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Personal Assistant System using Python

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ABSTRACT: This paper summarizes the project Personal Assistant. What is Personal Assistant? A Personal Assistant is a software agent that can perform tasks or services for an individual based on commands or questions. Sometimes the term "chatbot" is used to refer to virtual assistants generally or specifically accessed by online chat.Users can ask their assistants questions, control media playback via voice, and manage other basic tasks such as email, to-do lists, and calendars with verbal commands.A similar concept, however with differences, lays under the dialogue systems.Our personal assistant is based on a system like Cortana in windows 10, Bixby in Samsung phones, Siri in iPhones and other personal assistants like Alexa and Google.It is developed using python.The main motive of this project is to provide a personal assistant to a user just like the other personal assistant apps and devices.Our personal assistant is based on a system like Cortana in windows 10, Bixby in Samsung phones, Siri in iPhones and other personal assistants like Alexa and Google. A Personal Assistant is a software agent that can perform tasks or services for an individual based on commands or questions. Sometimes the term "chatbot" is used to refer to virtual assistants generally or specifically accessed by online chat. Our project personal assistant is developed using Python. The main motive of this project is to provide a personal assistant to a user just like the other personal assistant apps and devices.

I. INTRODUCTION

Our personal assistant is based on a system like Cortana in windows 10, Bixby in Samsung phones, Siri in iPhones and other personal assistants like Alexa and Google.
It is developed using python.
The main motive of this project is to provide a personal assistant to a user just like the other personal assistant apps and devices.
A Personal Assistant is a software agent that can perform tasks or services for an individual based on commands or questions. Sometimes the term "chatbot" is used to refer to virtual assistants generally or specifically accessed by online chat.
Users can ask their assistants questions, control media playback via voice, and manage other basic tasks such as email, to-do lists, and calendars with verbal commands.A similar concept, however with differences, lays under the dialogue systems.
Our project was made to overcome some of the following issues; like: -
1) A blind person can also use this device like another normal person.
2) Like in windows 10 there is Cortana which was only capable or operatable in windows 10 so people who specification won't meet requirement of this Cortana so our personal assistant is easily operatable in low end devices and also on lower windows version.

II. LITERATURE SURVEY FOR PERSONAL ASSISTANT AND SPECIFICATION

Literature survey: -
To complete our project personal assistant, we are still studying about the various libraries that would be importing in the project. We are also studying about the various keywords that we would be using in our project. We searched some libraries that were old for the version of python as they were required for our project. So, we are also studying about them and how they could be used in the latest version of python. We are also learning how to install libraries using cmd.

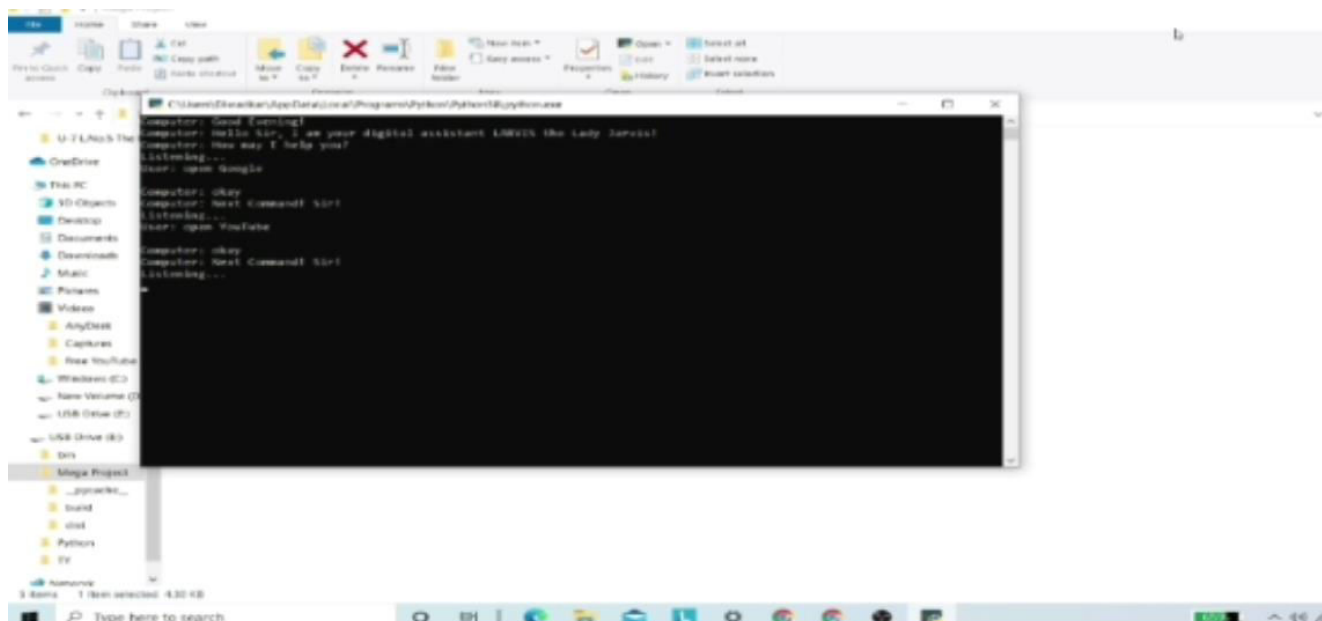**Specification's for Personal Assistant: -**
Operating System (OS): Any (Windows/ Linux/ Mac)
Ram: 500mb (Minimum)
Space:100mb
Graphics card: N/A
Other: Mic and Speakers for PC

Dig:1.0 Preview of Personal assistant

III. SIGNIFICANCE OF THE PROJECT

A voice assistant is a digital assistant that uses voice recognition, language processing algorithms, and voice synthesis to listen to specific voice commands and return relevant information or perform specific functions as requested by the user.

IV. AIMS AND PROPOSED SYSTEM

Aim of the project:
Our aim of the project is to make a Personal Assistant that can run on any system irrespective of its specifications. I.e. a personal assistant that would run on any low end device or on OS of the system.

The proposed systemwill provide following features:
1) Our personal assistant always keeps listing for its name and wakes up to as someone calling with the assigned functionality.
2) It keeps learning the sequence of questions asked to it related to its context which it remembers for the future. So, when the same context is mentioned, it starts a conversation with you asking relevant questions.
3) It can also perform some of the Arithmetic calculations that are based upon voice commands and gives back the computed solution via a voice format.
4) Our personal assistant can also do the Searching on the Internet based on user's voice input and giving back the reply through a voice with further questions by machine.
5) The rest of our Personal Assistant other features are like playing music, setting an alarm, checking weather conditions of device's location. Setting reminders, spell-correct, etc. can be performed by an input from user's voice.

V. PROPOSED ARCHITECTURE

Personal voice assistant responds to basic commands like, Open Applications, Close Applications, Connect Calls To respective person/contacts, send text SMS to respective person or contact, Capture Photos from camera (Front Camera/ Back Camera), Add/Delete/Update Contacts, run any media file, Start various services like Hotspot, Wi-Fi, Bluetooth, and various Services from the respective Notification Panel. All this can be performed on the voice commands of the end user without internet connectivity.

Google did quietly enable offline recognition in that Search update, but there is no API or additional parameters available within the Speech Recognizer Class. The functionality is available with no additional coding; however, the user's device will need to be configured correctly for it to begin working and this is where the problem.
Also, Google have restricted certain Jelly Bean devices from using the offline recognition due to hardware constraints. Which devices this applies to is not documented, in fact, nothing is documented, so configuring the capabilities for the user has proved to be a matter of trial and error.

VI. SYSTEM ARCHITECTURE OF PERSONAL ASSISTANT

In first phase, the data is collected in the form of speech and stored as an input for the next phase for processing. In second phase, the input voice is continuously processed and converted to text using STT. In next phase the converted text is analyses. In next phase the converted text is analysed and processed using Python Script to identify the response to be taken against the command. Finally, once the response is identified, output is generated from simple text to speech conversion using TTS.

C. Data Flow Sequence

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

b. Task Manager: Conversion of Speech-to-Text and Text-to-Speech is performed by task manager.

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.

ER-Representation

Dig:2.0 ER-diagram of personal assistant
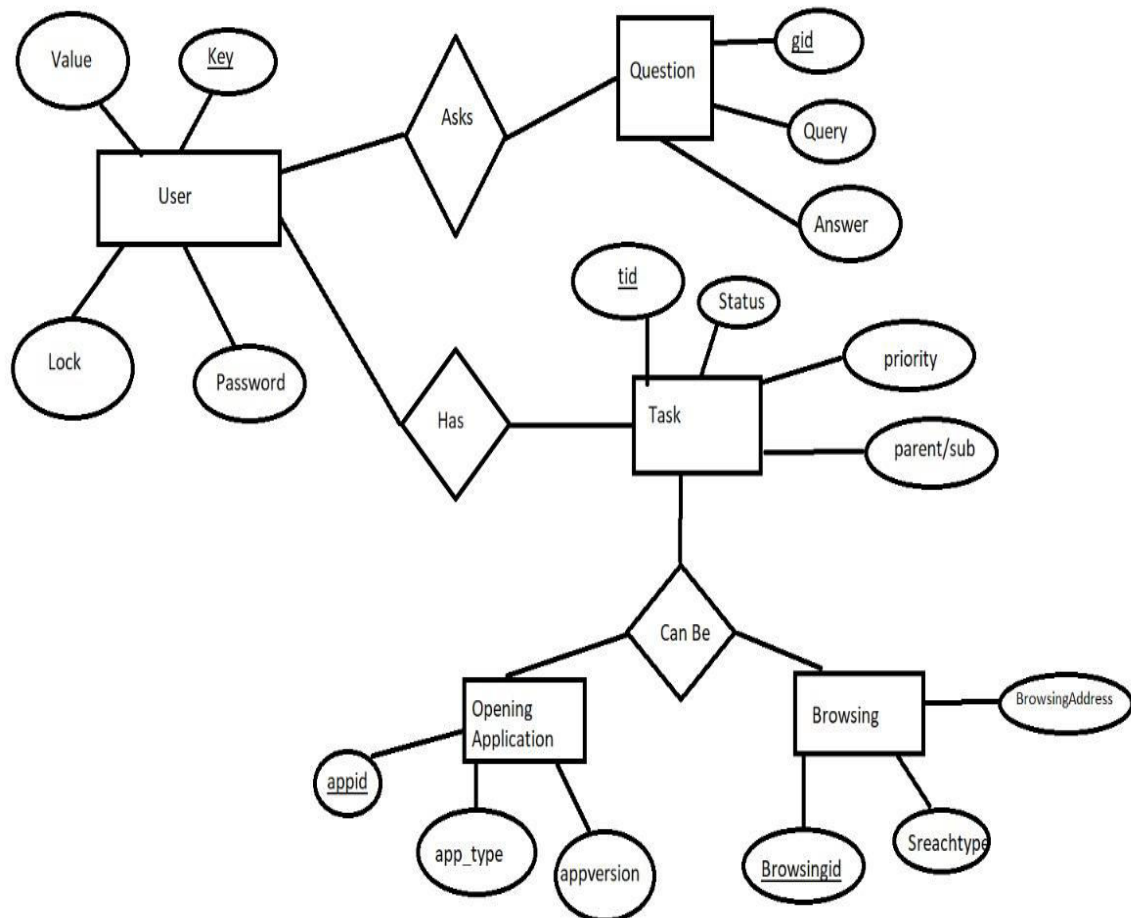
The Modules of Operation

Functions of Personal Assistant:

- Opening google chrome: - our personal assistant can open google chrome on a single voice input of the user and also can search for things as user give voice inputs.
- Playing Music: - it can also play music the user wants of his/her choice easily on voice inputs.
- Browsing web: - we can also surf on the internet through personal assistant
- Displaying Date and Time: - it can also show date and time on voice inputs.
- Command can be given through voice and through keyboard

Statement of Problem

In Our personal assistant project there is only one problem that it can only recognise voice on laptops but not on PCs. Since, PC's don't have a discrete mic as compared to laptops.

Solution:

To overcome this problem, we also came up with a solution like if u want to run this personal assistant on your pc or desktop you will just require to attach a discrete mic orearphones so that the personal assistant can easily recognize your voice and do what you ask it for.

But, in case if the user is unable to manage one of these there is also a feature to type the commands instead to speaking.

VII. KEY RESULTS OF OUR PERSONAL ASSISTANT

Streamlined Conversations

Both Google and Amazon recently announced that both assistants will no longer require the use of repeated "wake" words. Previously both assistants were dependent on a wake word (Alexa or Ok, Google) to initiate a new line of conversation. For example, one would have to ask "Alexa, what's the current temperature at the hallway thermostat?" and then have to say, "Alexa" again before requesting that the voice assistant to "set the hallway thermostat to 23 degrees." It would be more convenient and natural for the user to say, "Alexa, what's the current temperature at the hallway thermostat?" and then simply say "set my hallway thermostat to 23 degrees," without requiring the wake word again, and now that's possible.

Consumers use voice assistants in specific locations, usually while multitasking, and can either be alone or amongst a group of people when using them. Having devices that can decipher these contextual factors make a conversation more convenient and efficient with these devices, but it also shows that developers behind the technology are aiming to provide a more user-centric experience.

Compatibility and Integration

When it comes to integrating voice technology with other products, Amazon has been ahead of the game. Those who use Alexa will be familiar with the fact that the voice assistant is already integrated into a vast array of products including Samsung's Family Hub refrigerators. Google has finally caught on and has announced Google Assistant Connect.

Search Behaviors Will Change

Voice search has been a hot topic of discussion. Visibility of voice will undoubtedly be a challenge. This is because the visual interface with voice assistants is missing. Users simply cannot see or touch a voice interface unless it is connected to the Alexa or Google Assistant app. Search behaviors, in turn, will see a big change. In fact, if tech research firm Juniper Research is correct, voice-based ad revenue could reach $19 billion by 2022, thanks in large part to the growth of voice search apps on mobile devices. Brands are now experiencing a shift in which touchpoints are transforming to listening points, and organic search will be the main way in which brands have visibility. As voice search grows in popularity, advertising agencies and marketers expect Google and Amazon will open their platforms to additional forms of paid messages.

Individualized Experiences

Voice assistants will also continue to offer more individualized experiences as they get better at differentiating between voices. Google Home is able to support up to six user accounts and detect unique voices, which allows Google Home users to customize many features. Users can ask "What's on my calendar today?" or "tell me about my day?" and the

assistant will dictate commute times, weather, and news information for individual users. It also includes features such as nicknames, work locations, payment information, and linked accounts such as Google Play, Spotify, and Netflix. Similarly, for those using Alexa, simply saying "learn my voice" will allow users to create separate voice profiles so the technology can detect who is speaking for more individualized experiences.

Voice Push Notifications

We've previously discussed the method of using user-centric push notifications as a means to re-engage users with your app, voice technology presents a unique means of distributing push notifications. As a way to increase user engagement and retention, push notifications simply remind users of the app and display relevant messaging to the user. Now that both Google Assistant and Amazon's Alexa allow the user to enable spoken notifications for any third-party app that has the compatibility, users can hear notifications rather than read them. These notifications are generally related to calendar appointments or new content from core features.

Touch Interaction

CES 2019 continued to prove that voice and visual displays are merging into one seamless experience. This year Google showcased what is being called the E Ink screen. This display can show the weather, local traffic information, or calendar events. The push to bring visual and voice capabilities together allow users to further interact with the assistant.

Security Will Be a Focus

Forty-one percent of voice assistant users are concerned about trust and privacy according to a report from Microsoft. Voice payments, in particular, will become more secure and convenient for users to make purchases. Speaker verification and ID will also become paramount as part of the voice assistant experience with more security being built around the users.

VIII. FUTURE SCOPE

No one has predicted the future accurately, but technology experts are sure to predict that AI Assistant Apps are going to rule most of the technology advancements in future because of their efficiency and effectiveness. The future scope of voice assistants is bright and holds tremendous applicability in solving real-world problems.The voice assistant's skill to strategize and simplify the complexities in the communication process has resulted in the wide acceptance across various verticals including businesses, governments, home users, and much more.

1) Voice for Business:

The openness offered by the enterprise voice assistants architecture is enabling businesses to offer their users natural voice experiences while communicating with the business systems like IT service management(ITSM), operations management, business management, IT functions, office management, and HR management. Observing the intelligent and natural communication experiences, no industry is an exception in the usage of voice assistants.

2) Voice for Marketers:

For the E-Commerce industry, these enterprise voice enabled chatbots are a big thing to thrill their customers, by enabling them to shop online in a most conversational way-staying anywhere and on any device. On the other side, companies benefit a lot with consumer data which is more categorized based on interests, device, access location, purchase/search history, and so on. This data can be used to offer more personalized marketing efforts.

3) For Smart Home Users:

With Voice Assistants being enabled by AI and machine learning algorithms, we are soon to develop Iron Man kind of stuff: where you can talk to every home appliance, like a TV, refrigerator, thermostats, washing machines, coffee machines, bulbs, door locks, routers, house security mechanisms, and so on, and get the work done. And this is already happening.

4) Voice Assistants for Government Agencies:

Observing the capabilities that AI Voice assistants are bringing to the business world, governments have been fast enough in getting these voice enabled applications to improve public service delivery efficiencies, as well as better internal workforce management with greater transparency.

IX. CONCLUSION

Finally, Our personal voice assistant project we have application where user can ask his personal assistant for thing like to open google chrome, asking for playing music also displaying time and date and many more as well as many other operations like sending email, opening YouTube, Mail.

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