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Personal Voice Assistant

Siddhi Gupta[1], Devanshi Joshi[2], Krutika Kolpate[3], Dhruv Sharma[4], Mrs. Nilam Parmar[5]
[1, 2, 3,4]*Computer Engineering, Thakur Polytechnic, Thakur Complex, Mumbai, India*
Lecturer[5], Computer Engineering, Thakur Polytechnic, Thakur Complex, Mumbai, India

Abstract: In today's modern world, our daily life has been more linked with technology. Over time the advancement in technology is unmatched. The project that we have built is a personal voice assistant. It works on voice input and displays the output through voice or text. We have used python language for the voice assistant as it provides various libraries and packages to make our project. The assistant can perform some basic functions like giving weather updates, providing time and news, opening Google, YouTube, Gmail etc., setting reminder and performing arithmetic calculations. The main aim behind the voice assistant is to reduce the usage of input devices like keyboard, mouse, etc. This will not only lessen the hardware cost of the devices but also the space taken by them. Voice assistants are efficient and consume less time and therefore they are now inbuilt in many devices that people use nowadays.

Keywords: Speech Recognition, Personal Assistant, Voice Input, A.I., Python.

I. INTRODUCTION

Call Digitization offers new possibilities to facilitate the activities of our daily lives through assistive technology. This is the new way to connect with technology. Currently, the voice assistant is very useful for a person. The voice assistant takes less time. With the help of the voice assistant, we can participate in other works and save our time. Voice assistants are the great innovation that can change people's lives in other ways. Voice assistant was first introduced on smartphones and gained popularity on the back of its popularity. it was widely accepted by all. It can be conveniently used in all age groups.

Speech recognition is the process of converting speech into text. It is typically used by voice assistants such as Alexa and Siri. Python provides an API called Speech Recognition. You can use it to convert audio to text for further processing. Python's Speech Recognition API allows you to convert large or long audio files to text. User can give the commands in verbal and written form as well. The user can open an application (if installed on your system), search for queries on Google, Wikipedia, YouTube, or calculate mathematical questions. Just give a voice command. Used the Google Speech Recognition API and Google Text-to-Speech for voice input and output, respectively. In addition, you can use the Wolfram Alpha API to calculate formulas.

II. PROPOSED METHODOLOGY

Voice assistants use a combination of technologies such Natural language processing (NLP), artificial intelligence (AI) and speech recognition. By combining these technologies, technology can understand, answer and improve questions. It also works online in offline mode. System app runs offline mode, while web-based operations run online mode. The data is stored within the app itself, rather than the cloud which reduces time and space complexity. It even reduces the economic cost due to reduce high data usage plans.

Package required in this system to create a personal voice assistant using the pip command, the following packages must be installed on the system:

1) *Speech Recognition:* Speech recognition, or speech-to-text, is an ability which enables a program to process human speech into a written format.
2) *Pyttsx3:* pyttsx3 is a text-to-speech conversion library in Python.
3) *Wikipedia:* Wikipedia is a Python library that makes it easy to access and parse data from Wikipedia.
4) *Capture:* This module is used to capture pictures with the camera.
5) *OS:* The OS module in Python provides functions for interacting with the operating system. This module provides a portable way of using operating system dependent functionality.
6) *Time:* This module provides various time-related functions.
7) *Web Browser:* The web browser module provides a high-level interface to allow displaying web-based documents to users.
8) *Subprocess:* This module is used for getting system subprocess details which are used in various commands i.e., Shutdown, Sleep, etc.

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9) *JSON:* JavaScript Object Notation (JSON) is a standardized format commonly used to transfer data as text that can be sent over a network. It's used by lots of APIs and Databases, and it's easy for both humans and machines to read.
10) *Requests:* The requests module allows you to send HTTP requests using Python. The HTTP request returns a Response Object with all the response data (content, encoding, status, etc).
11) *Wolfram Alpha:* Wolfram Alpha is a computational knowledge engine and answer engine. It answers factual queries directly by computing the answer from externally sourced data.

III. WORKING MODEL

The assistant first waits for the input provided by the user. After receiving the voice command, the assistant picks it up and finds for the keyword in the input command. If the assistant searches the keyword successfully it will perform the given task and return the result to the user via voice.

1) *Assistant Taking Voice Command*

```
PS C:\Users\siddhi gupta hp\PycharmProjects\Test\venv> python .\test.py
Loading your AI personal assistant - G One
Hello,Good Afternoon
Listening...
```

2) *Assistant Providing Weather Updates*

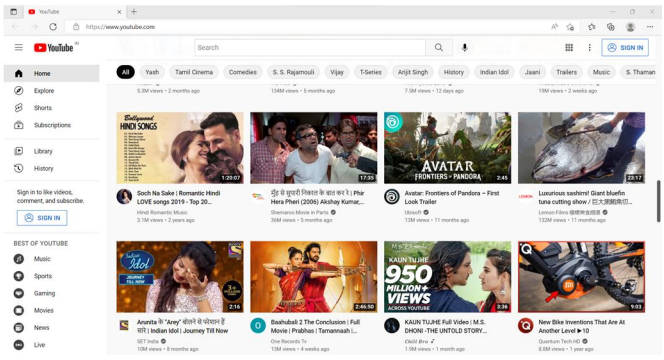
```
Loading your AI personal assistant - G One
Hello,Good Afternoon
Listening...
user said:weather

Listening...
user said:Mumbai

 Temperature in kelvin unit = 305.14
 humidity (in percentage) = 66
 description = haze
```

3) *Assistant opening YouTube*

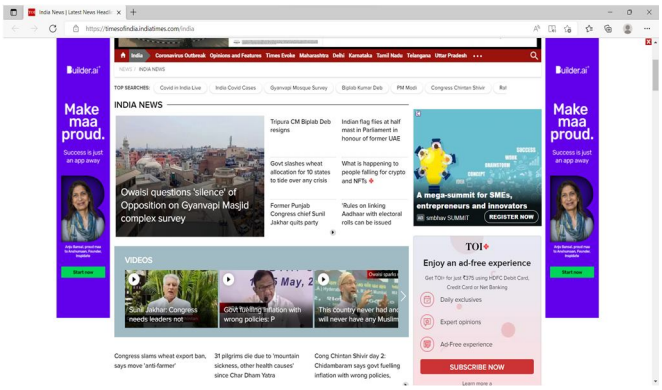
```
Loading your AI personal assistant - G One
Hello,Good Afternoon
Listening...
user said:open YouTube
```



4) Assistant Providing News

```
Loading your AI personal assistant - G One
Hello,Good Afternoon
Listening...
user said:news

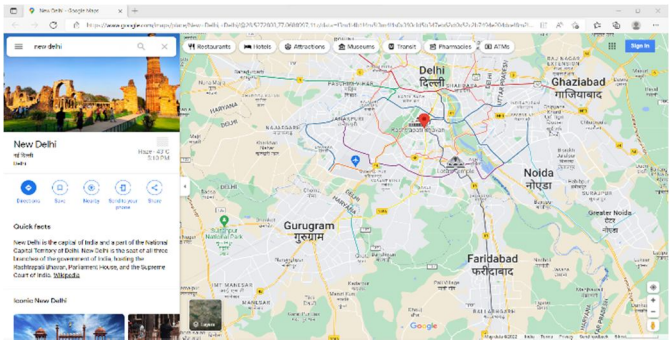
Here are some headlines from the times of india,Happy reading
```



5) Assistant Opening Map

```
Loading your AI personal assistant - G One
Hello,Good Afternoon
Listening...
user said:map

Listening...
user said:New Delhi
```



6) Assistant Performing Arithmetic Operations

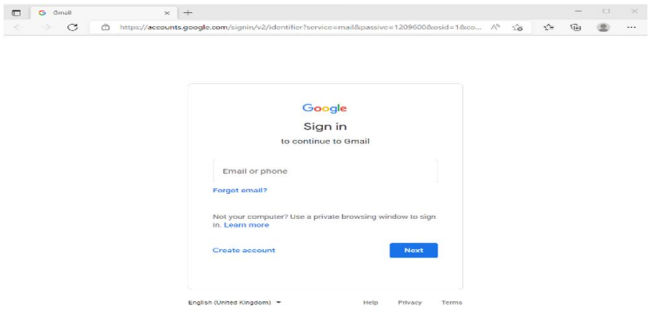
```
Loading your AI personal assistant - G One
Hello,Good Afternoon
Listening...
user said:calculate

 Please Enter the First Value Number 1: 10
 Please Enter the Second Value Number 2: 2
The Sum of 10.0 and 2.0 = 12.0
The Subtraction of 2.0 from 10.0 = 8.0
The Multiplication of 10.0 and 2.0 = 20.0
The Division of 10.0 and 2.0 = 5.0
The Modulus of 10.0 and 2.0 = 0.0
The Exponent Value of 10.0 and 2.0 = 100.0
```

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7) Assistant Opening Gmail

```
Loading your AI personal assistant - G One
Hello,Good Afternoon
Listening...
user said:open Gmail
```



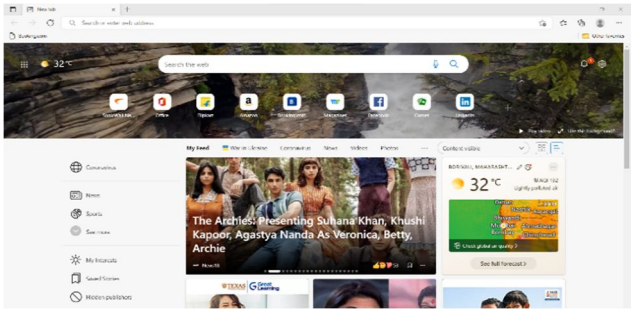
8) Assistant Opening Wikipedia

```
Loading your AI personal assistant - G One
Hello,Good Afternoon
Listening...
user said:Wikipedia
```



9) Assistant Opening Web Browser

```
Loading your AI personal assistant - G One
Hello,Good Afternoon
Listening...
user said:search
```



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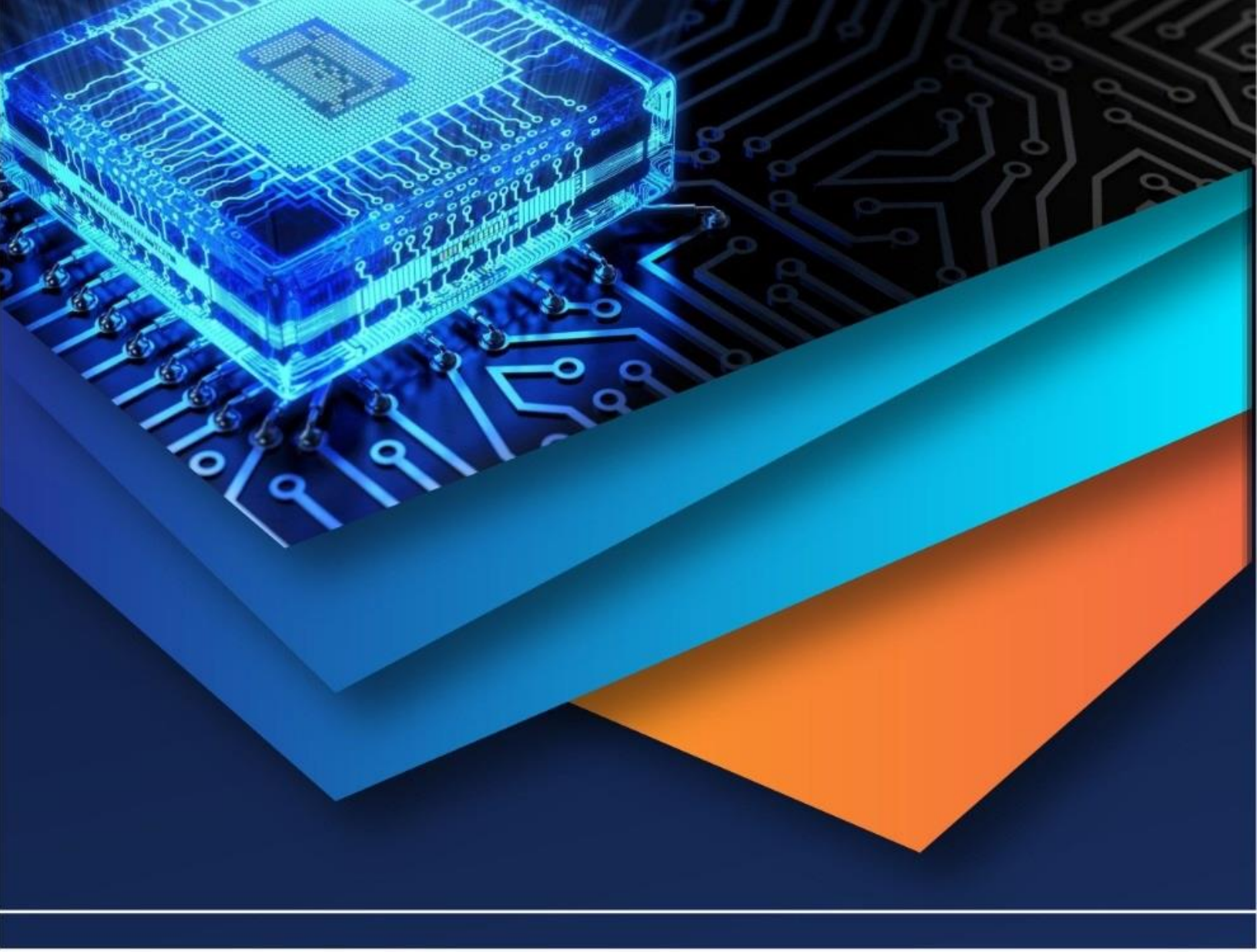
IV. CONCLUSION

Voice assistant completes the task given by the user making human life easy. This paper provides the abstract of design and development of personal voice assistant using python. The voice assistant includes the procedure: collection of data in the voice input -> analysing the voice and converting it into text -> processing the data -> providing the output. This system makes life easier for people who are physically disabled. The Voice assistant is less time consuming, easy to use and performs the task given by the user.

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