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Virtual Assistant Using Python

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Abstract: Today's era is the era of digitalization. Having smart phones and desktops is no less than having the world on our fingertips. Our lifestyle is involving being busy day by day. That busy, that people even find it a load to even type something to perform a task. So here comes virtual assistant at rescue. Just speak to it and the task is done. From sending a hello on WhatsApp to your friend to sending a full fleshed email to your boss virtual assistant will do it all for you. With time voice search is dominating over text searching. But what are virtual assistants? A software program that helps us perform our daily task just by speaking to it is a virtual assistant. A waking word is necessary to activate the software. This system can be used efficiently on desktops. The premise behind starting this project was that the data present on the web is sufficient and is openly available that can be used to build a virtual assistant that can make and perform intelligent decision for the user. They are intelligent computer programmes that recognise human natural languages via voice commands or text and perform tasks for the user. In this project, we will use a Python library to create your own voice assistant

Index Terms – Python, Artificial Intelligence, Natural Language Processing, Speech Recognition ,Speech To Text ,Text To Speech, Python Libraries

I. INTRODUCTION

Almost all tasks are now digitalized in today's world. Voice searches have surpassed text searches. Web searches conducted via mobile devices have only recently surpassed those conducted via computer, and analysts predict that 50% of searches will be conducted via voice by 2024. We need machine that think like humans and perform the task given to them by human beings, and to do so we are training them. And as a result of one of these training came the concept of virtual assistant.

A virtual assistant is self-employed software who is specialized in offering administrative services to clients from remote location, usually a home office. Scheduling appointments, making phone calls, booking tickets, sending messages and what not a virtual assistant ca n perform them all. It uses voice recognition features and language processing algorithms to perform a task by recognizing the voice command of user give out relevant information as per the user requirement. This is a software-based technology but companies nowadays are creating special devices integrated with this system that perform tasks. Amazon Alexa is one such example.

Virtual assistants are turning out to be smarter than ever. Allow your intelligent assistant to handle your email. Detect intent, extract information, automate processes, and provide personalized responses. In recent years, several researchers have become interested in the recognition of human activities. virtual assistant in Python is a software programme that assists you with day-to-day tasks such as showing the weather report, creating reminders, making shopping lists, and so on. They can respond to commands via text (as in online chat bots) or by voice. This system is intended for use on desktop computers. Virtual assistant software boosts user productivity by managing routine tasks and providing information from online sources. In this project, we propose a voice recognition system that recognizes human activities

Basically, we can say that these assistants are next level of advancement in development. The main privileged parts of the society who are benefiting from these assistants are old age, blind, physically challenged, and children. Blind people who cannot see can even interact with the machine with their voice only.

II. LITERATURE SURVEY

1) B. Sati, S. Kumar, K. Rana, K. Saikia, S. Sahana and S. Das have wrote about statement and speech for communication virtual assistant. It is a tool in AI that allows us to fulfil different purposes just by giving voice commands. The voice assistant we have developed is a desktop-based built using python modules and libraries which further stretches

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its reach to Machine Learning models and Deep Learning

2) T. -K. Kim, , has explained regarding speech analysis, and the theory is getting evolved day by day. The research performed describes a pattern recognition technique for the determination of voice. a voice control framework in view of man-made consciousness (AI) as colleagues the AI colleague framework utilizing Google Assistant,

3) Bassam A, Raja N. et al, have wrote about statement and speech for communication between humans and machines analog signals are used which is converted by speech signal to digital wave. The technology is massively utilized and has unlimited uses and also permit machines to reply accordingly to users command and voices. Speech recognition system is growing day by day and also has unlimited uses.

4) S. Subhash, P. N. Srivatsa, S. Siddesh, A. Ullas and B. Santhosh, explained about the spreading of speech technology products around the world. Voice control is a critical creating part that seriously modifies how people can live. The virtual assistant is typically being used in PDAs and PCs. Computerized reasoning based far off aides are working systems that can see the human voice and reply through composed voices.

5) Ravivanshi` Kumar Sangpal et al. Proposed a module named JARVIS with the combination of Artificial Intelligence interfaced to the platform Google along with the markup language inorder to convert the text format into speech. It illustrates its subsistence and its reutilisation and highlighted its future scope atlast

6) Dr. Kshama V. Kulhalli, Dr.Kotrappa Sirbi, Mr. Abhijit J. Patankar, "Personal Assistant with Voice Recognition Intelligence", International Journal of Engineering Research and Technology. ISSN 0974-3154 Volume 10, Number 1 (2017)

III. SYSTEM ARCHITECTURE

The system architecture of this project shows flow of control through the system. The hardware and software specifications are also depicted here. The architecture diagram is as

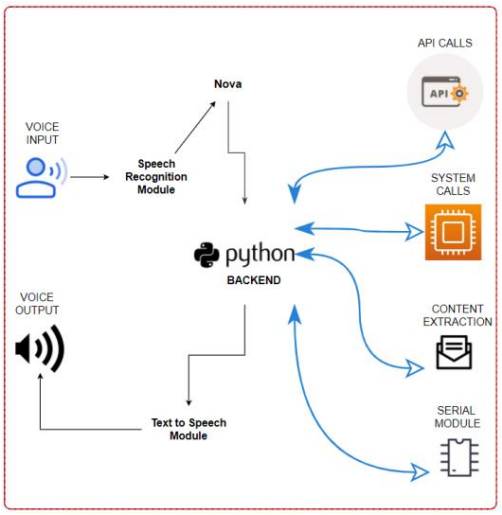

Fig1 :-System Architecture

1) **Speech Recognition module :** The class which we are using is called Recognizer. ⎪ It converts the audio files into text and module is used to give the output in speech.

2) **Speech To Text And Text To Speech Conversion :** Pyttsx3 is a text-to-speech conversion library in Python. And can change the Voice, Rate and Volume by specific commands. ⎪ Python provides an API called Speech Recognition to allow us to convert audio into text for further processing converting large or long audio files into text using the Speech Recognition API in python.

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3) Process and execute the required command: The said command is converted into text via speech recognition module and further stored in a temp. Then, Analyze the user's text via temp and decide what the user needs based on input provided and runs the while loop. Then, Commands are executed

➢ **HARDWARE AND SOFTWARE REQUIREMENTS**

➢ **HARDWARE**

- A desktop / laptop
- Minimum 512 MB RAM
- Internet connectivity
- USB debugging mode for development and testing
- processor

➢ **SOFTWARE**

- Windows 7 and higher

IV. SYSTEM DESIGN AND IMPLEMENTATION

1) Existing Model

Out of all the existing projects in the market most of them only use speech recognition using neural network.Although their system give result based on moderate accuracy. Few of the techniques used by them are

2) Context Aware Computing:-

Context-aware computing is a style of computing in which situational and environmental information about people, places and things is used to anticipate immediate needs and proactively offer enriched, situation-aware and usable content, functions and experiences. The main use of this technique is to recognise the word spoken by the peoples and also presuppose the mispronounced words.

3) Natural Language Processing :-

NLP is the branch of computer science more widely it is the branch of artificial intelligence that helps in the interaction between humans and machines. It is due to the existence of NLP only that makes possible for computers to read text, hear speech, interpret it, measure sentiment and determine which parts are important

V. PROPOSED MODEL

1)Speech To Text:-

It is software that enables the recognition of human language and also convert in into the language understood by machines using computer linguistics. It is also known as speech recognition

2)Text Analyzing:-

- Inputs provided are just letters for computer.
- Software converts the speech into machine understood language in natural language.
- Commands are understood by the computers, virtual assistants convert this text to command.

➢ **API Calls** :We have used weather forecast from openweathermap which can accurately fetch information and give results to the user.

➢ **System Calls:** In this feature, we have used OS & Web Browser Module to access the desktop, calculator, task manager, command prompt & user folder. This can also restart the pc and open the chrome application.

➢ **Content Extraction:** This can Perform content extraction from YouTube, Wikipedia and Chrome using the web fetching related information .

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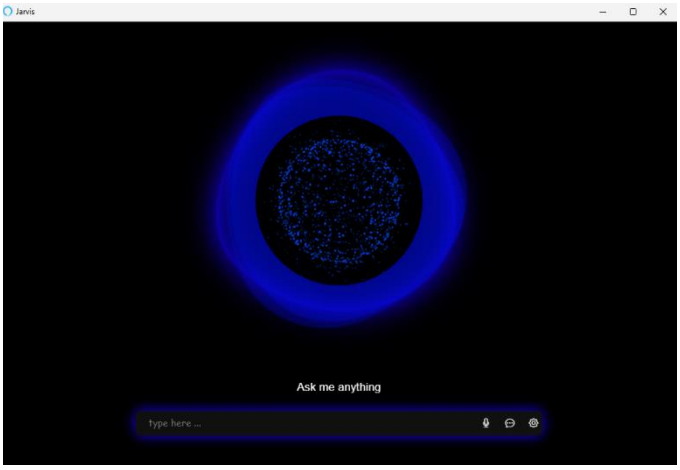

Fig 2:- User Interface of Virtual Assistant

Following are the task perform by virtual Assistant :-

1.Opening Youtube	2.Opening notepad	3.telling joke
4.Sending mail	5.Searching Web	6.Telling time
6.weather updates	7.closing notepad	8.greeting

VI. CONCLUSION

In conclusion, In this Paper we have discussed uses, methodology as well as implementation details of the personal Desktop based voice assistant using Python which is built using open-source software Visual Studio as an implementation tool. This Project will be helpful for people of all generations as well as to people with some disabilities or people with some special cases. The personal voice assistant will be easy to use and will reduce the manual human efforts for performing various tasks. The functionality of the current voice assistant system is limited to working on Desktop based and working online (required to have internet connection to perform tasks) only. The voice assistant system is modular in nature so that addition of new features is possible without disturbing current system functionalities. The virtual; assistant provides a smart working experienced for desktop users.

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