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ORIGINAL ARTICLE **OPEN ACCESS**

F.R.I.D.A.Y - A Python Based Voice Assistant For Windows

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ABSTRACT

FRIDAY stands for Female Replacement Intelligent Digital Assistant Youth. It is a fictional artificial intelligence that can be seen in comic books series published by Marvel Comics. It is shown as Tony Stark's assistant and ally for controlling his ironman suit. In this Project Friday is virtual Life Assistant which uses mainly human communication with the windows device of the user for performing various tasks in the user's system such as notifying news, opening various websites and applications, playing songs, and other various tasks which one can perform in a windows system. This process does not require any handwork with the windows system. The project FRIDAY works on the voice command and uses it for communication. Friday is the Speech recognition application that performs the tasks as per the user's command. The idea of speech technology contains two technologies within it that includes vocoder and recognizer. A vocoder takes speech as the input and in return manufacture a stream of audio as output. On the other hand, the speech recognizer does the opposite task. Similarly, the voice assistant, FRIDAY takes an audio stream as input and converts it into text transcription. Personal Assistants are really popular these days. For example, Alexa, Google Assistant, Siri ect... works on the basis of speech to text and text to speech conversion. In our project FRIDAY is a similar virtual personal assistant for PCs to create multiple functionalities that will help PC users to assist in their daily life and reduce their efforts and time.

Keywords: *Voice Assistants; PC user; speech recognition; text to speech; Python; Api; PC Applications*

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INTRODUCTION

We need to speak to interact and communicate with other people. As a gift from technology now we can have interaction with our mobile devices and even with our Pcs. In this way, we can minimize the use of keyboards, and controllers. The arrival of voice assistants like Alexa has made a possible platform that is a hands-free, yet accurate way to communicate with applications. The arrival of Speech recognition technology changed the lifestyle of smart device users and it has been very useful in many applications and environments in our daily life. Speech recognition needs a speech recognizer to understand human language and the spoken word to act according to it. We can see a different aspect of speech recognition as it facilitates people with functional disabilities or other kinds of handicaps. To make their daily life easier with the latest technologies, voice control would be very helpful. With the help of voice commands, users can operate various appliances. This leads to the appreciation for software technologies since the voice assistants can reflect on the users demands. The features like searching the web like wikipedia and google, taking photographs, telling weather reports and location and many more features proposed by virtual voice assistants. So, the implementation of the above mentioned aspects of the voice assistant which is capable of saving a lot of time and effort for a PC user. There is a famous saying: Time is Money, so why waste it. The PC users spend a lot of time doing routine tasks in their system. The daily tasks performed by them can be automated with a voice assistant, FRIDAY. The voice assistant makes it a lot easier to locate applications which the users need, like browsers, any IDE, or any other software/Application. A virtual voice assistant in a user's PC will help automate the process of performing free of hand-aid tasks. The user just has to do one simple task that is giving voice commands, and the further work will be done by the voice assistant. The purpose of this paper flashes light on the various features of FRIDAY, which additionally saves a lot of time for the user.

MATERIAL AND METHODS

In this proposed concept, FRIDAY uses various in-built libraries present in python. One of the most important libraries is Speech Recognition, which lets the voice assistant acknowledge the instruction given by the end user. The response is returned to the end user in the form of voice speech, with the help of text to speech functions. When FRIDAY recognises the voice instruction given by the PC user, the

triggered words will be recognized by the assistant and the corresponding task will get in action. These actions have been possible with the help of the functions available in different libraries imported into the code. In Addition to the libraries, the voice assistant needs help from some API. In our project we have used APIs for functionalities like extracting news from web sources, finding locations and weather reporting. The API keys help in sending requests in return and we get the respective output. The API keys are useful for accessing public data anonymously. In such a manner, we can withdraw news headlines from the Internet, and get the location and weather conditions from the web sources. We used the OS module to implement Operating System-related functionalities like Restarting a system, shutting it down and putting the system in sleep mode.

TECHNOLOGIES USED

For creating FRIDAY the programming language used is Python. It is a pure python project which comprises so many libraries that make possible various features of the voice assistant. For coding the voice Assistant, Pycharm Community Edition 3.9 has been used which supports Python programming language. As already mentioned above the speech Recognition function comes inbuilt with Python language. First of all, we specify a function for turning the text into speech and for the same purpose, we make use of the pyttsx3 library including sapi5. Sapi5 is used for speech synthesis, producing an audio stream from a text. We have used the take_command() method in the code to pass the voice as an argument, for which the output is the reply of a female voice. In this particular function, we need to specify the microphone source within its scope. And further we use certain properties and the output is stored in a variable. This complete procedure provides numerous facilities like Various Api keys for location and weather and different modules which provide different tasks. For building our project that is a voice assistant,we have used a python inbuilt speech recognition module to convert the spoken words of the user into the text format. Also the text is read out loud by the voice assistant using pyttsx3. The voice assistant FRIDAY recognizes the instruction given by the user and the main keyword is captured by it. According to the keyword the respective functions are called which help in processing the data like time and date or information of the system condition, taking a screenshot and saving it, telling location and weather, and many more. The main advantage of FRIDAY is that it can do hours
of business in seconds. It can even respond to questions or commands of different people other than the main user of the particular system. The end user has the elasticity to give commands, in natural language. In addition, this project contains a cool looking GUI that will make the user feel like Iron-man of his/her own life. It is designed using QT designer and the respective code is embedded in the python code.

Noteworthy Features

Searching From the web

Searching some queries about any topic is an essential feature of a voice assistant. It is the most important feature that a voice assistant should have. 'FRIDAY' shows the desired result to the user which he or she has asked for. FRIDAY fetches the queries from google and presents the output to the user just on the tip of a voice command.

Youtube Videos

The main source of entertainment in today's era is youtube. It is the most used app for creating and viewing videos. The use of youtube is now beyond entertainment as it has become the best platform for educational videos. FRIDAY can play various videos on youtube and the user can as the voice assistant to play directly the song he/she is wishing to listen to.

Location And Temperature

Live location detection is again one of the important features one can need in his or her system. FRIDAY provides this facility to the windows and along with the location, the weather forecast is also its embedded features. These features have been added with the help of API keys.

Reading PDFs

The voice assistant 'FRIDAY' can read out the pdfs present in the system. The user just needs to give commands and the name of the pdf file the user wants FRIDAY to readout. It also tells the total no. of pages and readouts the page according to the user's requirement. It will make the user feel like a storyteller reading out the stories if the pdf is a book.

Accessing System Applications

We use our laptops or PCs daily and there are several system applications like calculator, notepad, Microsoft applications, music applications, and more indifferent PCs of different users. The voice assistant FRIDAY opens and closes all the major applications on your voice command.

F. Covid Status

Covid has been a major threat to the world and it has not ended yet. In the time of this crisis, it is necessary to be updated with the covid-19 cases and take all kinds of safety measures. FRIDAY will tell the count of Covid-19 cases to the user every time he/she asks for the covid status.

WORKING MODEL

The voice assistant starts listening once the user clicks on the "RUN" button and stops on clicking "EXIT" button. The GUI is provided for the users to start and exit the voice assistant FRIDAY. Although it can also be done by giving "Start" or "Exit"Commands.

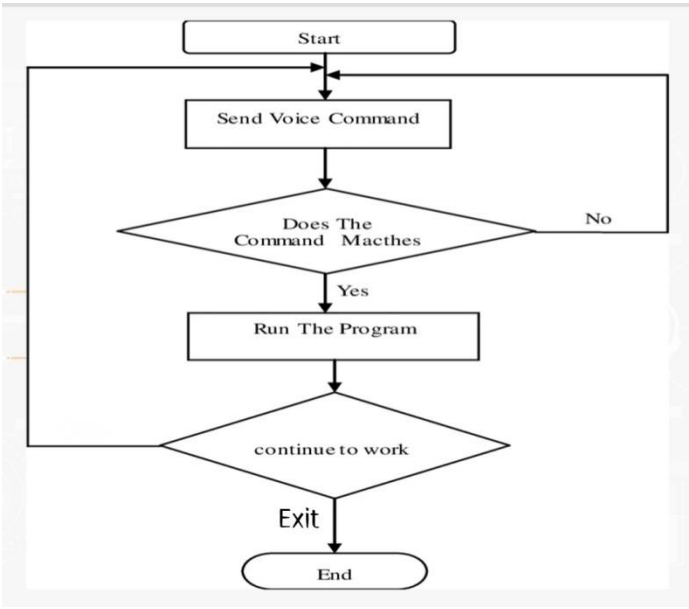

Figure 1. Working model

Further the assistant starts recognising the commands and matches it with the feeded command. If the command matches the particular task is executed for which the command was given for.

The project FRIDAY supports a graphical user interface for ease and to feel connection with the voice assistant. It also shows the current time and date along with start and exit buttons.

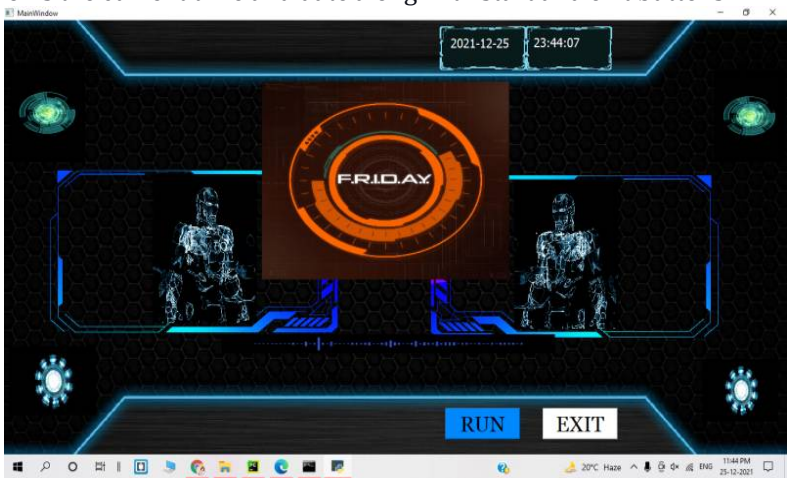

Figure 2. User Interface

The command prompt is the most comfortable way to use this voice assistant as all the processes going on will be in front of the user. Whether FRIDAY is listening or trying to recognize the voice input, reading the news headlines, steps of doing a certain process from wikihow etc…can be read by the user along with listening.

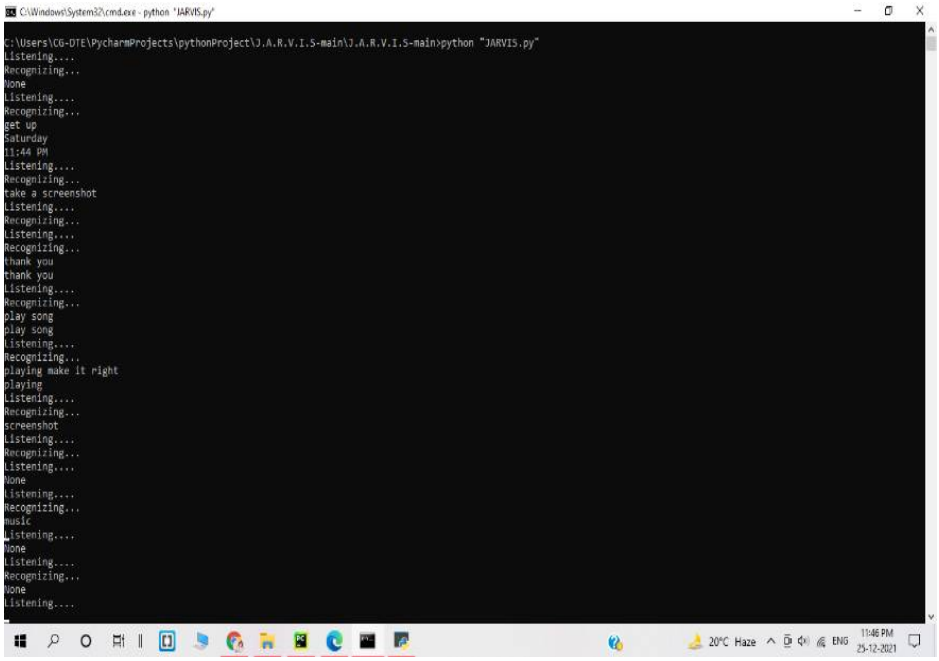

Figure 3. The command prompt

CONCLUSION

The paper represents an overview of the voice assistant which has been developed using python programming language. It eases multiple tasks an individual performs in his/her windows operating system like searching the web, retrieving data like music and information, getting latest news and using various applications. In today's lifestyle saving time is the major factor and using a voice enabled personal assistant will prove effective to save that time. In future, Speech recognition will evolve and be helpful in integrating world class e-business. This clearly represents the next generation of the web. The future plan includes providing more and more features that a user would require to make his/her lifestyle more easier. Further, in the long run, it is planned to make the voice assistant to be able to speak more and more languages to connect with more people who could not speak english. The voice assistant will be able to take commands in different languages and execute them. The functionality would be seamless enough to make this assistant reach in every corner of the world.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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