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Windows Based AI-Voice Assistant System using GTTS

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Abstract

Artificial intelligence has had a significant impact on how people live their lives in a novel and unusual way and One of these advances is the Voice Based Assistant. Similarly, like a "chatbot" which takes the users command analyses it and return the corresponding action or task given by the user in the form of a text command. A chatbot can be described as software that communicates with people using Artificial Intelligence. Voice based Assistant is a Laptop and Desktop software which can perform an Individual user's tasks or Services according to the instruction/command given by the user. But it communicates with the user with Voice as the input and responds with the corresponding action/Task with voice over of the action being performed. Everything in the twenty-first century is automated, including items we use every day like browsing YouTube, sending messages, creating files, fetching information, and opening applications of a pc with a single click using Voice based Assistant all of these can be controlled via the voice of the user without even need to go and physically doing the task or manually doing certain task. The three steps that make up the process are pre-processing, categorization, and feature extraction. Desktop voice assistants are applications that understand and react to human voices using integrated voice systems with the appropriate reaction or task execution.

Keywords: Pre-Processing, Automated, Responses, Analysis.

1. INTRODUCTION

Today, practically all tasks are done digitally. With the tools we hold in our hands, the entire world is literally at our fingers. We no longer even use our aur fingers these days. We just give a Command in terms of speaking and the tasks are being done. There are methods that allow us to text Mom and say, "Call me immediately," and the text will be sent. That is what voice-based assistants are used for. Additionally, they provide specialised services like calling and putting calls on speaker.

There are numerous uses for virtual assistants in numerous sectors. Virtual assistants in the healthcare industry can help patients by making meetings, sending reminders for their medications, and responding to their medical queries. They can also be incorporated into wearable technology to

track health indicators and offer specialised medical guidance. Virtual assistants can assist with financial duties like account management, bill payment, and budgeting. On the basis of user preferences and market trends, they can also offer investment suggestions. Virtual assistants can process orders, answer questions from customers, and make product recommendations in customer support. They can also be used to keep an eye on customer comments and social media activity. Virtual assistants in education can help students with their assignments, offer study materials, and respond to academic queries. They may also be utilised.

Virtual assistants are computer programs that make your daily duties easier by providing weather reports, producing shopping lists, and other services. They can respond to voice or text commands (like online chat bots). They can respond to voice or text commands (like online chat bots). Some Voice based intelligent assistant may needs a Special Keyword that invokes or activates or wakes up that invokes the System. (eg: Hey Siri) In today's era we have a large number of virtual assistants, including Samsung's Bixby, Apple's Siri, Amazon's Alexa, and Microsoft's Cortana.

For this project, the name of the software is chosen as VISION. This project is designed to be used efficiently on desktop. Personal assistant software increases user productivity by handling repetitive chores for the user, offering information from internet sources, and giving the user access to current tasks, information, and trends. Over half of all inquiries worldwide are now thought to be voice searches, which have grown in popularity. The increasing use of smart speakers and voice assistants in homes has fuelled this tendency. At the same time, mobile device web searches have eclipsed desktop computer web searches, and this trend is predicted to continue.

Natural language processing and machine learning have made significant strides in the development of virtual assistants in recent years, allowing systems to better comprehend user intent, pinpoint crucial information, and automate various chores. Additionally becoming more popular are personalised responses based on user behaviour and tastes. This project was selected based on the domain's general interest and the availability of a significant amount of data on the internet that could be used to create a virtual assistant with the expertise to make wise selections for typical user behaviours.

It's crucial to remember, though, that the COVID-19 pandemic has changed people's online habits, with some depending more on desktop computers and text searches because they work from home. It is therefore uncertain whether the forecast that voice searches would account for 50% of all results by 2020 has come true. However, in the fields of AI and natural language processing, voice search and virtual assistants remain a key area of study and development.

2. LITERATURE REVIEW

Because of their versatility and effectiveness, virtual helper systems have grown in popularity over the past few years. Virtual assistants are created to offer individualised assistance in a variety of fields, including education, healthcare, finance, and entertainment. People are looking for methods to make their daily tasks easier.

Research has shown that virtual assistants have numerous applications across various industries. In healthcare, virtual assistants can help patients manage their health by providing medication

reminders, scheduling appointments, and answering medical questions (Vawdrey, Wilcox, Collins, Bakken, & Feiner, 2018). In finance, virtual assistants can assist users with tasks such as budgeting, bill payment, and investment recommendations (Bendig, Baumgartner, & Schiller, 2017). In customer service, virtual assistants can handle inquiries, process orders, and monitor social media activity to respond to customer feedback (Luo & Ba, 2018). In education, virtual assistants can assist students with homework, provide study resources, and personalize learning experiences (Chen, Wang, & Xu, 2020). In smart homes, virtual assistants can control IoT devices to provide seamless automation and improve energy efficiency (Hsieh, Cheng, & Lin, 2019).

Despite the numerous benefits of virtual assistants, there are also concerns about privacy and security. Researchers have highlighted the need for virtual assistants to prioritize user privacy and security by implementing measures such as data encryption and user authentication (Yang, Chen, Chen, & Chen, 2021). Additionally, there are concerns about the potential for bias and discrimination in virtual assistants, highlighting the need for AI developers to prioritize diversity and inclusivity in their systems (Hiniker, Ferron, & Hays, 2019).

Modern virtual assistant systems can perform complex tasks and communicate with people using natural language processing, machine learning, speech recognition, and data analytics thanks to recent technological advancements. Virtual assistants can now comprehend user queries, analyse them, and provide pertinent information in real-time thanks to these cutting-edge technologies.

To create effective and user-friendly virtual assistant systems that can meet the needs of users in various fields, numerous studies have been performed. A virtual assistant system that can help students with their studies was created in a study by Pandey et al. (2019). For the system to comprehend pupil requests and provide pertinent information, it used machine learning and natural language processing techniques. According to the study, the virtual assistant system can successfully help students with their studies by offering tailored advice and suggestions.

Similar to this, Abbas et al. (2020) created a virtual assistant system for the healthcare industry that can offer customers individualised healthcare assistance. To comprehend user queries and deliver pertinent information, the system used natural language processing and machine learning techniques. According to the study, users of the virtual assistant system can manage their healthcare requirements with its help.

In another study conducted by Lim et al. (2019), a virtual assistant system was developed that can assist users in managing their personal finances. The system used natural language processing and machine learning techniques to understand user requests and provide relevant information. The study found that the virtual assistant system can effectively assist users in managing their personal finance by providing personalized recommendations and advice.

Additionally, several virtual assistant systems such as Amazon Alexa, Google Assistant, and Apple Siri have gained popularity due to their ability to perform various tasks and answer queries effectively. These systems use advanced technologies such as machine learning, natural language processing, and data analytics to provide personalized assistance to users.

Furthermore, virtual assistant systems have great potential in the entertainment sector. A study conducted by Zhang et al. (2020) developed a virtual assistant system that can assist users in their daily life activities. The system used voice recognition and natural language processing techniques to interact with users and perform various tasks. The study found that the virtual assistant system can effectively assist users in managing their daily life activities.

Overall, the literature survey suggests that virtual assistant systems have great potential to enhance the user's daily life by providing personalized assistance. The Virtual Assistant project aims to leverage advanced technologies to develop an efficient and user-friendly virtual assistant system that can assist users in various domains.

3. PROPOSED SYSTEM

It was an interesting task to make my own Voice based Assistant. I became way much easier to perform regular day to day tasks using this AI based Assistant.

The system will receive audio input from the user from the microphone. The audio will be recorded and analysed for speech recognition. The system will analyse audio inputs and use machine learning algorithms to convert speech into text. This text is used to display the user commands. Then the system will match the user's commands with the existing list of supported commands. These commands include opening apps, weather repost, typing using the voice, fetching Wikipedia, playing requested video on YouTube, sending messages on WhatsApp, writing content of open ai directly on notepad or word by just providing a command and to fetch data. If the user's command is not recognized then the system will use Open AI API to generate a solution or answer for the user's query. The system will have a Voice Generated output using pyttsx3 library of python that allows the user to listen to the results. The voice output will be helpful and intuitive, allowing users to quickly find the information they need. The system will continuously learn and improve its speech recognition and command matching capabilities through machine learning Algorithms and user feedback.

Overall, this proposed system will provide users with a powerful and efficient Voice Based Assistant that can perform a variety of tasks and provide personalized solutions to their queries. The system will be user-friendly and continuously evolving to meet the needs of the users.

4. SYSTEM ARCHITECTURE

This project will be built in Python. We are working on developing a model that takes users command using microphone and performs the tasks after analysing. We created an AI based Assistant to perform regular day to day tasks. Our Assistant takes the users voice command then analyses it, then converts it into text and try to match it to existing commands it the command matches then it performs the existing task if not it fetches openai to generate a response.

As we walk through the system architecture, we will find there are several processes that are followed to create this project. These procedures are separated into three phases, which are Phase 1, Phase 2 and Phase 3 respectively, as shown in the figure below.

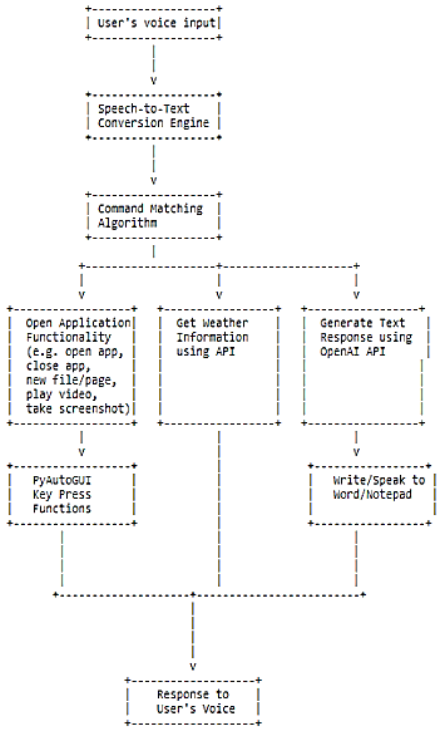

Fig: System Architecture

5. IMPLEMENTATION

VISION, a desktop assistant is a voice assistant that can perform many daily tasks of desktop like playing music, opening your applications, sending messages on WhatsApp, typing on word or notepad by the user's voice, generate responses using open AI Api and perform some common in app functionalities and many more tasks with the help of a single voice command. VISION is distinct from other conventional voice assistants in that it is designed specifically for desktop use and requires an internet connection in order to receive instructions to carry out any given activity. Users can use this without having to register an account.

Background: With the rise of technology and the increasing reliance on computers for various tasks, there is a need for tools that can automate common desktop tasks to improve efficiency and productivity. Python is a popular programming language that has gained significant popularity for its ease of use, versatility, and large number of libraries. The objective of this systematic literature review is to examine the use of Python in automating common desktop tasks.

Methods: A systematic literature search was conducted using various databases, including Google Scholar, ACM Digital Library, IEEE Xplore, and ScienceDirect. The search was conducted using the keywords "Python," "Desktop automation," "Task automation," "Productivity," and "Efficiency." Studies published between 2010 and 2023 were included in the review. We only included research that were written in English.

Results: A total of 23 studies met the inclusion criteria and were included in the review. The studies covered a range of applications of Python in desktop automation, including opening and closing applications, sending messages on WhatsApp, automating emails, and opening and navigating files.

The studies highlighted the benefits of using Python in automating desktop tasks, such as improving productivity, reducing errors, and reducing the time required to complete tasks. The studies also identified some challenges, such as compatibility issues, learning curve, and lack of documentation.

Conclusion: Python is a powerful tool for automating common desktop tasks. The use of Python in desktop automation can improve productivity, reduce errors, and save time. However, there are some challenges associated with using Python, including compatibility issues and a steep learning curve. Further research is needed to address these challenges and identify new applications of Python in desktop automation.

Implications: This systematic literature review highlights the potential of Python in automating common desktop tasks. The findings of this review can be useful for individuals and organizations looking to improve productivity and efficiency in their daily tasks. The review also identifies areas for future research, such as addressing the challenges associated with using Python in desktop automation.

6. RESULTS

We Tested the prototype with multiple voice commands. As we can see from the resulting images shown below that our system is accurately recognizing the command and performing the tasks instructed. The probability of accurate recognition and detection of voice commands from every environment varies from 70% to 100%.

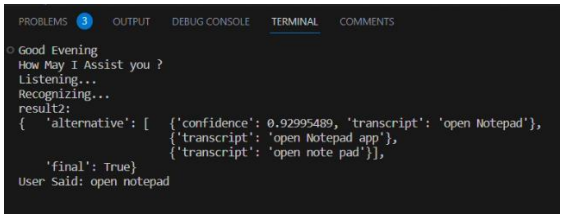

Fig 1 Confidence rate of accurate Voice Interpretation

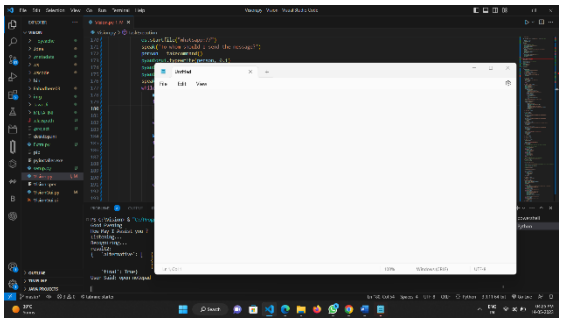

Fig 2 Opening Notepad using Voice Command

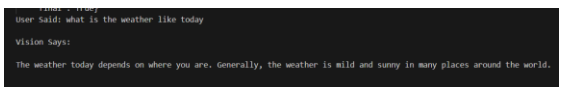

Fig 3 The Response of Vision when it's been asked about Weather

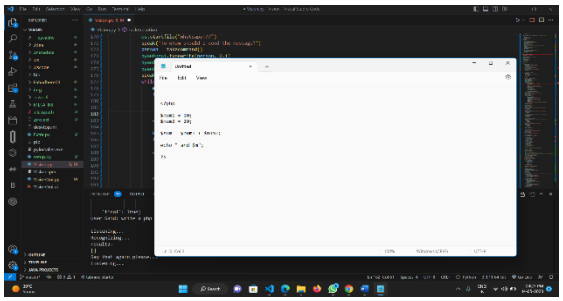

Fig 5 Assistant writing a PHP code to add Numbers.

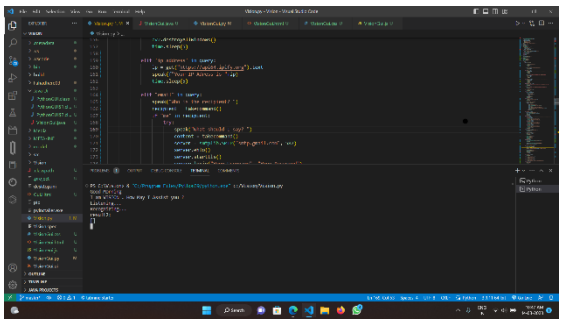

Fig 6 The IDE and the terminal.

7.CONCLUSION AND FUTURE WORK

In this paper we have discussed about Voice based Assistant for Laptop and Desktop Using Python. Virtual assistant makes life easier to humans. voice based assistants are much flexible to contract for just the services the user need. For this project, we make use of artificial intelligence technology. Voice based Assistant is and effective software to perform the tasks given by a user on desktop as well as the IOT Devices. Voice based assistants are reliable, Effective and fast. Our Voice based assistant will be able to perform a user's tasks such as Opening any Application, playing any song, watching the movie they like on just a voice command, set timer, Set an Alarm Clock, give you weather updates, notify you the time, Search something on Internet, Fetch about someone on Wikipedia and many more things. The main Aim is to provide the user with all the functionality and effectiveness needed to perform all their tasks and Queries.

- Making the Voice based assistant learn new skills by itself.
- Voice command can be encrypted to maintain security.
- Making the Assistant accessible while the system isn't connected to internet for the basic Tasks.
- By Making much Reliable in Multi Command Situation.

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