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IMPLEMENTATION PAPER OF EDITH VIRTUAL ASSISTANT

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ABSTRACT

"EDITH" a well-known name brings up an image of the classical Assistant used in the Reel world and coming to the real world it just similar to the Cortana by Microsoft or Alexa by Amazon or to the Google Assistant. But our EDITH offers something much more than what today's assistant's offer and for sure less than the reel world. The add-ons which will make our EDITH a standout Assistant are developed but never embedded in any of the assistants.

Keywords: Soft Computing, Artificial Intelligence & Machine Learning.

I. INTRODUCTION

The EDITH ("A Personal Virtual Assistant") is your Personal Assistant which will help you in as many tasks as possible. Our EDITH is here for your help in many tasks as the main and the basic role will be your Personal Assistant which will do all the functions all normal assistance do. But the game changes in the further modules which will be the main attractions and attracting features of our assistant. Some of the modules are mentioned:

1) Virtual Assistant.
2) Gesture Mouse.

A voice assistant is a digital or a software-based assistant that uses voice recognition, language processing algorithms and voice synthesis to listen to human voice commands and return relevant information or perform specific functions as requested by the user and then based on the commands, spoken by the user and then voice assistants can return information on specific topic by listening for specific keywords. While voice assistants can be completely software based and able to integrate into most devices some assistants are designed specifically for single device applications.

II. EXISTING SYSTEM

In the year 1994, IBM's first smart voice assistant was Simon it was a PDA, and the first smartphone in history.

Then in 2008 when Android was initially released, Google had started rolling out the assistant which was known as voice search for their Google mobile apps on various platforms, they wanted to give dedicated Google Voice Search Application to their users which was released in 2011. This led to more advanced features, after this they announced Google now and Google Voice Assistant.

Then Siri was released in 2010 which was developed by SRI International and speech recognition which was provided by Nuance Communications, then the app was released on the iOS App Store and was acquired later by Apple. And then with the release of the iPhone 4s, Siri was officially released as an integrated voice assistant within iOS.

After Siri, Amazon announced Alexa as their virtual assistant in 2015. The name was inspired by the Library of Alexandria and it also have the hard consonant 'X' in the name, which helps with more accurate voice recognition. With Alexa the Echo line of smart devices are announced to bring smart and easy integration to consumer's homes for an inexpensive way.

III. VIRTUAL ASSISTANT

A Virtual Assistant is a software which will make your life easier and you will enjoy your work and time you spend on your windows PC. As our Virtual assistant is not a chatbot is the foremost thing need to be taken in consideration, because as people hear about work virtual assistant the work most come in mind is chatbot, but our virtual assistant is way more than that. Interestingly chatbot is just a small part of our virtual assistant. Through our assistant users will order him by their voice command and it will process them and will give you

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the desired output. Our assistant will be able to do a lot of stuff like manage emails, play music, set reminders, show you weather forecast, calendars, manage to do list and many more. But all this are the basic modules of our assistant the things which it can do additionally are take notes of your virtual meetings, open virtual mouse by which you can operate your system with your palm, open a chatbot for conversations and some automation tasks.

Implementation Details: -

Operating system should be Windows 7 or higher. Support of other basic applications like maps, calendar, camera, web connection, etc. Must have support of microphone and speakers.

Working of Virtual Assistant:

1. Speech to Text Conversion:

The foremost task is to detect the speech through microphone and convert it text by which we will be able to process the user inputs and will provide the desired outputs. Some libraries have been used and custom code are also added to make this function work.

2. Text Analyzing and processing:

Next task is to process the converted text, analyze it and perform the whatever actions are required according to the user input. For example, if text is "Open Calendar" then code will analyze it and will initiate the process to invoke the calendar application of the system.

3. Text to Speech Conversion:

Final task is to convert the desired output of the given input to the speech format. As our code processes the converted speech to text and gives output in text only, so we will now use library and some custom code to convert the text into the speech and give it to the user through the speakers.

IV. GESTURE MOUSE

A real-time gesture-based interface is still challenging for human–computer interactions. There are seral issues such as noise due to sensors, lighting conditions in environment where system is used, system unable to track gestures. Here comes sixth sense technology in picture, sixth sense technology helps us in efficiently tracking the hand gestures with less hardware requirement. The module will use the camera embedded with the system. Initially the user has to show his/her palm, the camera will capture the palm, once it recognizes the palm the software module in it will trace the fingertips and it will keep the track fingers, as soon as the gesture made by the user matches to the one stored in database it will perform the action associated to that gesture. The database will contain all the possible gestures and associated tasks with respect to that gesture.

Modules which will be implemented are: -

1. Hand detection
2. Hand gesture extraction and matching
3. Fingertip detection and gesture tracking

Algorithm: -

1. Start.
2. Initialize the microphone audio engine and webcam.
3. Then start detecting for the hand.
4. Capture the frames constantly and then perform the below calculations:
5. var_leftmost→min_argument[tuple(hull[hull[:,:,0].argmin()] [0])]

var_rightmost→max_argument[tuple(my_con[my_con[:,:,0] .argmax()][0])

var_topmost→tuple assignment (hull [hull [:, :,1].argmin()][0])

var_bottommost→tupleassignment(my_con[my_con[:,:,1].ar gmax()][0])

var_Temp→bottommost[0]+30 6.cv2.line(roi,topmost,(topmost[0],h-280),(0,242,225),2)

cv2.line(roi,leftmost,(topmost[0],bottommost[1]- 80),(0,242,225),2);

6. Then convert the values to the grid and for further frame changes calculate the values based on grid for the same.

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7. Then compare those and if matched then perform the associated actions or else loop.
8. Stop.

V. AUDIO-ALL

Imagine you are tired or not in the mood to read or even look at the computer screen, but it's necessary for you to read at that particular time. So, no worries our Audio-All is here to manage this task. An Audio-All is a feature of our assistant which serves your ears. It has the ability of reading all the text available in the pdf, webpage and word documents, etc.

1. Start
2. Import required libraries.
3. Initialize voice engine.
4. Initialize audio engine.
5. If command = read book then ask the name of the book.
6. Then ask the starting point i.e., the page number from where to start the reading.
7. Then prompt the audio engine to translate the text to audio.
8. Make your speakers speak whatever is commanded by the audio engine.
9. Stop.

VI. AUTOMATIONS

The message automation module helps the end user the schedule the messages (WhatsApp Messages). This module will automatically trigger the WhatsApp messages asper scheduled by the user.

The browser automation will let you automate the features available on your browser by your voice command.

Browser Automation Algorithm:

1. Start
2. Import required libraries.
3. Initialize voice engine.
4. Initialize audio engine.
5. Open the desired browser to open or command our assistant to open.
6. If command = Chrome/Edge Automation.
7. Ask user to give command.
8. Check all the possible conditions of the automation.
9. If Condition matches execute its related code or else check other condition.
10. If not found any prompt audio engine to say invalid command.
11. If command = Stop Automation then, Exit.
12. Stop.

WhatsApp Automation Algorithm:

1. Start
2. Import required libraries.
3. Initialize voice engine.
4. Initialize audio engine.
5. If command = Send Message then prompt audio engine.
6. Ask user the recipient of the message.
7. Then ask the message to send.
8. Then send the desired message to the desired person.
9. Stop.

Zoom Automation Algorithm:

1. Start.

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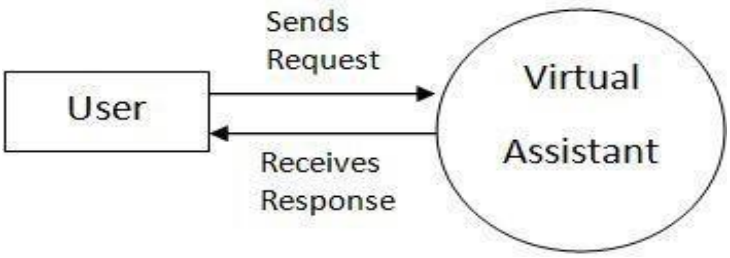
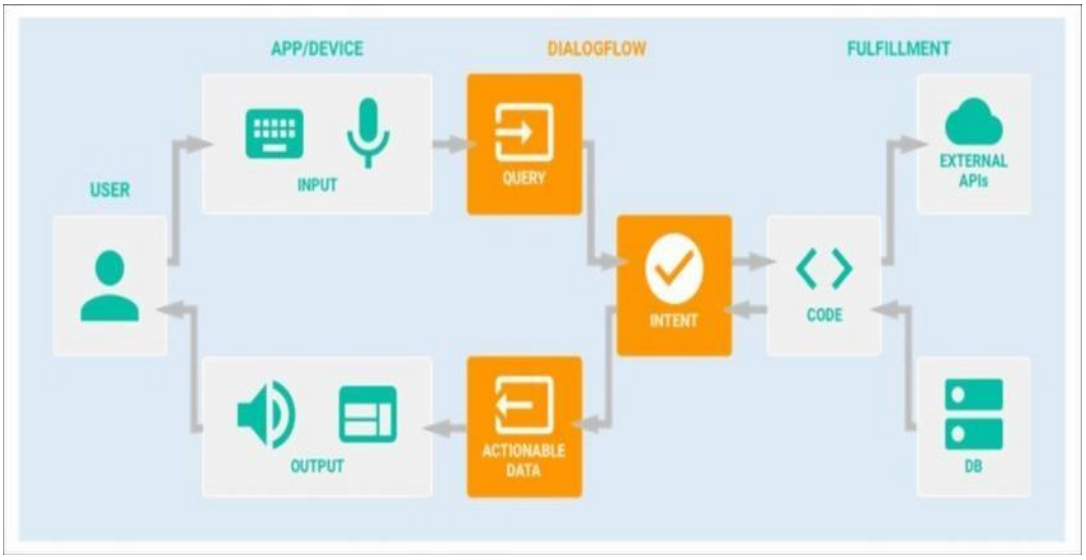
2. Import related libraries.
3. Check for the current timecard and then check it with the user entered values.
4. If matched then join the meeting automatically.
5. It will turn off the microphone and camera automatically.
6. Constantly check for the exit time of meeting once matched then exit the meeting automatically.
7. Stop.

Data Flow & UML Diagrams

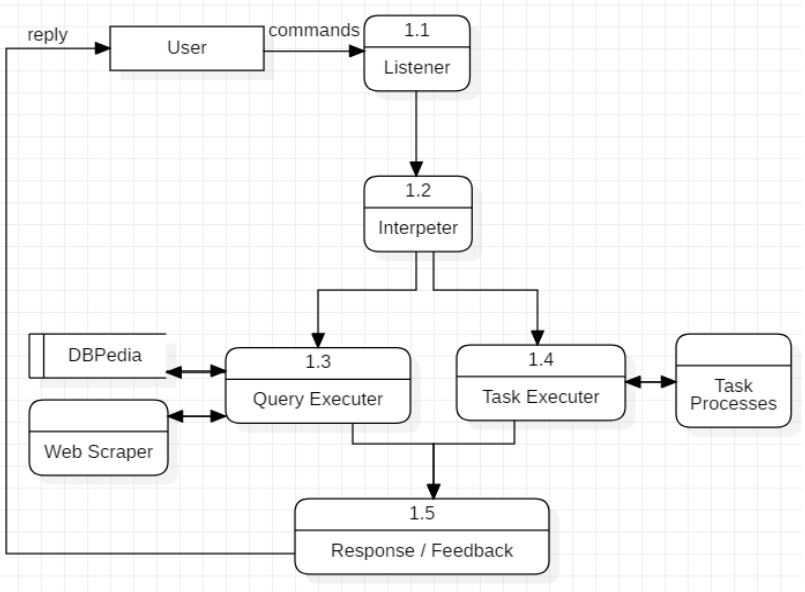


DFD Level 0: -

DFD Level 1: -



DFD Level 2:



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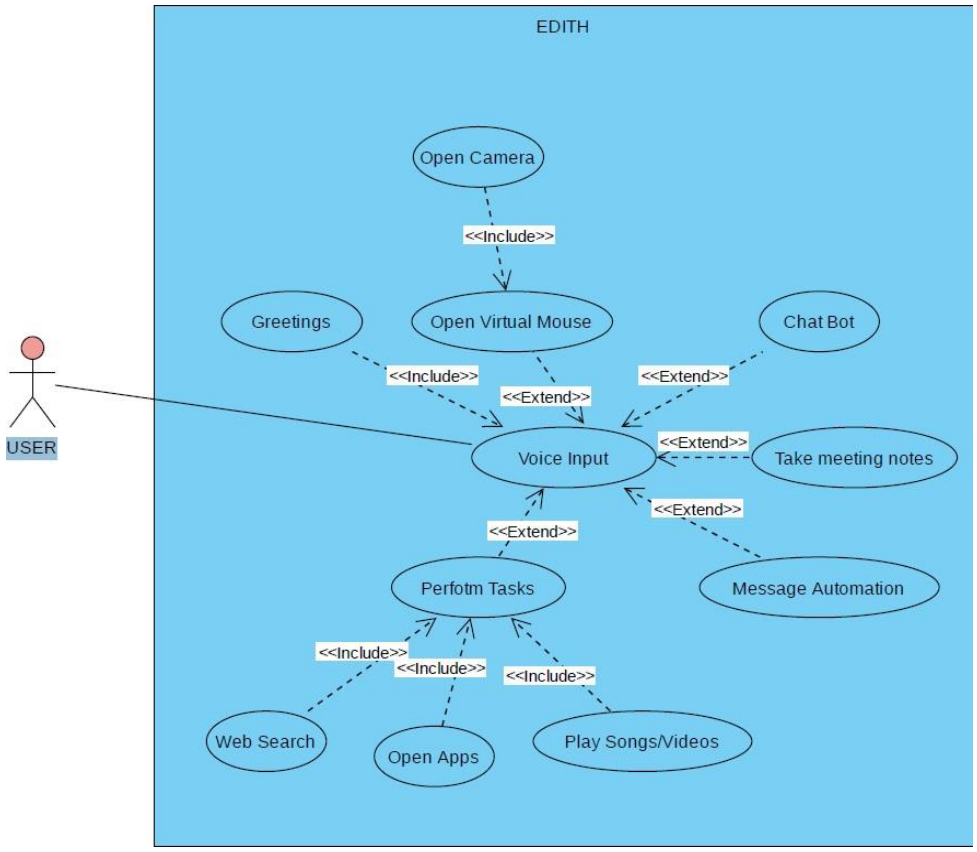
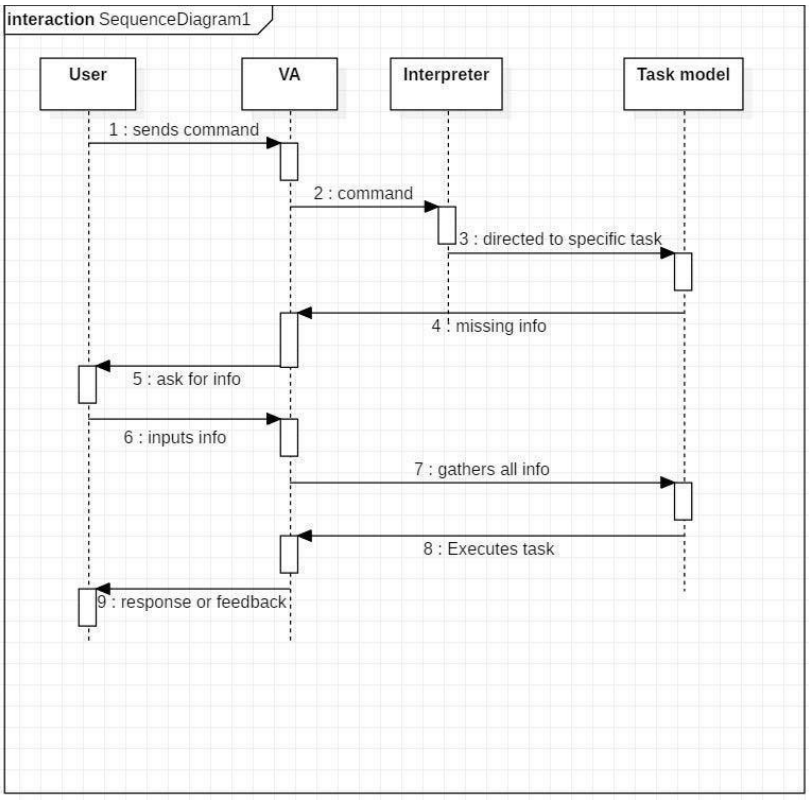
Use Case Diagram: -



Sequence Diagram for Query Response: -



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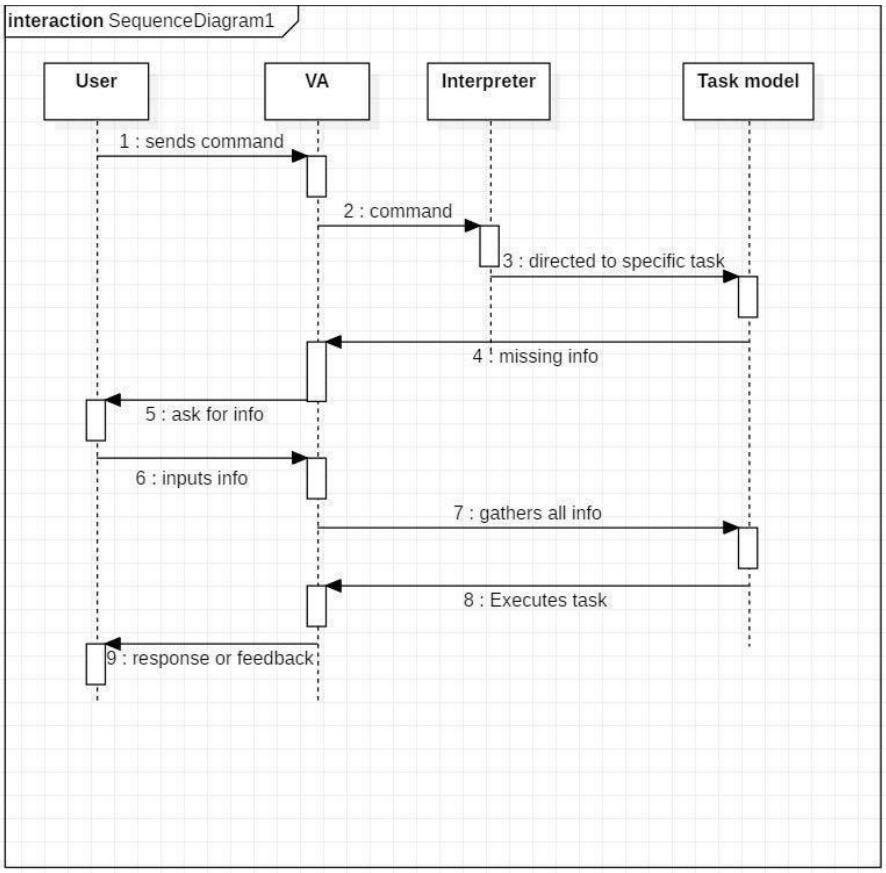
Sequence Diagram for Task Execution: -



Partial Implementation

Assistant: -

```
PS E:\EDITH> & C:/Users/Ritik/AppData/Local/Programs/Python/Python37/python.exe e:/EDITH/Assistant.py
Listening...
Recognizing...


User said: what is the time

Listening...


Listening...


Listening...

User said: show me weather

Listening...


Listening...


Listening...
Recognizing...
User said: Neeraj Chopra Wikipedia

Neeraj Chopra  (born 24 December 1997) is an Indian track and field athlete who competes in the javelin throw. As of August 2021, he is ranked second internationally
 by World Athletics. A Junior Commissioned Officer (JCO) in the Indian Army, Chopra is the first track and field athlete to win a gold medal for India at the Olympic
s.
Listening...
Recognizing...
User said: bye
```

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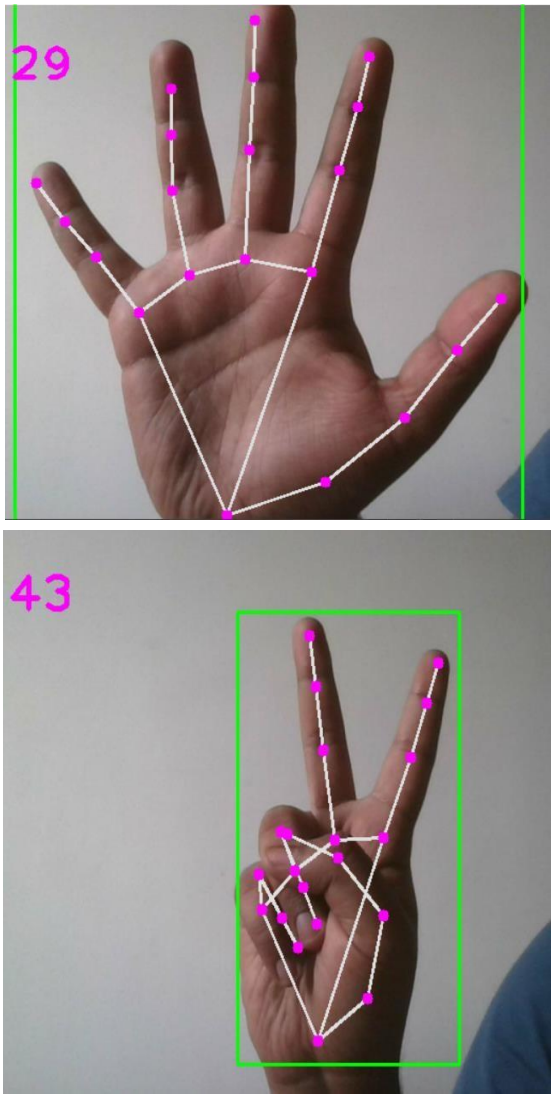
Gesture Mouse: -



VII. CONCLUSION

Hence, we here conclude our paper with all the brief information we have got through this During this whole journey we learn many new things as this whole journey has been very inspiring. We have been through the experience of handling ad manipulating the data and many more things Our main aim through this project is to advance and add more new functionalities to the existing assistants, which will help the end customers or users to do their work easily and efficiently.

The EDITH ("A Personal Virtual Assistant") has been a successful project. Hence, we conclude as thanking each and every person who has been involved in this journey without their contribution this success was not possible.

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VIII. REFERENCES

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