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The Jarvis Voice Assistant Using Python

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ABSTRACT: This paper offers JARVIS, a digital incorporated voice assistant comprising of TTS and Python-based generation in personalised assistant development. JARVIS contains the power of NLP and the industry-leading platform for text-to-speech conversion and the voice of the Male Pitch within the TTS libraries stimulated from the Marvel World. This is the result of the adoption of the dynamic base Python's pytsx which considers intentionally in adjacent stages of TTS, facilitating the established order of notably easy dialogues among the assistant and the users. This is a unique result of the exaggerated contribution of numerous platforms like Python[pytsx] and TTS[Text to Speech] resulting in a consistent and modular structure of JARVIS exposing the widespread reusability and negligible maintenance.

KEYWORDS: NLP (Natural Language Processing), Speech Recognition, TTS (Text-To-Speech), pytsx (python text-to-speech)

I. INTRODUCTION

AI when used with machines, it suggests to us the functionality of thinking like humans. In this, a laptop gadget is designed in this sort of manner that usually requires interaction from humans. As we know Python is an emerging language so it becomes easy. The commands for the assistant can be treated according to the requirement of the user it changed into an exciting task to make my very own assistant. It has become simpler to ship emails without typing any word. Searching on Google without starting the browser, and performing many different day-by-day duties like playing music with the assist of a single voice command. In the modern scenario,

development in technologies is such that they could carry out any project with identical effectiveness or can say more successfully than us. By making this project. I found out that the idea of AI in each field is reducing human effort and saving time. As the voice assistant is the usage of Artificial Intelligence as a result the result that it is providing are highly accurate and efficient. The assistant can assist to lessen human attempts and consumes time even as performing any task, they eliminated the concept of typing completely and behave as another individual to whom we are talking and asking to perform the task. The assistant is no less than a human assistant but we can say that this is more effective and efficient to perform any task. The libraries and packages used to make this assistant focuses on the time complexities and reduces time.

The functionalities include open command prompt, your favorite IDE, and notepad etc, It can play music, it can do Wikipedia searches for you. It can open websites like Google, YouTube, etc., in an internet browser to supply climate forecasts. It can supply computer reminders of your choice. It can have some basic conversation with us.

II. LITERATURE SURVEY

The literature study for this paper was carried out to present the reader with a better understanding of AIML and NLP. The peer-reviewed papers that had been used for this paper comes from the 2019 second International Conference on Intelligent Computing, Instrumentation and Control RD's SCSCOE, Department of Computer Engineering 2022-23 Technologies (ICICICT). This paper offers JARVIS, a virtual integrated voice assistant comprising of TTS[Text-To-Speech], AIML[Artificial Intelligence Markup Language], and Python-based generation in personalised assistant development.

The following keywords and sentences were used:

- NLP
- TTS
- pyttsx

In this paper, we presented JARVIS: An interpretation of AIML with the integration of TTS and Python based on the dynamic Python interpretation environment. This system includes the effectual use of AIML and Google API to make the Linux user interface more interactive and easier than ever. Our contributions include: (1) AIML 1.0 with a lighter base and more portability for JARVIS; (2) Speech recognizing techniques by Google API providing best-in-class performance; (3) Use of Python Interpreter as it is the most Dynamic-in-nature and functionally advanced structure supporting AI integration and for a positive part, its pre-installed in every Linux Distro. This is an original work in the area of Linux-AI integration with the most acknowledged base technologies used i.e. Google TTS engine and Python for Interpretation and GUI development.

III. SCOPE

Presently, Jarvis is advanced as an automation tool and digital assistant. Among the numerous roles performed through Jarvis are:

1. Search Engine with voice interactions.
2. Reminder and To-Do application.
3. Vocabulary App to expose meanings and accurate spelling errors.
4. Weather Forecasting Application

IV. PROPOSED SYSTEM

This is a voice-recognition primarily based totally digital assistant made in Python that listens to users' queries, analyzes the command, and responds accordingly. The system can perform both Online and Offline tasks. The assistant can recognize speech in both online and offline mode. It uses VOSK module to listen in offline mode and work accordingly, this makes the assistant more interesting and useful. It also works well in offline mode.

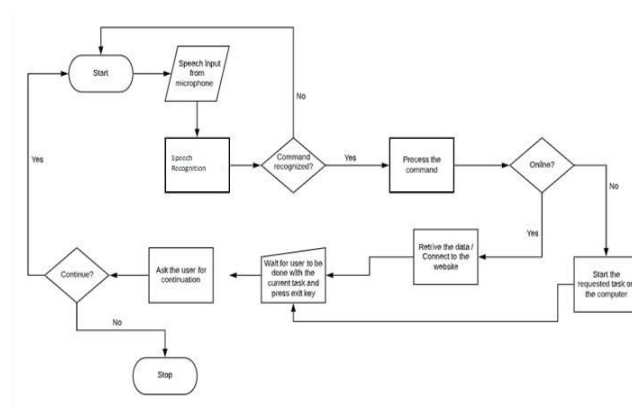


Fig 1. Proposed System Architecture

V. METHODOLOGY

1. Speech Recognition :

The system uses VOSK and Python speech recognition module for converting speech input to text. The speech input Users can obtain texts from the special corpora organized on the computer network server at the information center

from the microphone is temporarily stored in the system which is then sent for speech recognition. The equivalent text is then received and fed to the central processor.

1.1 VOSK

Vosk is a speech recognition toolkit. Vosk elements speech recognition for chatbots, clever domestic appliances, digital assistants. It also can create subtitles for movies, transcription for lectures and interviews. It allows speech recognition for 20+ languages.

1.2 Python Speech Recognition

You can use speech recognition in Python to transform the spoken phrases into text, make a question or deliver a reply. You may even program a few devices to reply to those spoken words. The most popular Python speech and audio analysis tools are Speech Recognition and PyAudio. PyAudio is a library that offers access to audio devices and allows developers to record and play audio.

2. Context Extraction

Context extraction (CE) is the process of acquiring structured data from machine-readable materials which might be unstructured or semi-dependent. The majority of the time, this activity entails using natural language processing to process human language texts (NLP). TEST RESULTS for context extraction can be seen in recent activities in multimedia record processing, consisting of automated annotation and content material extraction from images/audio/video.

3. System Calls

The mechanism via which a computer software program requests a service from the kernel of the working machine on which it's running is referred to as a system call. Software-related services (for example, opening the software which are present in your system), the creation and execution of new processes, and communication with core kernel services such as process scheduling are all examples of this. A process's interface with the operating system is provided by system calls.

4. TTS (Text-To-Speech)

The ability of computer systems to read textual content aloud is called text-to-speech (TTS). Written textual content is transformed into a phonemic representation, that's sooner or later transformed into waveforms that may be generated as sound with the aid of using a TTS Engine. Third-party publishers provide TTS engines in many languages, dialects, and expert vocabularies.

VI. RESULTS

Speech recognition software program makes use of natural language processing (NLP), Speech recognition breaks down into bits it can interpret, converts it right into a virtual format, and analyzes the portions of content. From there, the software makes determinations based on programming and speech patterns, after determining what users said, the software transcribes the conversation into text, the text is saved in the variable, as our voice assistance is text dependent the , the given command in the form of text searches for the similar text written in the form of functions, if the text is matched it performs the particular task, if not found it throws an exception (unable to recognize voice).



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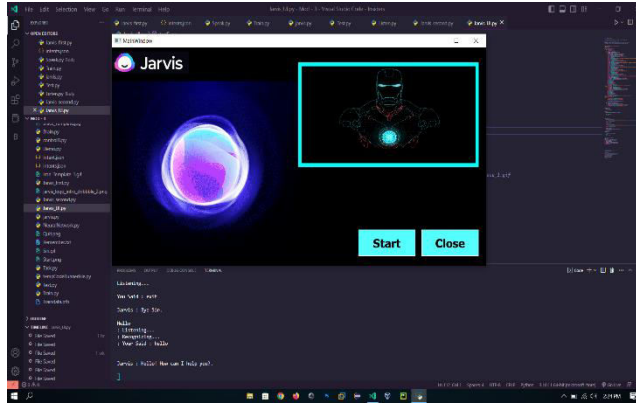


Fig 2. Jarvis UI

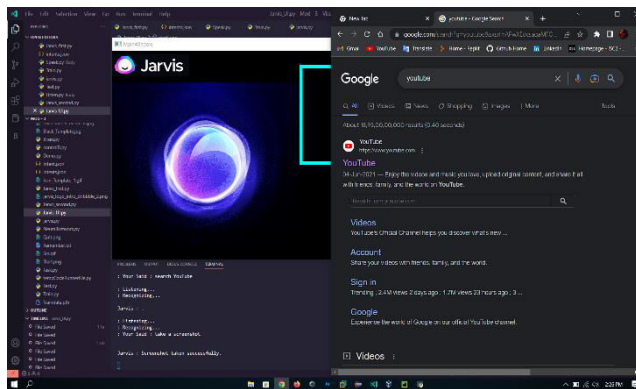


Fig 3. Search Youtube Command

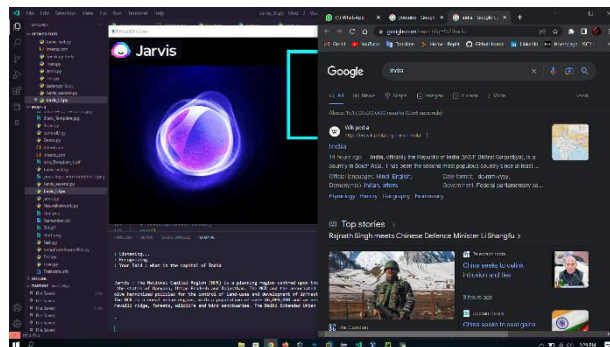


Fig 4. Answer for the Question asked

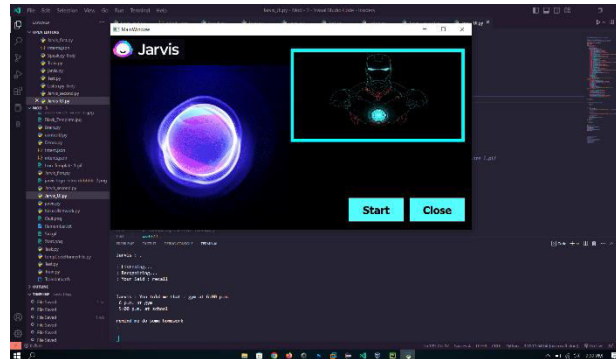


Fig 5. To Do Application

VII. CONCLUSION

In this paper we've mentioned Jarvis voice assistance for PC using Python. Jarvis voice assistance makes life easier to humans. As like Google assistance and Cortana we make Jarvis voice assistance to be available to all Windows version, We use Artificial intelligence technology for this project, and Jarvis voice assistance be able to do all the tasks like other assistance including some special functions like restarting the devices, sleeping the device and shut down the device with our voice. It is also capable of performing tasks in offline condition/mode. We can expect this Jarvis voice assistance to be permanent.

VIII. FUTURE WORK

Future work consists of Making the voice assistant work on all of the variations of Python in all of the Windows and Linux versions and including some function that helps in studying, learning new things, etc. JARVIS can be transformed from a stable AI assistant into a dynamic self-learning AI system which will be more potent to the system itself.) JARVIS can be reprogrammed to perform automation tasks such as Home automation, industry automation, or Smart Homes / Societies.

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