III. CONCLUSION:

In this report we have discussed a virtual assistant using Python programming. This virtual assistant perform basic tasks like update of weather, Time & Date, Exact Location, Open Desktop, Shut-Down PC etc. The update of the virtual assistant will have more cool features according to the user needs

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