

F.R.I.D.A.Y.: Your Personal AI Companion

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Abstract: *Voice-based Artificial Intelligence (AI) integration has become a popular trend in current technology, allowing for smooth interactions between humans and computers/devices. Voice assistants have become essential tools, reacting to commands said and providing a wide range of features. This research paper introduces "FRIDAY," a voice-controlled personal assistant aimed to enhance the user experience in a way similar to modern voice assistants such as Google Assistant and Amazon Alexa.*

FRIDAY highlights the intersection of cutting-edge technology and user-centric design, with a number of features aimed to simplify daily interactions. This study aims to provide a thorough investigation of FRIDAY's architecture, functions, and influence on user engagement. FRIDAY, like other voice assistants, can get information, surf the web, and carry out a variety of tasks using natural language processing. Its design, which incorporates qualities such as friendliness, peacefulness, and kindness, goes beyond traditional AI applications, resulting in a digital companion who is sensitive to the user's emotional state.

As we look into the inner details of FRIDAY's development, this paper provides useful insights into the changing world of voice-based AI. By drawing similarities with major companies and studying the underlying technology, we hope to highlight FRIDAY's importance in creating the future of voice-controlled personal assistants. This study not only expands the debate on AI integration, but it also offers the light on the opportunities and challenges of creating intelligent companions for a voice-enabled future.

Keywords: Desktop Assistant, Python, Text to Speech, Voice Recognition, Artificial Intelligence, Virtual Assistant.

I. INTRODUCTION

In the rapid evolving artificial intelligence landscape, the development of intelligent digital assistants has emerged as a priority, with the goal of improving user experiences and streamlining daily chores. One such development is "F.R.I.D.A.Y.," a sophisticated personal AI companion meant to provide a variety of functions and seamless interaction with humans.

F.R.I.D.A.Y. is not a static program, but rather a dynamic entity that constantly learns and adapts to user needs. This AI companion's various capabilities include information retrieval from sources such as Wikipedia, web browsing, suggesting random movies, controlling device volume, retrieving the most recent news, and even assisting with daily tasks such as note-taking and to-do list management. Its voice recognition and synthesis capabilities, provided by libraries such as pyttsx3 and speech_recognition, allow users to engage.

This research study will look into the architecture, functionality, and user experiences of F.R.I.D.A.Y. The research will look at how an AI companion matches with current AI trends, improves users ease, and addresses the evolving needs of individuals in a technologically driven world. As we decode the complexities of F.R.I.D.A.Y.'s design and implementation, we gain insight into the possibilities and problems of developing advanced AI companions for personalized digital interactions. It can be very helpful to physically challenged people. Let's take an example, suppose if a person is not able to walk and he/she wants to turn off the lights, he can do it just with their voice by giving the command to their assistant to turn off the lights so in simple words, we can say that it has Internet of things (IoT). It reminds the user to do the stuffs which you ask it to remind, it can order from which you ask and from where you want that food from and many more.

One of the most important features of a voice assistant is that, it will save a bunch of time and everything will be simple to do with the help of a voice assistant. In other words, you can do multi-tasking.

II. LITERATURE REVIEW

2.1 Survey of Technology

A. Python

Python is a versatile and high-level programming language known for its readability, simplicity, and extensive community support. Developed by Guido van Rossum and first released in 1991, Python has evolved into one of the most popular programming languages globally. Its design philosophy prioritizes code readability and ease of use, making it an excellent choice for beginners and seasoned developers alike.

The language's syntax increases readability while lowering program maintenance costs. Python's dynamic typing, paired with its interpreted nature, enables speedy development and testing. It supports a variety of programming paradigms, including procedural, object-oriented, and functional programming, giving developers flexibility.

Python's extensive standard library offers modules and packages for various tasks, promoting code reusability and efficiency. Additionally, its active community contributes to a vast ecosystem of third-party libraries and frameworks, such as Django for web development, NumPy for scientific computing, and TensorFlow for machine learning.

Python plays an important part in developing the digital landscape in the modern era, and its continuous popularity demonstrates its relevance in the ever-changing world of programming.

B. Pyttsx3

Pyttsx3 is a Python library that provides a simple interface to Text-to-Speech (TTS) engines. It allows you to convert text into spoken words. The library is platform-independent but is commonly used on Windows systems with the SAPI5 (Speech API version 5) engine. It also has limited support for macOS and Linux using the espeak engine.

C. Voice Recognition Technology

Voice recognition technology, often known as automatic speech recognition, is a game changer in the field of human-computer interaction. It refers to a computer or device's ability to read and understand spoken language, transforming it into written data that the machine can process. This technology has grown in popularity due to its wide range of applications in a variety of industries, including personal devices and commercial solutions.

D. Natural Language Processing (NLP)

Natural Language Processing (NLP) is an area of artificial intelligence (AI) that studies the interaction of computers and human languages. The goal of NLP is to allow AI to understand, interpret, and generate human-like language in a way that is both useful and meaningful. It involves building algorithms and models that can process and grasp natural language, enabling computers to do jobs like language translation, sentiment analysis, speech recognition, and others.

E. Virtual Assistants and Voice Activated Systems

Virtual assistants like Siri, Google Assistant, and Amazon Alexa leverage voice recognition technology to comprehend user commands and provide relevant information or perform tasks. Additionally, voice-activated systems in smart homes and automobiles enhance user convenience.

F. Accessibility Features

Accessibility features refer to the design elements and functionalities incorporated into products, devices, or environments to ensure they are usable and accessible to individuals with various abilities, including those with disabilities. These features aim to provide equal access, promote inclusivity, and enhance the overall user experience for everyone, regardless of their physical or cognitive capabilities.

2.2 Voice Assistant the Future

In an era of rapid technological advancement, the journey of voice assistants unfolds as a riveting story of promise and possibility, fundamentally altering the landscape of human connection with technology. This transformation is not a

passing trend, but rather a paradigm changes those places voice assistants at the core of our daily lives. As technology advances, these voice-driven digital entities are poised to become crucial components, effortlessly integrated into the fabric of our existence.

The journey into the future of voice assistants takes us to a place where innovation meets human-centered design, creating the way for outstanding user experiences. In the persistent effort of improving and expanding their powers, voice assistants are likely to redefine the limits of ease.

III. PROPOSED WORK

3.1 Mandatory features of a Voice Assistant

A. Must provide the user any information which they ask for:

The user may require any information that is available on the internet, but looking for and reading it takes a long time. However, with the assistance of a voice assistant, we can complete the task of obtaining the information much faster than searching and reading it. So, this is a small example that a voice assistant helps users save time.

B. Telling the day's news in the user's location:

In general, watching a news channel just to learn about the important news in one's location takes a long time, and the user may even want to listen to some news that is irrelevant to them or news from another location before learning about the news that they want, which requires a lot of patience on the part of the user. However, having a voice assistant eliminates all of that; it will give the user the news of the location that they want to know about.

C. Opening the file/folder which the user wants:

In the busy world, everything should do quick else, our schedule will get changed and sometimes we need assistance of someone to complete that task quickly but, if we have a voice assistant, we can complete that task in right away in a hustle freeway. For example, let's say the user is doing some documentation but after a while, he needs some file for reference and he goes searching for that file which wastes a lot of time and he ends up missing the deadline but, with a voice assistant we can do the searching part in a quick way by commanding the assistant to open the folder. So, by this we can say that it is one of the important features of a voice assistant.

D. Informing the user about the temperature/weather at their current location:

Let's start with a question: why is it important to know the weather for the day? or why do we need to observe the weather every day? The solution is quite straightforward: it tells users who ask about the weather that "it might rain today, so bring an umbrella if you go out" or "it will be a sunny day, so wear shades." So, we may conclude that this is also a must-have feature.

E. Task Execution:

Task execution is a basic feature of voice assistants, allowing users to accomplish a wide range of operations using spoken commands. This feature improves user ease and efficiency by converting spoken directions into measurable results.

F. Ecosystem Integration:

Seamlessly integrates with a diverse ecosystem of devices, platforms, and applications. Supports interoperability with smart home devices, smartphones, and other connected technologies.

G. Personalization of Voice Assistants:

Personalization is an important component of current voice assistants, since it increases user engagement and customizes the interaction to individual tastes. This functionality allows voice assistants to give a more personalized and user-focused experience.

3.2 Limitations of Voice Assistants

Voice assistants have been present in the current technological landscape for an extended period, yet they exhibit certain drawbacks or limitations within their existing systems.

A. Imperfect Voice Recognition:

The accuracy of voice recognition remains a concern. Users often find themselves repeating queries to ensure the assistant comprehends and processes the information accurately. Instances of misinterpretation, especially with homonyms like "their" and "there," highlight the ongoing challenge of achieving flawless voice recognition.

B. Background Noise Interference:

Operating a voice assistant requires a quiet environment, as these systems struggle to differentiate between the user's voice and surrounding ambient noise. This limitation can lead to script mix-ups and errors, hindering the seamless operation of voice assistants in varied settings.

C. Security Concerns:

Voice assistants pose notable security risks, as anyone with access to a voice-activated device can extract sensitive information about the device's accounts and services. The potential exposure of calendar contents, emails, and personal data raises significant security concerns. Additionally, susceptibility to threats like Man-in-the-Middle attacks adds an extra layer of vulnerability to the use of voice assistants in sensitive contexts.

D. Restricted Multilingual Abilities:

While many voice collaborators support numerous dialects, they may not succeed in grasping different accents or tongues. This limit can bring about decreased adequacy and client dissatisfaction, particularly in etymologically different areas.

E. Reliance on Web Availability:

Most voice partners intensely depend on a web association for handling questions and giving precise reactions. In circumstances with poor or no web network, their usefulness is seriously compromised, affecting client experience and availability.

F. Protection Concerns:

Voice colleagues frequently store voice accounts and individual information to further develop execution. Nonetheless, this raises protection worries as clients might be awkward with their discussions being put away, prompting expected breaks or unapproved admittance to delicate data.

G. Absence of Logical Comprehension:

Voice partners frequently battle to get a handle on the setting of a discussion. Due to a lack of contextual understanding, they may misinterpret user queries, resulting in incorrect responses or the need for multiple clarifications.

IV. IMPLEMENTATION OF PROPOSED WORK

4.1 Algorithm

Speech Recognition Module:

The Recognizer class is utilized for speech recognition. It transforms audio files into text and the module is responsible for generating speech output. The energy threshold function determines the minimum energy level required for a sound to be considered speech. Sounds below this threshold are classified as silence, while sounds above it are recognized as speech. The Recognizer instance adjusts the ambient noise with the audio source and dynamically adjusts the energy threshold using the duration of the audio.

Speech to Text & Text to Speech Conversion:

Pytttsx3 is a Python library used for text-to-speech conversion. It allows for customization of voice, rate, and volume through specific commands. Python provides the Speech Recognition API, which enables the conversion of audio into text for further processing. This API can handle the conversion of large or lengthy audio files into text. We have incorporated the sapi5 and espeak TTS Engines, which are capable of processing the same.

Process & Executes the Required Command:

The specified command is converted into text using the speech recognition module and stored temporarily. The user's text is then analysed through the temporary storage to determine their needs based on the provided input. The algorithm proceeds to execute the required commands within a while loop. This ensures the successful execution of the commands.

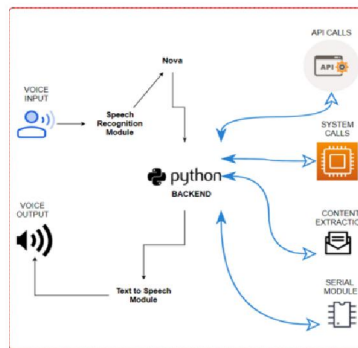


Fig 1: Algorithm

V. RESULTS AND DISCUSSION

This report provides a comprehensive explanation of the voice assistant project, highlighting its usefulness and reliability in performing various tasks required by the user. It also emphasizes the continuous development of the assistant, indicating its potential to become one of the leading technologies in the current technological landscape. Our team has nearly completed the software development, and it is functioning smoothly as anticipated. However, there is still room for further enhancements, which may lead to even greater usefulness of the assistant in the near future.

```

104 # Dictionary to store notes
105 notes = {}
106 def take_notes(note_title, note_content):
107     notes[note_title] = note_content
108     print("note saved - note_title")
109     speak("note saved")
110     save_notes_to_file() # Save notes to file after adding a new note
111
112 # Function to save notes to a file
113 def save_notes_to_file():
114     with open("notes.txt", "a") as file:
115         for title, content in notes.items():
116             file.write(f"{title};{content}\n")
117
118 # Function to load notes from a file
119 def load_notes_from_file():
120     try:
121         with open("notes.txt", "r") as file:
122             lines = file.readlines()
123             for line in lines:
124                 title, content = line.strip().split(";")
125                 notes[title] = content
126     except FileNotFoundError:
127         pass
    
```

Fig 2: Program Code

VI. CONCLUSION

As stated before, "voice assistant is one of the biggest problem solvers" and you can see that in the proposals with the examples that it is in fact one of the biggest problem solvers of the current world. We can see that voice assistant is one of the major evolving artificial intelligences 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 an 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.

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