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AI-BASED DESKTOP VOICE ASSISTANT

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Abstract- Integrating artificial intelligence (AI) in desktop voice assistants has revolutionized how we interact with computers. These advanced AI-powered voice assistants, such as Jarvis AI, can understand natural language commands, process information, and provide personalized assistance to users seamless and intuitive manner. They offer many features, including scheduling appointments, managing tasks, providing news and weather updates, controlling smart home devices, and more. The system provides an overview of Jarvis AI, a state-of-the-art desktop voice assistant that utilizes cutting-edge voice recognition technology and machine learning algorithms to deliver a user-friendly and efficient virtual assistant experience. Jarvis AI constantly learns and adapts to user preferences, making it a powerful tool for simplifying daily routines, enhancing productivity, and improving overall user experience. The system highlights the capabilities and benefits of Jarvis AI as a modern AI desktop voice assistant that brings convenience, efficiency, and personalized assistance to users' fingertips.

Keywords – Artificial Intelligence, Voice Assistant, Python, Machine Learning.

I. INTRODUCTION

Just A Rather Very Intelligent System (J.A.R.V.I.S.)

J.A.R.V.I.S. is an AI that functions as Tony Stark's assistant, running and taking care of all the internal systems of Stark's buildings and the Iron Man suits. In Peter David's novelization of Iron Man, J.A.R.V.I.S.

Jarvis is a testbed of current and future AI systems used by Facebook. Actor Morgan Freeman is the voice of Jarvis, while the name comes from J.A.R.V.I.S., "Just a Rather Very Intelligent System," the artificial intelligence program in the 2008 superhero film Iron Man. See virtual assistant and AI.

Jarvis uses several artificial intelligence techniques, including natural language processing, speech recognition, face recognition, and reinforcement learning, written in Python, PHP, and Objective C.

JARVIS is a Voice-Based AI Assistant which is developed in Python Programming Language. It uses Different Technologies to Add New Unique Features. It can Automate Tasks with just One Voice Command. It is a Desktop Based AI Assistant.

We know some of the virtual assistants, like Google's Google Assistant, Apple's Siri, Amazon's Alexa, and Microsoft's Cortana. this method is specifically designed to work effectively on desktops. Personal Assistant application code ameliorates users' productivity by organizing routine tasks and by dispensing data from an internet supply to the user. This project started on the assumption that there is an adequate amount of openly obtainable information & data on the Internet that can be utilized to make a virtual assistant that can build intelligent decisions for regular user activities.

III LITERATURE SURVEY

JETIR JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR) ISSN: 2349-5162
ESTD Year: 2014: This paper proposes a voice control framework given man-made consciousness (AI) as colleagues the AI colleague framework utilizing Google Assistant, a delegate administration of open API man-made consciousness, and the restrictive auto-run framework.

International Research Journal of Modernization in Engineering Technology and Science. Volume:04/Issue:05/May-2022
Impact Factor- 6.752: This is mostly because of its need in devices like smartwatches or fitness bands, speakers, Bluetooth, earphones, mobile phones, laptops or desktops, television, etc.

"Artificial Intelligence-based Voice Assistant," 2020 Fourth World Conference on Smart Trends in Systems, Security, and Sustainability (WorldS4), London, UK, 2020, pp. 593-596: The request asked by the user gets split into separate commands so that our voice assistant can able to understand

"JARVIS: An interpretation of AIML with the integration of gTTS and Python," 2019 2nd International Conference on Intelligent Computing, Instrumentation and Control Technologies (ICICICT), Kannur, India, 2019, pp. 486-489: Analyzing the speech recognition systems in the acknowledged platforms from the viewpoint of Neural Language Processing [NLP], we can classify major three generations of these Intelligence Systems.

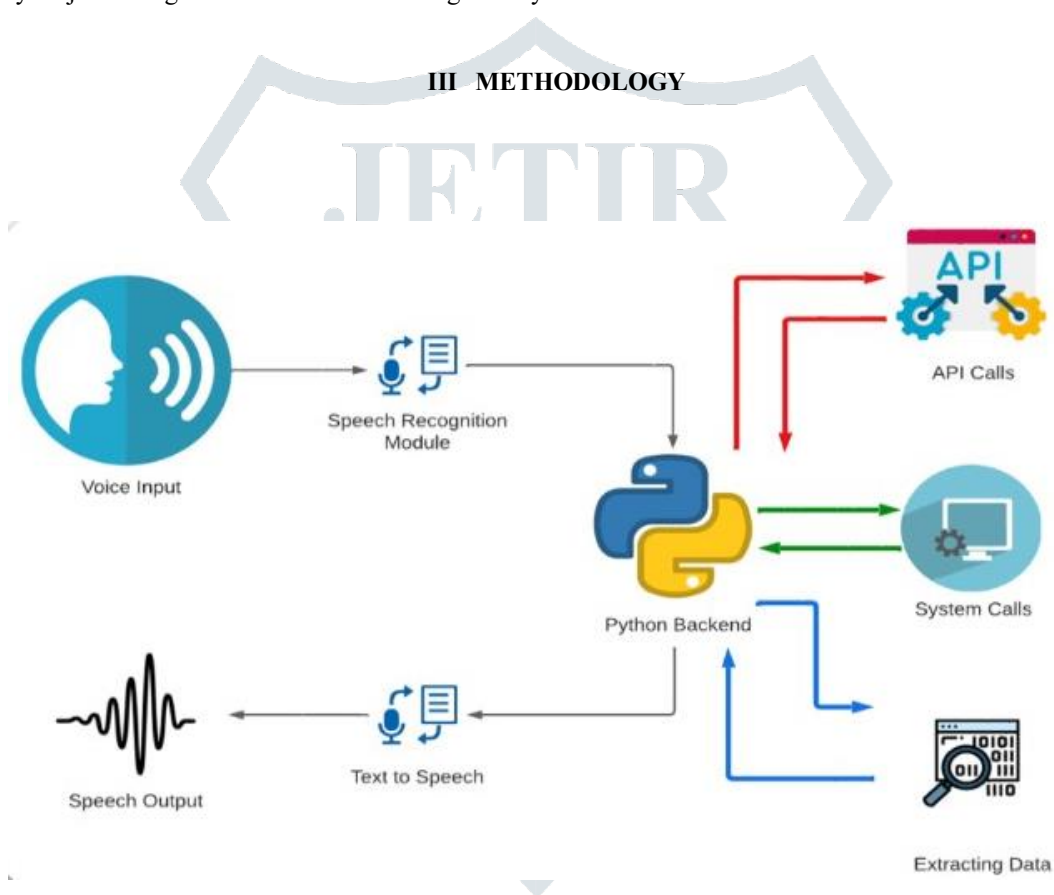
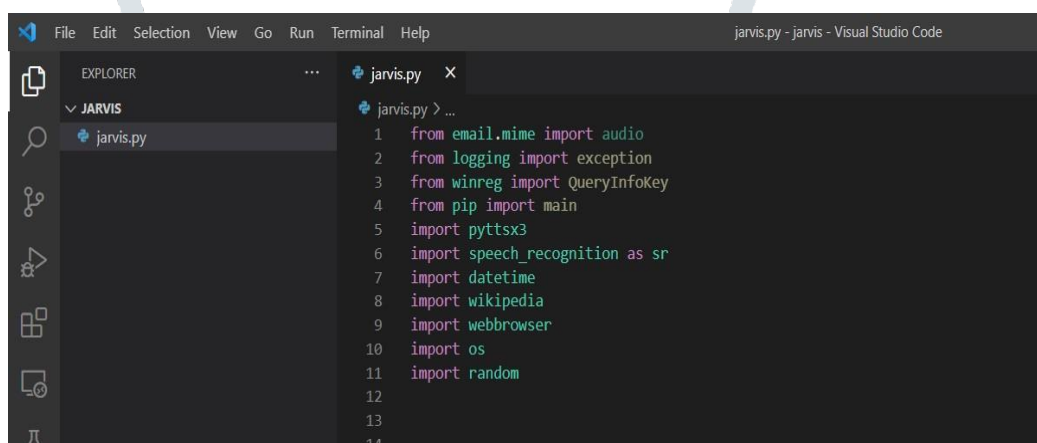


Fig .1 System diagram (a)

i. Python: Python is an OOPs (Object Oriented Programming) based, high-level, interpreted programming language. It is a robust, highly useful language focused on rapid application development (RAD). Python helps the easy writing and execution of codes. Python can implement the same logic with as much as 1/5th of code as compared to other OOPs languages. Python provides a huge list of benefits to all. The usage of Python is such that it cannot be limited to only one activity. Its growing popularity has allowed it to enter into some of the most popular and complex processes like Artificial Intelligence (AI), Machine Learning (ML), natural language processing, Data science, etc. Python has a lot of libraries for every need of this project. For JARVIS, libraries used are speech recognition to recognize a voice, Pyttsx3 for text-to-speech, selenium for web automation, etc. Python is reasonably efficient. Efficiency is usually not a problem for small examples. If your Python code is not efficient enough, a general procedure to improve it is to find out what is taking most of the time and implement just that part more efficiently in some lower-level languages. This will result in much less programming and more efficient code (because you will have more time to optimize) than writing everything in a low-level language.

- ii. Que.py: Que.py is a Python framework to transform natural language questions into queries in a database query language. It can be easily customized to different kinds of questions in natural language and database queries. So, with a little coding, you can build your system for natural language access to your database.
- iii. Pyttsx3: Pyttsx3 stands for Python Text to Speech. It is a cross-platform Python wrapper for text-to-speech synthesis. It is a Python package supporting common text-to-speech engines on Mac OS X, Windows, and Linux. It works for both Python2.x and 3. versions. Its main advantage is that it works offline.
- iv. NLP and Voice Recognition: Natural language processing (NLP) techniques are used to process and understand the voice commands the desktop voice assistant receives. This may involve tasks such as speech recognition, language understanding, intent recognition, and context extraction, to accurately interpret the user's commands.
- v. SQLite: SQLite is a capable library, that provides an in-process relational database for efficient storage of small-to-medium-sized data sets. It supports most of the common features of SQL (Structured Query Language) with few exceptions. Best of all, most Python users do not need to install anything to get started working with SQLite, as the standard library in most distributions ships with the sqlite3 module. SQLite runs embedded in memory alongside your application, allowing you to easily extend SQLite with your own Python code. SQLite provides quite a few hooks, a reasonable subset of which are implemented by the standard library database driver.

IV SYSTEM ARCHITECTURE



1. gTTS - Google's text-to-speech package converts your voice requests into text. Answers to search functions that you type to get answers to questions or commands are converted into voice by gTTS. This package connects with the Google Translate API.
2. Datetime- Datetime folder is used to display Date and Time. This runtime module is built in Python.
3. Wikipedia - We all know that Wikipedia is a great and huge source of knowledge like Geeks for Geeks or other resources we use the Wikipedia module in our project to get more information from Wikipedia or search Wikipedia. To install this Wikipedia module, install Wikipedia
4. Webbrowser - Browse the web. This module is built with Python.
5. The OS module in OS-Python provides functions to interact with the OS. The OS includes Python's standard utility modules. This module provides a way to use functions depending on the operating system.
6. Pyjokes- Py jokes are used to collect jokes on the internet. Pyjokes joined our project because he adds humor to our project. This is great interesting Pyjokes is a one-liner joke that makes our project interesting.
7. Pyaudio - PyAudio is a set of Python bindings for Port Audio, a C++ library that interfaces with audio drivers.

8. Smtplib- Simple Mail Transfer Protocol Library is a Python library for sending an email using Simple Mail Transfer Protocol (SMTP). smtplib is a built-in Python module; no installation is required. It summarizes all the complexities of SMTP. Enable the client to implement Simple Mail Transfer Protocol (SMTP).

9. Requests - Requests module allows you to send HTTP requests using Python. Used to make GET and POST requests. It summarizes the complexity of making simple API requests.

V RESULT AND DISCUSSIONS

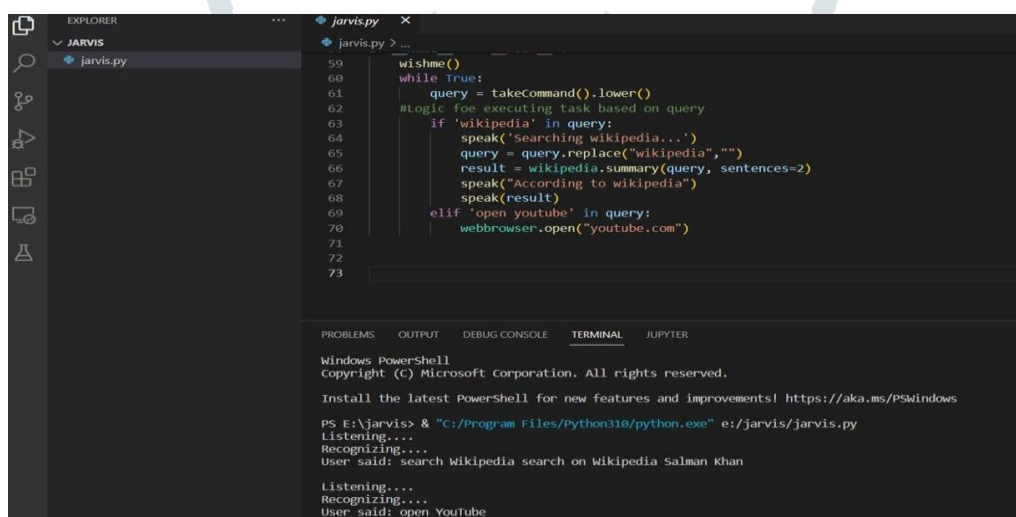
A virtual assistant time-saving solution that can efficiently understand orders and carry out tasks assigned by clients. Using natural language processing (NLP), virtual assistants can match the user's voice or text input with executable commands, allowing them to operate machines such as laptops or computers based on the user's commands.

The speed and efficiency of virtual assistants make them an ideal choice for saving time on various tasks. They can quickly respond to voice commands or text-based questions, eliminating the need for manual input or navigation. This streamlined approach can be especially useful when performing repetitive or time-consuming tasks, allowing the user to focus on other important responsibilities.

Virtual assistants are designed to be available at any time, making them reliable and ready to help. They can quickly and effectively adapt to changing needs, providing emergency assistance when needed. In addition, virtual assistants can be used by multiple users, including family members or colleagues, depending on their permission and workload. This versatility extends its usefulness beyond individual users and allows them to help others.

Example:

In fig. command given to the desktop assistant for opening YouTube



```

59 wishme()
60 while True:
61     query = takeCommand().lower()
62     #logic for executing task based on query
63     if 'wikipedia' in query:
64         speak("searching wikipedia...")
65         query = query.replace("wikipedia", "")
66         result = wikipedia.summary(query, sentences=2)
67         speak("According to wikipedia")
68         speak(result)
69     elif 'open youtube' in query:
70         webbrowser.open("youtube.com")
71
72
73

```

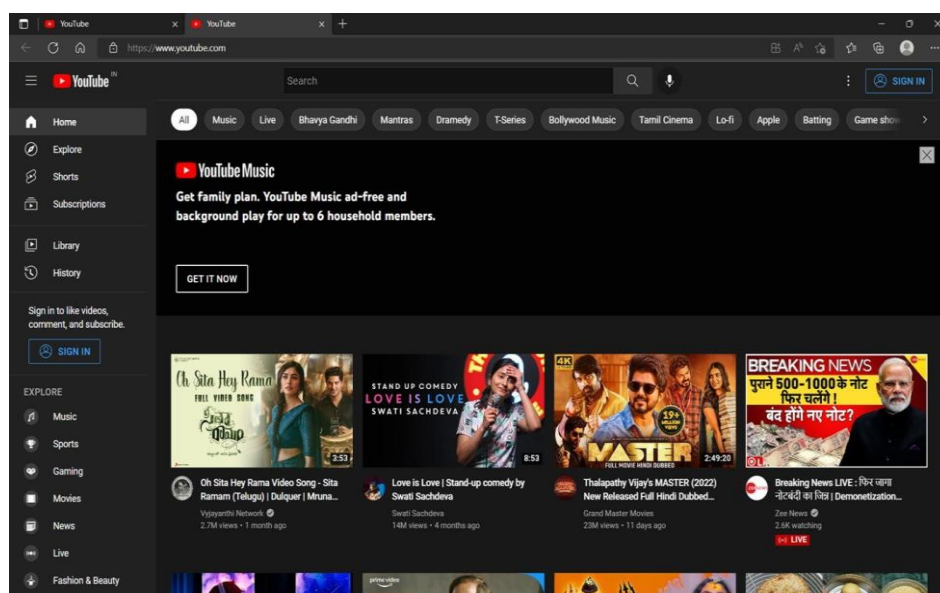
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! <https://aka.ms/PSWindows>

PS E:\jarvis> & "C:/Program Files/python310/python.exe" e:/jarvis/jarvis.py
Listening....
Recognizing....
User said: search Wikipedia search on Wikipedia Salman Khan
Listening....
Recognizing....
User said: open YouTube

Expected Outcome:

In fig., the desktop assistant opens YouTube as per the user command



VI Conclusion

Jarvis AI desktop voice assistant represents an exciting and promising development in artificial intelligence technology. With the ability to understand natural language commands, perform tasks, and provide useful responses, Jarvis AI has the potential to improve productivity and convenience for users in various fields, including home automation, scheduling, communication, and information retrieval.

Jarvis AI's voice recognition capabilities and integration with other apps and devices make it a powerful tool for hands-free interaction and digital task control. Learning and adapting to user preferences and habits over time improves usability and user experience. With continued advances in natural language processing, machine learning, and voice recognition technology, Jarvis AI will continue to evolve and improve, offering more capabilities and flexibility in the future.

However, it is important to consider the ethical implications and potential issues associated with using Jarvis AI and AI-powered voice assistants. Issues such as data privacy, security, bias, and impact on business and human interaction must be carefully managed to ensure the responsible and ethical use of this technology.

Jarvis AI offers convenience, efficiency, and productivity benefits as a desktop voice assistant. As technology advances and matures, it is important to consider the potential benefits and challenges associated with its use and use it responsibly and ethically. With careful and responsible use, Jarvis AI and similar AI-powered voice assistants can dramatically change the way we interact with technology in our daily lives.

VII REFERENCES

- [1] Dr. Kshama, V. Kulhalli, Dr. Kotrappa Sirbi, Mr. Abhijit J. Patankar, "Personal Assistant with Voice Recognition Intelligence," *International Journal of Engineering Research and Technology*, vol 10, no.1, pp. 416-418, (2017).
- [2] Kukade, Ruchita G. Fengse, Kiran D. Rodge, Siddhi P. Ransing, Vina M. Lomte "Virtual Personal Assistant for the Blind," *International Journal of Computer Science and Technology (JCST)*, vol 9, Issue 4, PP.2251-2253, October - December 2018.
- [3] TusharGharge, ChintanChitroda, NishitBhagat, KathapriyaGiri, "AISmart Assistant," *International Research Journal of Engineering and Technology (IRJET)*, vol: 06 Issue: 01, PP-3862-3863, January 2019
- [4] M. A. Jawale, A. B. Pawar, D. N. Kyatanavar, "Smart Python Coding through Voice Recognition," *International Journal of Innovative Technology and Exploring Engineering (IJITEE)*, vol: 8 Issue-10, PP-3283-3284, August 2019.
- [5] Isha S. Dubey, Jyotsna S. Verma, Ms. Arundhati Mehendale, "An Assistive System for Visually Impaired using Raspberry Pi," *International Journal of Engineering Research & Technology (IJERT)*, vol 8 Issue 05, PP-608-609, May 2019.
- [6] VetonKëpuska, "Next-Generation of Virtual Personal Assistants (Microsoft Cortana, Apple Siri, Amazon Alexa, and Google Home)," *International Journal for Research in Applied Science & Engineering Technology (IJRASET)*, vol 10 Issue 04, PP-2251-2253 Apr 2022.