VOICE AND TEXT BASED VIRTUAL PERSONAL ASSISTANT FOR DESKTOP

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Abstract— **A virtual personal assistant (VPA) is a computer application that simulates human-to-machine communication through the Internet. Virtual personal assistants mimic and process human interactions, allowing users to converse as if they were speaking with real people. The goal of the project is to use facial recognition to offer security for a virtual personal assistant. Users have the option of communicating via voice or text. The virtual personal assistant will be able to tell the time, tell jokes, take screenshots, take photos using the webcam, search Wikipedia, open calendar, open applications, Google search, play music, perform mathematical calculations, volume control, send emails, and much more, and it will be very user-friendly. Virtual assistants will play a vital role in reducing human effort and also time spent on any given task.**

*Keywords—***Voice Assistant, Artificial Intelligence, Natural language processing, Speech Recognition.**

I. INTRODUCTION

A virtual assistant is a software program that aids you with daily tasks such as weather forecasting, watching YouTube videos, searching Wikipedia for anything, using Google Maps, and so on. Text or voice commands may be accepted. This project was founded on the concept that there is enough publicly reliable data and information on the internet to create a virtual assistant capable of making intelligent decisions for common user tasks.

Natural dialogue, interaction between people and machines is a thriving issue in today's society, and it can now be found on a variety of everyday devices and digital assistants. This is attempted through the use of the Artificial Intelligence subfield of Natural Language Processing.

Every day, artificial intelligence assistants are transforming our lives. It's nearly impossible to give a single name to any technology that makes our lives easier. There are several terms for agents who can execute activities or provide services for a person.

Here are the basic definitions, similarities, and differences:

- Virtual Personal Assistant (VPA): software that assists people with basic tasks, typically through the use of natural language. Virtual assistants can go online and search for the answer to a user's query.
- Automated Personal Assistant: The software that is synonymous with a smart personal assistant.
- Smart Assistant: This term typically refers to objects that can provide a variety of services via intelligent speakers that listen to the user's voice to activate and perform specific functions.
- Virtual Digital Assistants (VDAs): These are automated software applications or platforms that help users understand natural language, whether written or spoken.
- Chatbot: A chatbot can be communicated with via text. It can mimic a conversation with a human user. Companies use them in the customer service field to answer basic questions and contact a live person if necessary.
- Voice Assistant: Its voice is significant. A Voice Assistant is a digital assistant that works with a specific application by using voice commands, speech synthesis, and natural language processing.

For the purposes of this discussion, the term "voice assistant" is used interchangeably with related terms such as virtual digital assistant, automated personal assistant, intelligent personal assistant and smart assistant.

The organization of the paper is as follows: The methodology is explained in the II section. Design and implementation are presented in the III section. Results and discussion in the IV section The V section contains concluding remarks.

II. METHODOLOGY

A. Artificial Intelligence –

Artificial intelligence (AI) refers to the simulation of human intelligence by robots that have been computer programmed to think and act like humans. Artificial intelligence is an area of science that focuses on assisting robots in finding human-like answers to problems. This usually requires converting characteristics of human thinking into machine algorithms. A more or less flexible or efficient technique may be chosen depending on the application, which defines how artificial intelligence behaves.

B. **Natural language processing–**

Natural language processing is an area of artificial intelligence in computer techniques that is based on assisting machines in understanding how humans communicate. Machine learning (ML) and data analytics are also utilised. This is a challenging undertaking because people's speaking styles (also known as' tone of voice') are unique to them and are continuously changing to suit common usage.

C. **Computer vision–**

Computer vision is often a subfield of artificial intelligence (AI) which enables computers and devices to obtain the necessary information from digital pictures, recordings, as well as other visual inputs, and also take actions or make recommendations based on that information. If AI allows robots to think, computer vision empowers them to observe, watch, and comprehend.

III.   DESIGN AND IMPLEMENTATION

This diagram shows the architecture of a virtual assistant. The user enters text or speaks. The Google Speech API converts voice commands to text. It is recognized and compared to the commands stored in the file. When a command is found, its associated task is performed as a voice, text, or user interface output. It could potentially take the shape of software execution. The system architecture is visualized in Figure 3.1. When a user accesses the virtual assistant, facial recognition will be performed. Facial recognition provides more security to the system. The camera recognizes the face, which is handled using OpenCV, which detects the faces in front of the camera, and the photographs taken are compared to the pictures in the system using an algorithm.

After recognizing the face, it permits you to interact with the assistant. If input is delivered to the virtual assistant by a microphone in voice format, i.e., speech format, it converts speech to text format, If input is delivered to the virtual assistant by keyboard, i.e., text format, it processes the input text and converts it to a command in the next stage. The user's request input is searched using text commands. Once the keyword is located, the command will be executed. If the request is an API call, then the API will be called and the answer will be retrieved. An API is a communicator that transfers your request to a service provider, who then sends you the response. If it's not an API call, it will go to context extraction. It is the task of automatically extracting structured data from unstructured or semi-structured system-readable documents and json files. The content was extracted from Google search to fetch the answer. If it is a simple command, it will be executed there to get the answer.
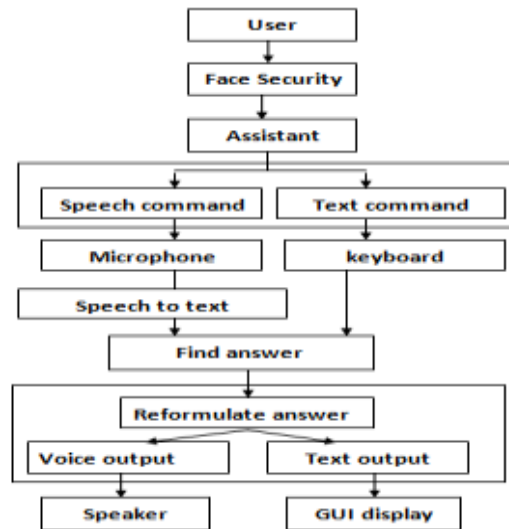

Fig. 1.   System architecture

Tasks performed by Desktop Assistant:
- Play video from YouTube
- Search anything from Wikipedia, Google maps
- Email Sender
- Game (snake game and some online game)
- COVID Tracker
- Weather
- Jokes
- News
- Security (Face Unlock)
- Click Photo
- Math Calculations
- Set timer
- In-built search image display
- Smart Dictionary Search
- System information
- Battery life
- Window, Tab Operations
- Roll Dice and Toss the coin
- Translator
- To-do List
- Directions on Map
- Screenshots
- Volume Control
- Play music
- Open applications
- Open calendar

IV.   RESULTS AND DISCUSSION

The following screenshots are provided from the Desktop Assistant working model. It consists of a chat window, a voice listener, and a keyboard that is given the functionality to send the query to the Desktop Assistant.
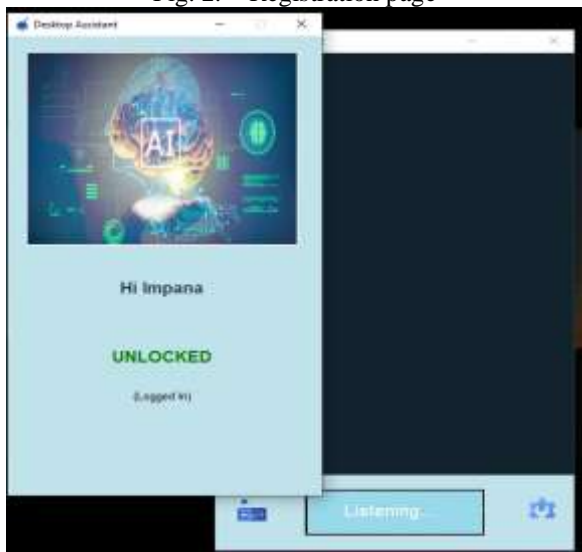
Fig. 2.   Registration page

Fig. 3.   Unlocked and Desktop Assistant opened

In Fig. 2, it shows that we need to register for Desktop Assistant by entering the name, gender and need to capture photos by clicking on Add face to register. In Fig. 3, it shows it has identified the face and unlocked the desktop assistant.
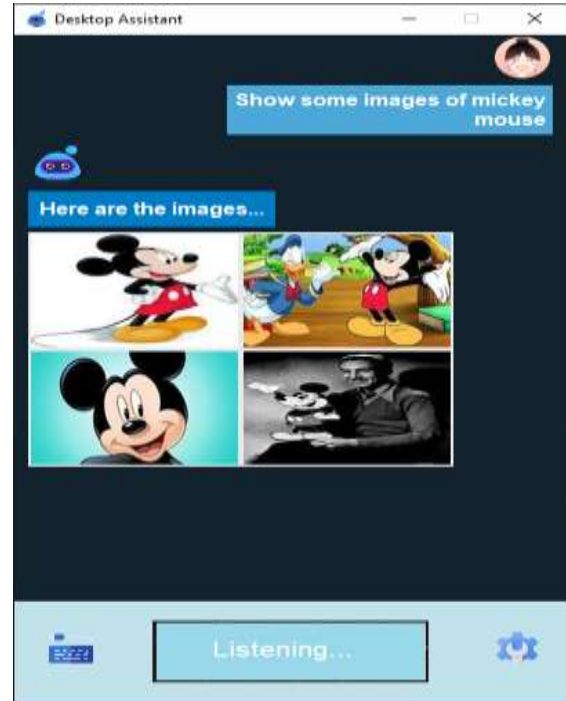

Fig. 4.   In-built search image display

In Fig. 4, it shows how an image search command given by the user and the required result has been fetched.
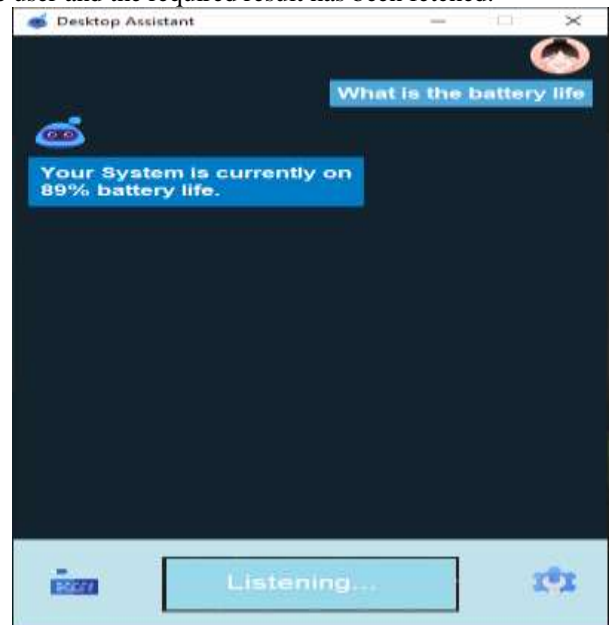

Fig. 5.   Battery percentage information

In Fig. 5, it shows how to check the battery percentage by giving the command what is the battery life. It fetches the answer that your system is currently on 89% battery life.

Fig. 6.   Opening application

In Fig. 6, it shows the user being asked to open the eclipse application and the Desktop Assistant opens the eclipse application by telling ok its opening.

Table -1 Experiment Result

Commands	Cortana	Desktop Assistant
What's my battery life	✘	✔
Open eclipse	✘	✔
Increase the volume	✘	✔
Decrease the volume	✘	✔
Toss the coin	✔	✔
Click a Photo	✘	✔
Open recent files	✔	✘
Open eclipse	✘	✔

Table 1 shows the commands that work on Cortana and the Desktop Assistant. Here, comparisons are made between them. If the command is working, the tick mark "✔" is shown, and if the command is not working, the wrong mark "✘" is shown. As in the table, these are the few examples.

V.   CONCLUSION

The software has been created in such a way that the user will easily deal with it. Our proposed methodology, "Desktop Assistant"—an artificial intelligence smart voice assistant, is often built using face recognition and speech recognition modules, making the operations more effective and resilient. The Voice Assistant delivers two kinds of services. Firstly, the facial recognition technology makes it safer to use. Second, the voice or text controlled application. With hands-free voice management of their system, the Desktop Assistant can assist a user. It will be able to automate a number of activities with the help of this voice assistant using single-line commands.

VI.   REFERENCE

[1]   P Srinivas, T Sai Teja, CH Bhavana, R Likhith and K Sathish Kumar, "Raspberry pi based personal voice assistant using python", International Journal of Engineering Applied Sciences and Technology, Vol. 4, No. 11, pp. 105-108,2020.

[2]   Dr. Jaydeep Patil, Atharva Shewale, Ekta Bhushan, Alister Fernandes and Rucha Khartadkar,"A Voice Based Assistant Using Google Dialogflow and Machine Learning", International Journal of Scientific Research in Science and Technology, Vol. 8, No. 3, pp. 6-17,2021.

[3]   V. Geetha, C.K.Gomathy, Kottamasu Manasa Sri Vardhan and Nukala Pavan Kumar, " The Voice Enabled Personal Assistant for Pc using Python", International Journal of Engineering and Advanced Technology (IJEAT), Vol. 10, No. 4, pp. 162-165,2021.

[4]   Anusha S, N Vignesh Karthik and Sampada K S," Comparative Study on Voice Based Chat Bots",International Journal of Computer Sciences and Engineering, Vol. 6, No. 12, pp. 172-175,2018.

[5]   Sumitkumar Sarda, Yash Shah, Monika Das, Nikita Saibewar and Shivprasad Patil, "VPA: Virtual Personal Assistant" International Journal of Computer Applications (0975 – 8887), Vol. 165, No. 1, pp. 22-25, 2017.

[6]   Sampad Mondal, Subham Paul, Somjeet Ganguly and Ratul Dey, "Virtual Personal Assistant with Face Recognition Login System Using Machine Learning and Artificial Intelligence" International Journal of Engineering Science and Computing, Vol. 9, No. 4, pp. 21603- 21605, 2019.

[7]   Harshita Yadav, Ravi Teja Nandam and Sonu Lamba, "Artificial Intelligence-based Virtual Assistant", International Journal of Computer Science & Wireless Security (IJCSWS), Vol. 08, No. 02, pp. 39-43, 2021.

[8]   Deny Nancy, Sumithra Praveen, Anushria Sai, M.Ganga and R.S. Abisree, "Voice Assistant

Application for a college Website", International Journal of Recent Technology and Engineering (IJRTE), Vol. 7, No. 6S5, pp. 2065-2070, 2019.

[9]   Vikas Prasad, Vishal Kumar, Vishwadeep Rana and S. Ponmaniraj, "Research on Voice Control System", International Journal of Innovative Science and Research Technology, Vol. 6, No. 4, pp. 531- 534, 2021.

[10]   R. Augustian Isaac and Abishek Narayanan, "Virtual Personal Assistant", Journal of Network Communications and Emerging Technologies (JNCET), Vol. 8, No. 10, pp. 29-31, 2018.