Virtual Voice Assistant using Python

Harrish.H [1], Midhun Raj.S.B [2], Nivaskumar.K [3]
[1, 2, 3] Department of Computer science & Engineering
[1, 2, 3]Dr.MGR educational & research institute.

Abstract- *Virtual Voice assistants is a software that can interpret human speech and respond via synthesized voices. Apple's Siri, Amazon's Alexa, Microsoft's Cortana, and Google's Assistant are the most popular voice assistants and are embedded in smartphones or dedicated home speakers. Users can give some tasks to the voice assistant, can control whole house using automation and can manage other basic tasks. This column will explore the basic workings and common features of today's voice assistants. It will also discuss some of the privacy and security issues inherent to voice assistants and some potential future uses for these devices. As voice assistants become more widely used, librarians will want to be familiar with their operation and perhaps consider them as a means to deliver library services and materials.*

I. INTRODUCTION

In today's generation almost everything is digitalized. Nowadays having a Smartphone is like having world at your finger tips. Nowadays we aren't even using fingers to operate a lot of things. We just speak and it is done. There exist systems where we can say Text Mom, "I'm on my way" and the text is sent. This is the task of Virtual Voice Assistant. The assistant also supports specialized task such as booking a flight ticket , or finding cheapest price book online from different sites and then suggest the best and cheap price to book a ticket. Virtual Voice Assistants are software programs that help you in your day-to-day tasks, such as weather report, reminders, making shopping lists, date/time, play music, search on internet etc. They can take commands via text (online chat bots) or by voice. Voice based intelligent assistants need an invoking word or wake word to activate the listener, followed by the command. This system is designed to be used efficiently on desktops. Our assistant is effortless to use. Just you have to tell the command and within seconds it gets executed. Using Voice searches have dominated over text search. Every year using of Virtual Voice assistants are turning out to be smarter than ever. This project was started to improve the current virtual voice assistant in windows OS and do better like what other voice assistant.

II. BACKGROUND

There are a lot of voice assistant exist nowadays. Which can performs your daily tasks and make your day easy.

Tasks:

- Can open a application we want.
- Connect to wifi.
- can send a message to a friend.
- Can set alarm at 5am tomorrow morning.
- Can tell the today's weather.
- Enter a new note.

III. PURPOSE, SCOPE AND APPLICABILITY

- Purpose: Purpose of voice assistant is to do the daily tasks like, date/time, weather report, current news, web search, playing music, reading pdf, connect to WIFI, take a picture etc. Voice assistant enable users to speak natural language voice to operate the device and its apps.
- Scope: Voice assistants will continue to offer more individualized experiences as they get better at differentiating between voices. However, it's not just developers that need to address the complexity of developing for voice as brands also need to understand the capabilities of each device and integration and if it makes sense for their specific brand.
- Applicability: The mass adoption of Artificial Intelligence in user's everyday life is also increasing the shift towards voice. Smart speakers are the no:1 way to voice assistant being used. A lot of technology will integrate voice technology in next 5 years.

IV. SURVEY OF TECHNOLOGY

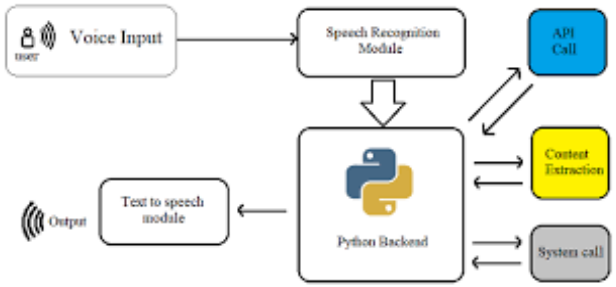
- **DBpedia**: DBpedia is a project aiming to extract structured content from the information created in the Wikipedia project. This structured information is made available on the world wild web. DBpedia allows users to semantically query relationships and properties of

Wikipedia resources, including links to other related datasets.

- **Quepy:** Quepy is a python framework which use to transform natural language questions to queries. It can easily convert natural language from the user to database queries.
- **Pyttsx:** It stands for python Text to Speech. It is a python package supporting common text to speech engines on Mac OS, Windows and Linux. Its main advantage is that it works offline.
- **Speech recognition:** This is a library for performing speech recognition with the support of several engines and APIs(online and offline).
- **SQLite:** SQLite is a library, providing a in-process relational database for efficient storage small- medium sized data sets.

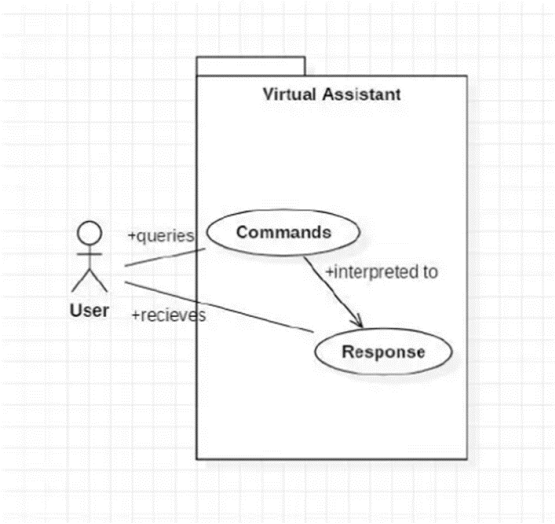
V. PROPOSED SYSTEM

- Virtual voice assistant will keep listening and wait for the commands and the time for listening can be changed according to users wish.
- If the voice assistant is not able to understand or didn't get the input, It will keep on ask until it get a proper input till desired on.of.times.
- Features supported in the current version include streaming music online, Open gmails, can tell date/time, search on google, reading pdf file, opening a website in the google, etc.
- We can change the voice of the virtual voice assistant male to female and vise versa, for now its in male voice.
- Pyttsx been used in this assistant to convert the texts to speech form.
- The following figure give a brief idea about how the virtual voice assistant works and the prosposed system.



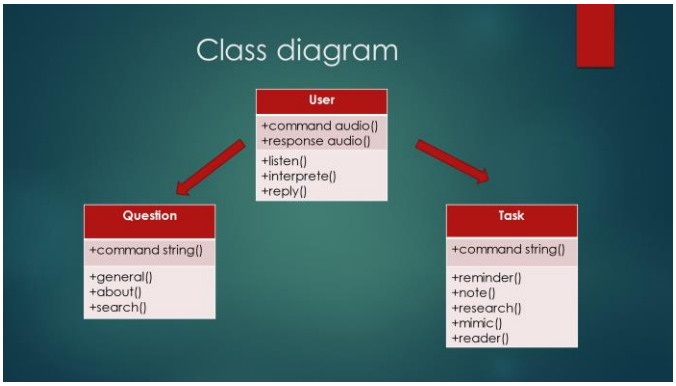
VI. UML DIAGRAMS

Use case diagram



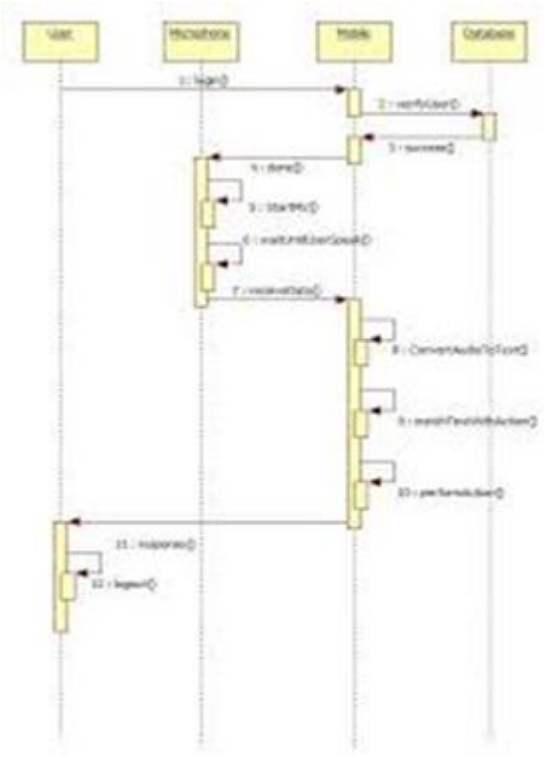
- The user have to give a proper command/request.
- The given command by the user will change to queries.
- Those queries will interpreted to system.
- User receive the response from the virtual voice assistant.

Class Diagram



- There are various entities that are present in the class diagram.
- It contains User,Question and Task.
- The user will give the command in audio/voice format.
- Using the keywords,the voice assistant decide it is a question or task.
- After knowing it's a question or task,action will be taken and return the data to user in audio format and text.

Sequence Diagram



- Sequence diagram denotes the order in which various actions takes place in the entire program.
- Entities are represented by separate blocks in the sequence diagram.
- The actions are represented by rectangle box and arrows denote the sequence of actions.
- User have to login and verify.
- After received the command,it will speech – to – text .
- Match the text with action and find the result.
- Finally,perform action and response.

Activity Diagram

- Activity diagram describes the structure of a program and denotes the flow in which various actions takes place in a place.
- First, check whether it's a valid command or not, if No then End the task.
- If Yes, then check system command, if No then check browser command.
- If it's a browser command, then get the result from browser.
- End the task after responding to the user.

VII. FEASIBILITY STUDY

- **Technical Feasibility:** For virtual assistant, user must have microphone to give inputs and a speaker to get the output from the system.
- **Operational Feasibility:** It is easy to use, no need to be a skilled person to use.
- **Economical Feasibility:** The main cost is documentation cost. User also would have to pay for microphone and speakers.
- **Oranganizational Feasibility:** This shows the management and organizational structure of the project.
- **Cultural Feasibility:** Virtual assistant is built in accordance with the general culture. The project is to represent Indian culture without undermining local beliefs.

VIII. HARDWARE AND SOFTWARE REQUIRMENTS

The software is designed to be light-weighted so that it doesn't be a burden on the machine running it. Here are the minimum hardware and software requirement for virtual assistant.

Hardware:

- Mac OS X 10.11
- LINUX: RHEL 6/7
- WINDOWS 7 TO 10

Software:

- Python IDLE OR
- PyCharm

IX. CONCLUSION

In this project, we have discussed about our virtual voice assistant using python. Our project currently works on online and do basic tasks like reminder, data/time, open google and search on it, increase/decrease brightness and volume, reading the given pdf file, shuting down the pc, capturing a picture in camera and play music. This version of this virtual voice assistant is limited to work in online only. The upcoming versions in future, with the help of machine learning incorporated which will result in better than current version similar to what other popular voice assistant does.

X. FUTURE SCOPE

The virtual voice assistant which is fast and available for all is already good but still we have to improve a lot in this in order to make it more like a human, voice assistant nowadays are still not reliable in critical scenarios. The future of voice assistant will have AI, Machine learning, IOT, Neural networks etc. With these technologies, we can the voice assistant more reliable to humans like JARVIS in reality.

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