AI DESKTOP VOICE ASSISTANT

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Abstract:

As we all know, Python is an emerging language, so it is easy to write voice scripts in Python. The instructions of the service provider can b e customized according to the needs of the customer. Literacy is the process of converting words into text. This is commonly used with voic e assistants like Alexa, Siri, etc. Creating your own website is a fun project. Search for a topic without typing a single word, search on Goog le without opening the browser, and perform many other daily tasks like playing music and opening your favorite IDE again with a simple v oice command. In the current state of technology advancement, they do all the work with the same efficiency or we can say that they work b etter than us. Through this work, I realized that the concept of artificial intelligence in many areas is to reduce human labor and save time. A s a personal assistant, Jarvis helps end users in daily tasks such as social networking, searching on Google, searching videos, saving photos, live weather, word topic, research topic, health, as shown. Symptoms and alerts Events and activities planned by users. Analyze user messag es/commands with the help of artificial intelligence to provide the best solutions. The algorithm used here is a rule-based algorithm.

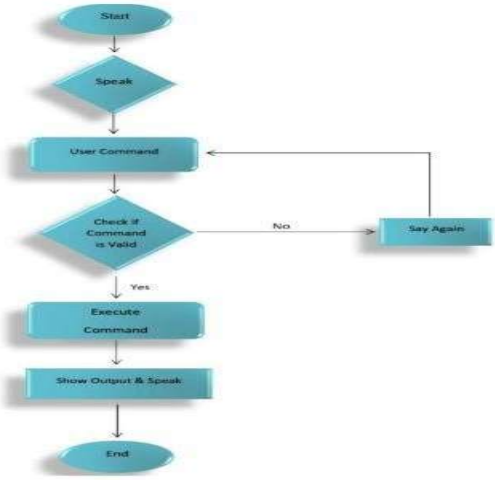
Keywords: speech recognition, Jarvis, voice assistant, rule-based algorithm, artificial intelligence.

I. INTRODUCTION

An AI desktop voice assistant is a convenient software tool that allows users to interact with their desktop or laptop via commands, providi ng a hands-free and efficient way to manage tasks. These programs use advanced technologies like natural language processing (NLP) and machine le arning (ML) to recognize and interpret speech, allowing users to do many things without typing or clicking. Tasks include opening apps, m anaging files, setting notifications, playing music or videos, and even controlling smart home devices. By understanding the context of com mands, AI voice assistants can provide more accurate and relevant responses, learn from past interactions, and improve over time. They als o integrate with third-party software and tools to increase efficiency and provide personalized services based on user preferences. The ability to convert sentence s into additional text makes them especially useful for tasks like writing emails, editing documents, or writing letters. AI voice also provide s great accessibility benefits by making it easier for people with disabilities or limited mobility to interact with their devices. As technology continues to advance, these assistants are becoming smarter and more intuitive, helping users work more efficiently and stay connected whi le chatting, becoming increasingly more immersive in the experience.

II. OBJECTIVES AND METHODOLOGY

The AI desktop voice assistant provides a novel method for users to interface with their computers using spoken commands or responses. Further augmenting the appeal of AI desktop assistants, they also manage various typical tasks such as launching applications and organizing files and settings, as NLP and machine learning algorithms are employed to integrate voice comprehension into their functionality. These solutions are intelligent and adaptable, learning what suggestions to offer based on the command given or the interaction with the user, as well as seamlessly integrating with browsing tools, communication applications, and social media platforms. It is also possible to transform words or information quickly for hyper-efficient typing. Indeed, speech to text optimizes performance on a professional and personal level alike. For instance, computer users can now control lighting, heating, security, and other smart devices installed in their homes without needing to switch to different mobile applications. Contrary to existing solutions, AI allows for context-led dialogue wherein conversations can be non-linear with multiple different threads focused on the same topic. However, these new technologies can address this issue too, as they enable AI assistants to hold and monitor several sessions at the same time. To illustrate, if a person enkuluwe nebaiba, arguing over a dispute with their AI voice assistant, the assistant, instead of being perturbed by the argument, continues the conversation.



III. PROPOSED SYSTEM

Creating your own website is a fun project. Search for a topic without typing a single word, search on Google without opening the browser, and perform many other daily tasks like playing music and opening your favorite IDE again with a simple voice c ommand. Jarvis is different from other voice assistants in that it is desktop specific and users do not need to register an account to use it, and it does not require an internet connection to receive instructi ons to perform a specific task. The IDE used in this project is Visual Studio Code. All python archives are created in Visual St udio Code and all necessary packages are easily installed in this IDE. The following templates and libraries were used for this project: pyttsx3, speech recognition, history, wikipedia, pywhatkit, pyautogui, beautifulsoup4, webbrowser, wolframalpha, late st_news, keyboard, pynput, greetme, shutdown, speedtestalpha, latest_news, keyboard, pynput, greeting, shutdown, speedtest-clicli, etc. They can do the job with the same efficiency as us or probably more than us. Through this work I realized that the c oncept of artificial intelligence in many areas is to reduce human labor and save time. Among the features of this program is th at it can send messages on WhatsApp, open commands, open your favorite IDE, notepad, etc., play music, do Wikipedia searc h for you, open Google, YouTube, etc.provide weather forecast in the web browser, provide desktop notification of your choic e. It can do some simple conversations...

IV.IMPLEMENTATION

The implementation of the AI desktop voice assistant is combined with speech recognition, Python backend processing, and API calls for user commands. It uses natural language to extract content and make calls to interact with the business. Text-to-speech technology provides feedback, and security measures ensure data privacy. Continuous testing and optimization improve the system, and new features are added based on user feedback.

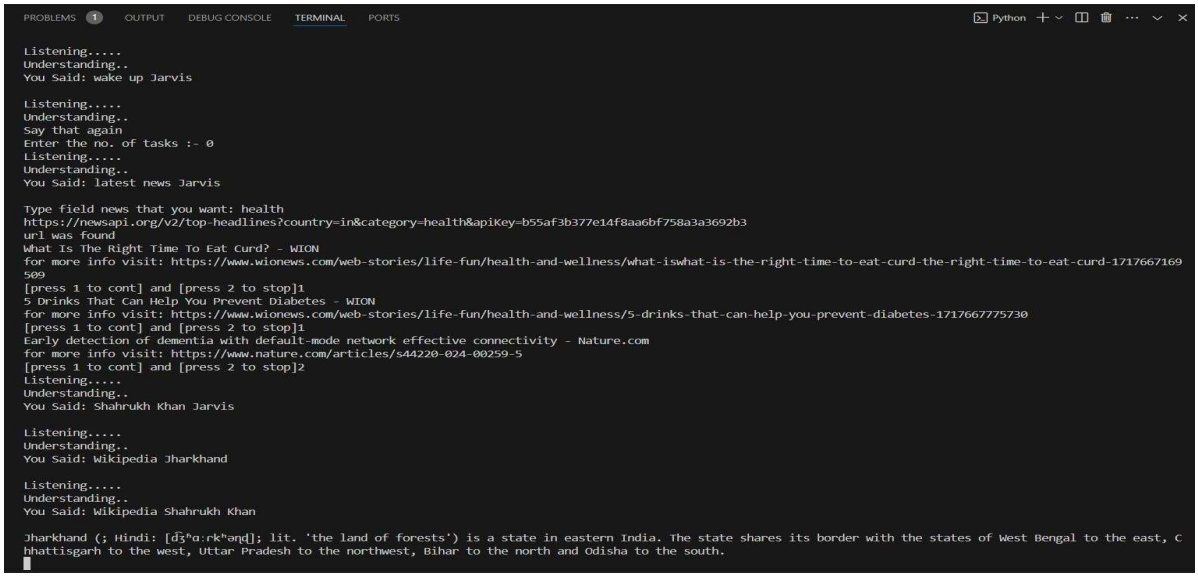


Fig 1:Wikipedia searches results, news reading

Fig 2: What is the time now?

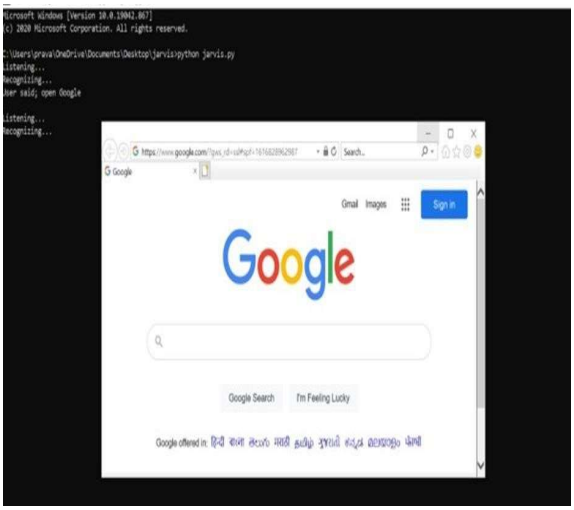


Fig 3: open Google

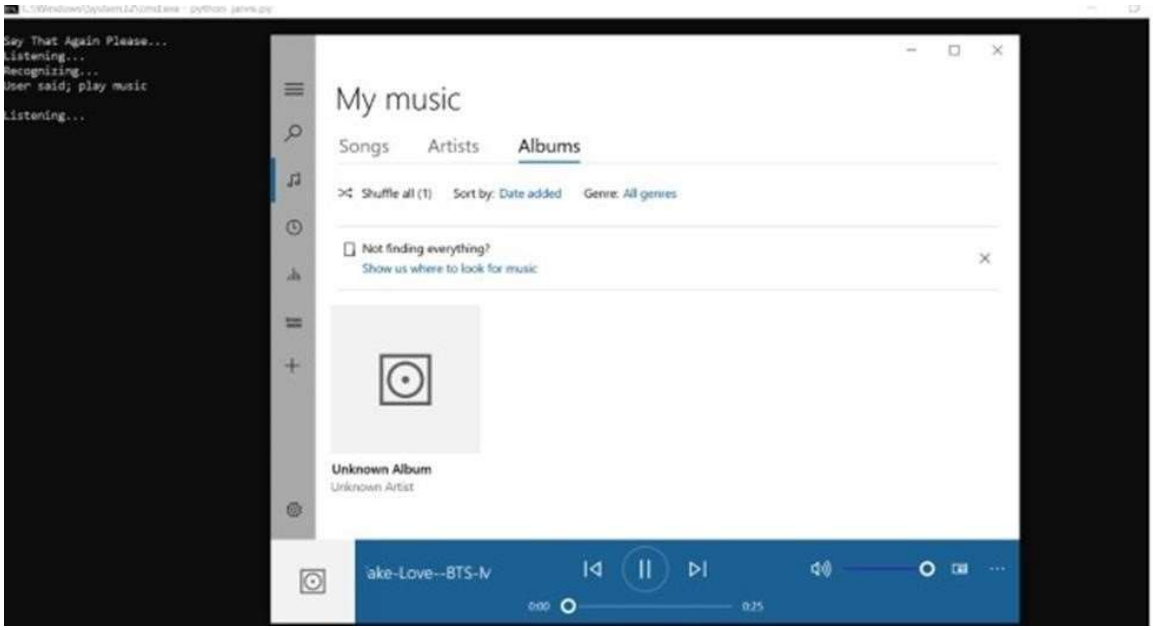


Fig 4: Play Music

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Listening.....
Understanding..
You Said: let's play a game Jarvis

LETS PLAYYYYYYYYYYYYY
Listening.....
Recognizing..
Say that again
Listening.....
Recognizing..
You Said : paper

Score:- ME :- 0 : COM :- 1
Listening.....
Recognizing..
Say that again
Listening.....
Recognizing..
Say that again
Listening.....
Recognizing..
Say that again
FINAL SCORE :- ME :- 0 : COM :- 1
Listening.....
Understanding..
Say that again
Enter the no. of tasks :-
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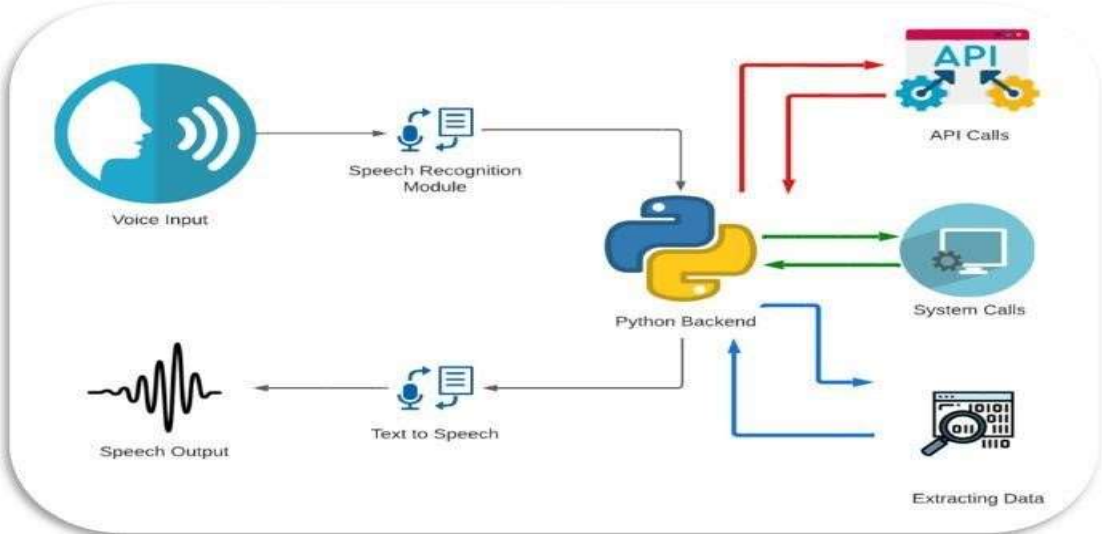
Fig 5:Rock Paper Scissor game

A.Architecture Daigram:



This diagram represents the voice control system architecture. It starts with the voice input of the voice recognition module. This mod ule converts the message to text and sends it to the Python backend. The backend processing core manages and interacts with various objects. It makes API calls to external services to get more information or perform tasks. It also makes calls to interact with the operati ng system. Data acquisition is done at the backend to collect the necessary data. The processed data is converted into speech by the tex t-to
speech module. Finally, the system produces an output message to the user. The design demonstrates the integration of speech recogni tion, background processing, external services, and administrative control in a streamlined system.

B. Test Cases:

Test Case ID	Test Case Name	Description	Test Steps	Expected Result	Status
TC_001	Speech Recognition Accuracy	Verify the assistant correctly recognizes user voice commands	1.Lanch the assistant 2.Speak a clear command e.g.:-Open Microsoft word	The assistant accurately interprets the command and performs the requested action	Pass/Fail
TC_002	Response Tone Consistency	Check if the assistant Uses the predefined dystopian tone for responses	1.Ask the assistant query e.g.-what is the temperature?	The assistant responds with a tone That matches the dystopian the me e.g.- authoritarian or robotic tone	Pass/Fail
TC_003	Restricted information handling	Verify the assistant restricts responses based on project constraints	1.Ask for restricted information e.g.-Tell me classified details about XYZ….	The assistant denies access and responds with a message aligned to dystopian rules	Pass/Fail
TC_004	Multitap skiing capability	Test if the assistant can handle multiple simultaneous commands efficiently	1.Issue two Commanda in quick Succession e.g. Open followed by play video	The assistant executes both tasks correctly, prioritizing or queueing the m based on system design	Pass/Fail

A. Comparative Analysis:

The above test scenarios provide a general framework for evaluating various aspects of AI desktop voice assistants, such as speech recognition, natural language processing (NLP), performance, user interaction, performance, and security/privacy.

The Speech Recognition Test evaluates a person's ability to clearly recognize and understand speech, control different voices, control background noise, control speech rate, distinguish messages from different speakers, and respond to interruptions or pauses. NLP data evaluates how well an assistant understands simple and complex commands, manages content and transitions, resolves ambiguity, maintains context knowledge, and responds to general knowledge questions. Process data, search the web, provide weather updates, manage real-time events, and create tasks or alerts. Text-to-speech (TTS) and user interaction data testing measures the accuracy and precision of a user's speech output; it can understand and respond to different languages, manage conversations, and provide personalized responses based on user preferences. Performance metrics measure CPU and memory usage, response time, offline performance, and errors during interruptions. Monitor user privacy and provide controls to prevent data access. These tests provide an in-depth analysis of voice assistant performance, identify areas for improvement, and provide a way to compare different AI voice assistants in terms of performance, usability, and security.

B. Positive Aspects:

Voice assistants that have been embedded with artificial intelligence have a number of both user and tool performance benefits. One of the advantages that stands out is their retention accuracy of facts. These voice assistants can hear commands from varying locations, at times, and even with other noises present. This increases dependability on the tools and opens them up to a wider variety of users. Also, these voice assistants have been designed so that they can hear simple verbal orders and engage fully in multi-step orders which include doing tasks, responding to contextual inquiries among other complex services giving them a higher intuitive interaction.

Using a single command, the Assistant Assistants allow the users to do several activities at once, implying that the users will be able to find several commands easy to do. When launching an app the users could give multiple commands for reminders to be set or events to be scheduled for that particular say all in one go. Such goal directed behavior is bound to improve the efficacy of an individual and also saves the time. Dedicating time to nurture relationships is certainly yet another key highlight. A number of voice assistants do recognize the unique interests of a particular user and personalize their response according to how

that user has interacted with the tool before.

They prove to be valuable thanks to the unstoppable ability to do a variety of tasks, including managing files, opening an application, or even conducting web searches. They make it convenient for people from different parts of the world because they enable providers to speak different languages. This gives them the flexibility to be more suitable to users of varying regions. Almost every voice assistant Available provides users with the ability to set multiple alpha.

V. Conclusion and future scope

As stated before, "voice assistant is one of the biggest problem solver" and you can see that in the proposals with the examples that it is in fact one of the biggest problem solver of the current world. We can see that voice assistant is one of the major evolving Artificial Intelligence in the current world once again on seeing the proposal examples because at the past, the best feature which a voice assistant had was telling the date and searching the web and giving the results but now look at the functions that it can do so with this, we can say that it is a evolving software in the current world. The main idea is to develop the assistant even more advanced than it is now and make it the best AI in the world which will save an ample of time for its users. I would like to conclude with the statement that we will try our best and give one of the best voice assistants which we are able to. Through this voice assistant, we have automated various services using a single line command. It eases most of the tasks of the user like searching the web, retrieving weather forecast details, vocabulary help and medical related queries. We aim to make this project a complete server assistant and make it smart enough to act as a replacement for a general server administration.

VI. REFERENCES

[1] K. Noda, H. Arie, Y. Suga, T. Ogata, Multimodal integration learning of robot behavior using deep neural networks, Elsevier: Robotics and Autonomous Systems, 2014.

[2] Artificial Intelligence (AI), sometimes called machine intelligence. https://en.wikipedia.org/wiki/Artificial_intelligence.

[3] Deepak Shende, RiaUmahiya, Monika Raghorte, AishwaryaBhisikar, AnupBhange, “AI Based Voice Assistant Using Python”, Journal of Emerging Technologies and Innovative Research (JETIR), February 2019, Volume 6, Issue 2.

[4] J. B. Allen, “From lord rayleigh to shannon: How do humans decode speech,” in International Conference on Acoustics, Speech and Signal Processing, 2002.

[5] John Levis and Ruslan Suvorov, “Automatic Speech Recognition”.

[6] B.H. Juang and Lawrence R. Rabiner, “Automatic Speech Recognition - A Brief History of the Technology Development”.

[7] AbhayDekate, ChaitanyaKulkarni, RohanKilledar, “Study of Voice Controlled Personal Assistant Device”, International Journal of Computer Trends and Technology (IJCTT) – Volume 42 Number 1 – December 2016.

[8]. Vijaya Balpande1, Vedanti Lute2, Neha Pawar3, Saniya Sadaf4, Aayush Jain5 “Designing of Virtual Desktop Assistant using Machine Learning” Volume 2, Issue 3, April 2022

[9]. Kishore Kumar R, Ms. J. Jayalakshmi, Karthik Prasanna, “A Python-based Virtual Assistant Using Raspberry Pi for Home Automation”, International Journal of Electronics and Communication Engineering (IJE CE), Volume5, Issue 7, July 2018.

[10]. 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.

[11]. Veton Këpuska, “Next-Generation of Virtual Personal Assistant (Microsoft Cortana, Apple Siri, Amazon Alexa and Google 11. Home)”, Pycon, Cleveland, 2018.

[12]. G Rushivardhan, Mrs K Santoshi “Virtual Assistant using NLP Techiques” Volume 10, Issue 10 October 2022.

[13]. Amujuri Venu “Voice Assistant Using Artificial Intelligence” Vol 3, no 11, pp 926-931 November 2022.

[14].Saadman Shahid Chowdury, Atiar Talukdar, Ashik Mahmud, Tanzilur Rahman,”Domain specific Intelligent personal assistant with bilingual voice command processing,”IEEE 2018.

[15]. Polyakov EV, Mazhanov MS, AY Voskov , LS Kachalova MV, Polyakov SV
“Investigation and development of the intelligent voice assistant for the IOT using machine learning”Moscow workshop on electronic technologies, 2018.