VIRTUAL PERSONAL ASSISTANT OR VOICE ASSISTANT (VPA)

Abstract:-

* A **voice assistant** or **intelligent personal assistant** is a software agent that can perform tasks or services for an individual based on verbal commands i.e. by interpreting human speech and respond via synthesized voices. Users can ask their assistants' questions, control home automation devices, and media playback via voice, and manage other basic tasks such as email, to-do lists, open or close any application etc with verbal commands.

* Let me give you the example of which is an intelligent personal assistant, human language interface, automation and **voice recognition software** for Windows PC. Voice assistant a multi-functional AI software that allows you to interact with your computer using **voice commands** in most of the languages of the world. Voice assistant also allows you to accurately convert speech to text in over 100 different languages of the world.

* Our project (Voice assistant) is work on the basis of 'en-in' by the help of Google speech recognizer.

Contents

Introduction

- **What is Virtual Personal Assistant?**
- **Concept of an artificial personal assistant.**
- **Voice-controlled Personal Digital Assistants.**
- **The combination of :**
  - Automatic Speech Recognition.
  - Artificial Intelligence.
  - Natural Language Processing.
  - Inter Process Communication.

History

- The first PDA was released in 1984 by Psion, the Organizer
- Early PDA's was devices having full keyboard and touch screen,

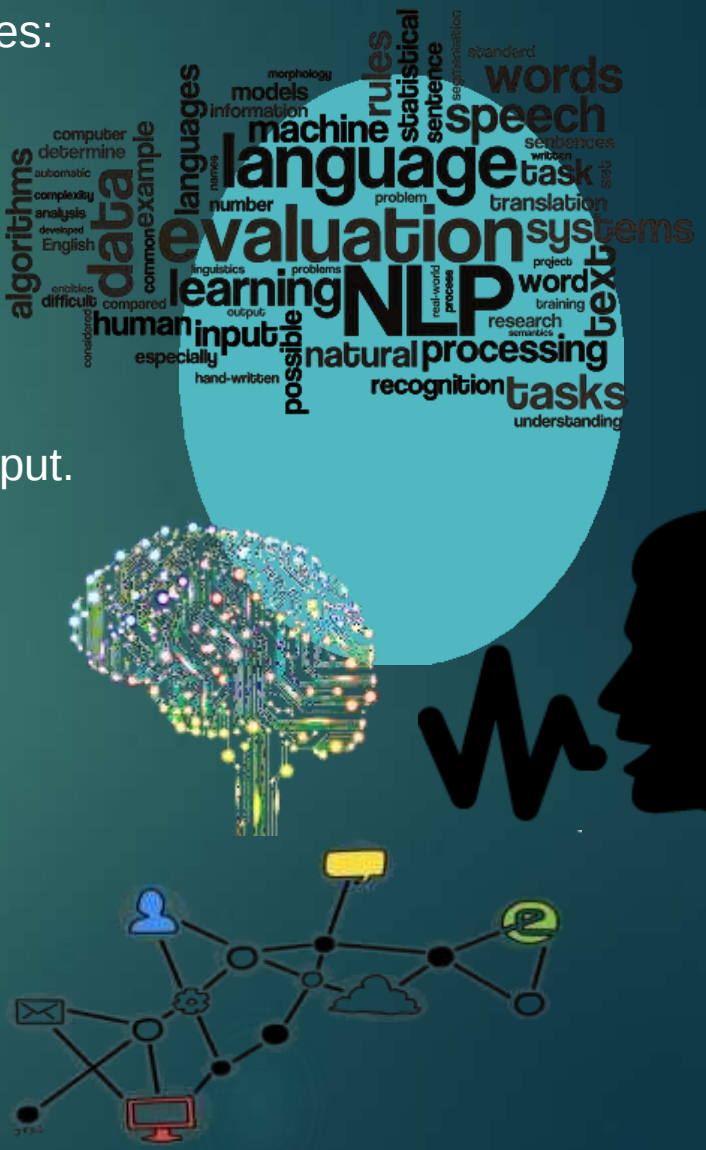
  Which was also known as PALMs
- Which was also known as PALMs
- The concept of virtual assistant was first developed by Joseph

  Weizenbaum of MIT in the late 60s.
- The first chatterbot was "ELIZA".
- "JULIA" is an example of the second generation chatterbot.
- "ALICE" is example of third generation chatterbot.

Basic Concepts Used

The working of Virtual Assistant uses following principles:

- Natural Language Processing.
  - To Understand user's speech input.
  - Like en-in .
- Automatic Speech Recognition.
  - To understand command according to user's input.



Hardware And Software Requirements 7

- Hardware:
  - A LAPTOP OR DESKTOP with a touch and without touch interface.
  - Laptop Ram should be of a minimum 512 MB.
  - Internet connectivity.

- Software:
  - Operating system should be win 7/win 8.1 or higher.
  - The kernel version should be 3.0.16 or higher.
  - Visual studio code ,python setup ,Gitbash
  - Support of other basic applications like browsers, files, Music bars etc.

Working

Any Virtual Assistant basically consists of three layers.

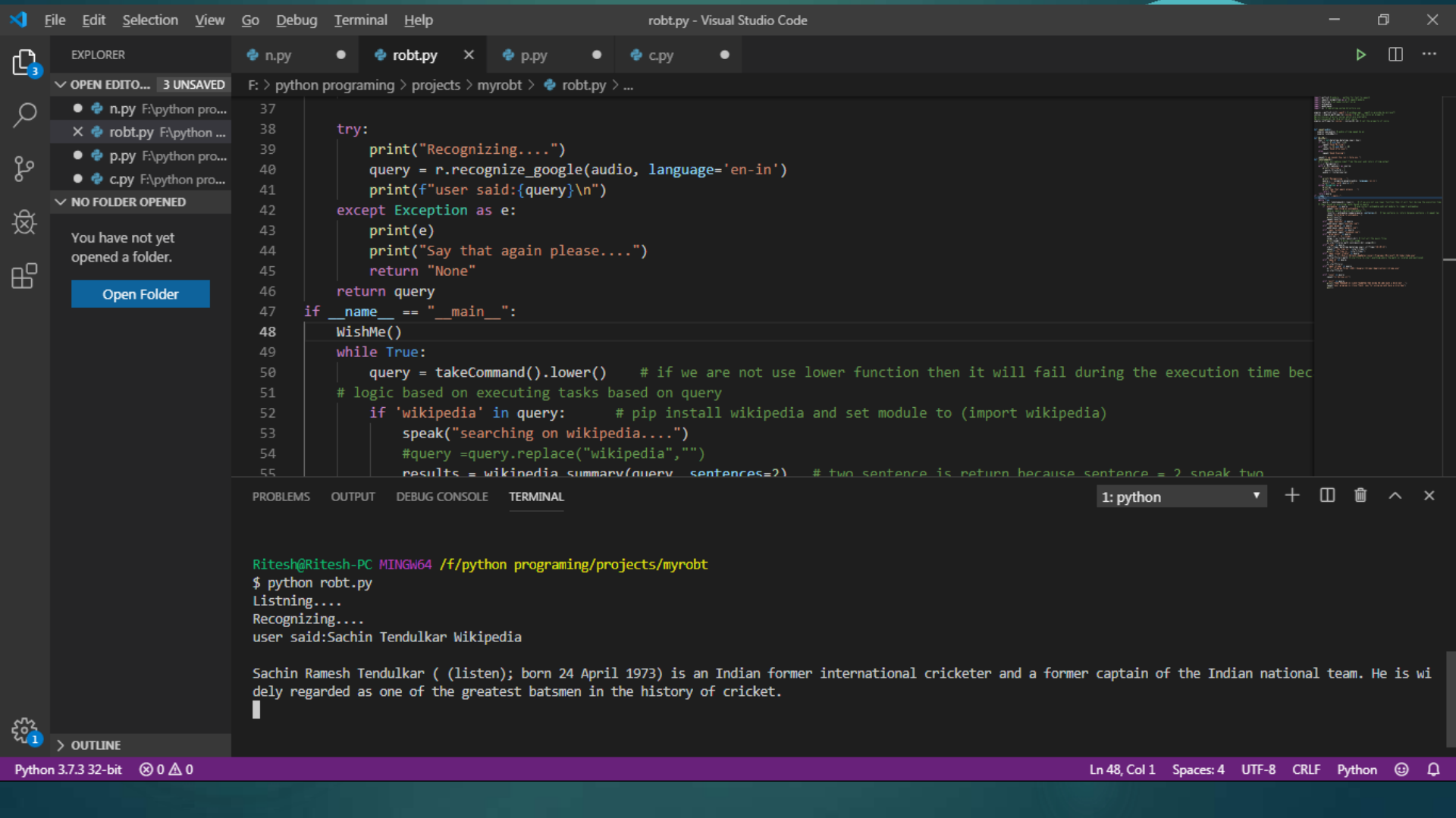
1. Speech to text (Convert).
2. Text Analysing (Recognizing).
3. Interpret commands.
4. Show the output in the form of result (by voice).

Install libraries

python programing > projects > myrobt > robt.py > ...

```
1   import pyttsx3 # module    python for text to speech
2   import speech_recognition as sr # speech module
3   import datetime # already install on pc
4   import wikipedia
5   import webbrowser
6   import os  # operating system directory use
7
8   engine = pyttsx3.init('sapi5') # windows api   sapi5 is provide by microsoft
9   voices = engine.getProperty('voices') # get the voice as property
10  #print(voices) # print voices which are available
11  #print(voices[0].id) # print id of voice
12  engine.setProperty('voices', voices[0].id) # set the property of voice
13
14
```

Real time working



Working- Three Layers

1. Speech to text:

- A Piece of software used that converts audio to text.

  It doesn't understand just anything you might say.

2. Text Analysing:

- Converted text is just letters for computer.
- A piece of software converts text to something that is understandable for computer.
- Computer understands the command, so Virtual Assistant like siri convert this text to computer command.

Working- Three Layers

- VPAs maps the words to functions and parameters to create a command that computer can understand.

  Example of (Wikipedia, browsing etc.)

3. Interpret commands:

- In this layer, that mapped computer command, go to server through internet.
- Simultaneously, your speech evaluated locally.
- A local recogniser communicate with server to judge whether command will be best handle locally or not.

  Example:

  Tell Wikipedia (like sachin tendulkar) , Play Music.

Available Applications

Name	Platform
Google Now	Android & IOS
Cortana	Windows
Siri	IOS
Robin	Android
Dragon Go	IOS
Evi	Android
EasilyDo	Android

Features

- Speaks Naturally.
- Communicate with surroundings and other objects.
- Geofencing and Event based services.
- Grows with you.
- Get smarter every day.
- Will entertain you.

Features

Some of the features of Virtual Assistant, you may ask him in day by day uses are shown below:

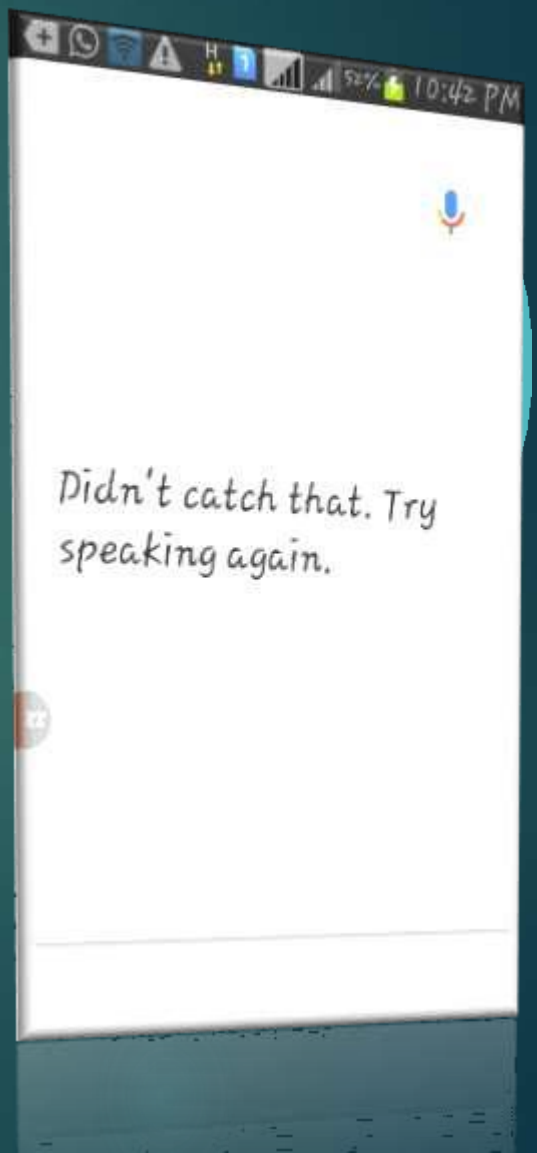
- WIKIPEDIA.
- GREETING.
- SHOW TIME
- SEND MESSAGE.
- PLAY MUSIC.
- SEARCH ON INTERNET.
- OPEN OF APPLICATION.

Advantages

- These applications make small and smart hand-held devices to combine multiple features.
- They allow you to export and import data.
- Store various information.
- Make to do lists.
- Recognizes voice commands.
- Controls various applications of device.
- Provides services regarding your location.
- Helps to plan your whole day.
- Reminds you important things on accurate situations or location. (Geofencing)

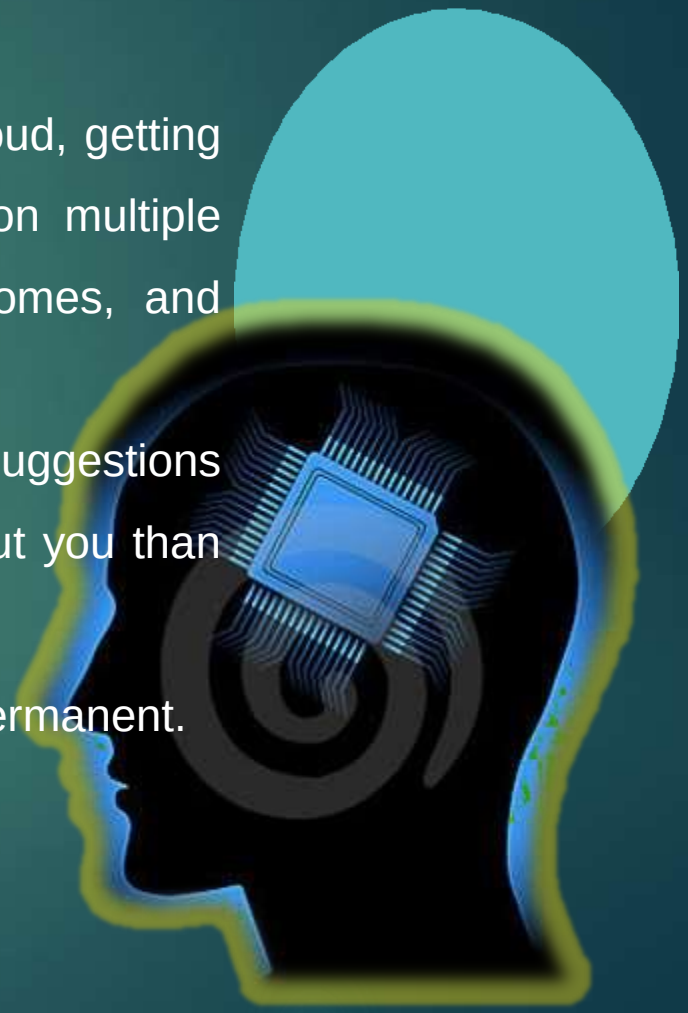
Dis-Advantages

- **Listening problem.**
  - VPA get problem to process wrong pronounced words and miscellaneous words.
- **Silent mode support.**
  - VPA gives response in voice output thus it doesn't work properly in silent mode.
- **Navigation languages.**
  - Most of VPAs can understand only English language.
- **Internet access.**
  - VPA needs internet connection to give desired output.



VPAs in Future

- Next step will be to strip back the physical hardware as far as possible
- With the intelligence of the VA existing in the cloud, getting pulled in, and pushing its way into our lives on multiple devices on our bodies and in our offices, homes, and vehicles
- Your VA will be continually prompting you with suggestions and taking instructions, and will know more about you than perhaps you do yourself.
- We can expect this device to be implanted and permanent.

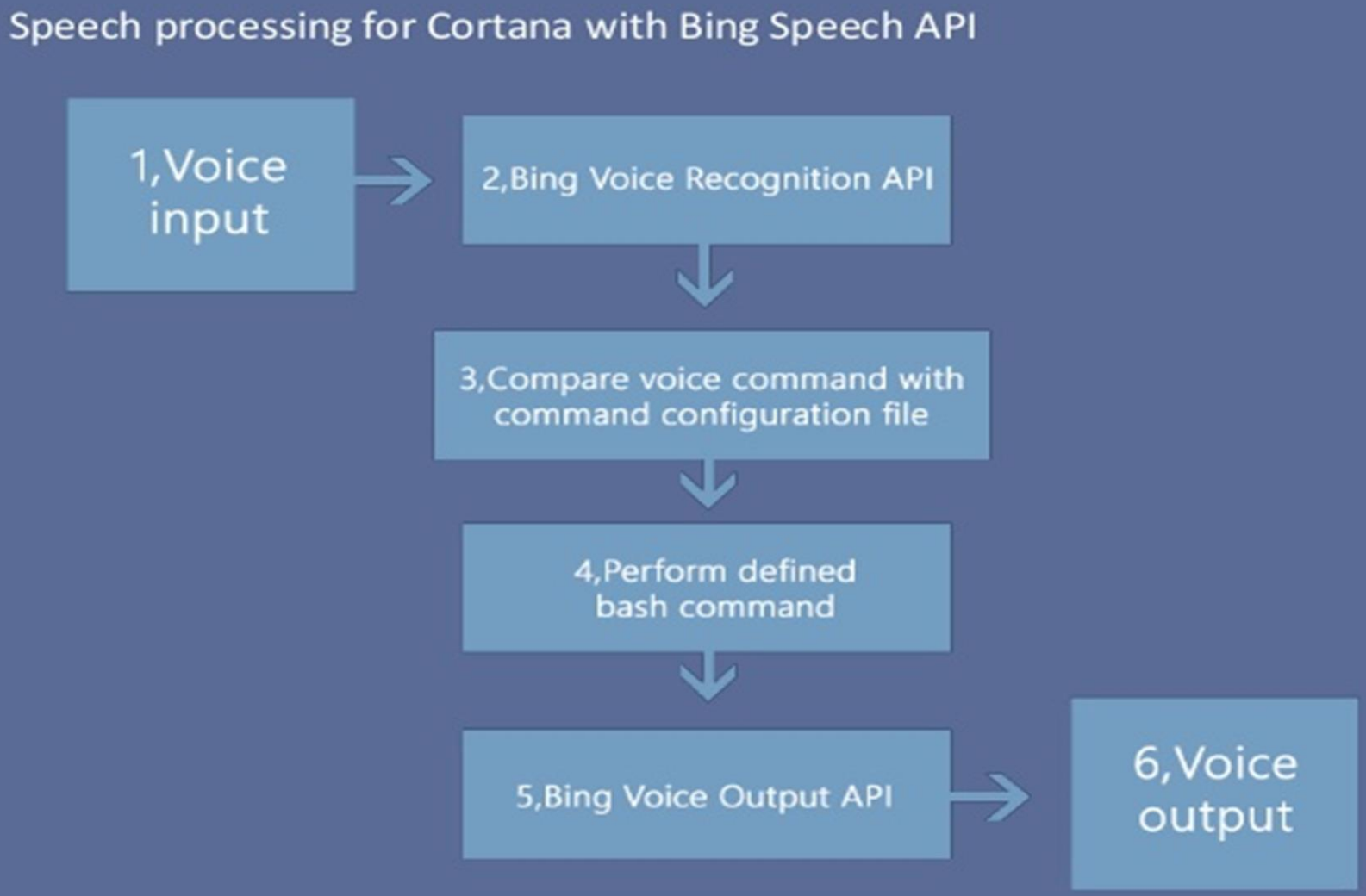


USER INTERFACE


```
Ritesh@Ritesh-PC MINGW64 /f/python programing/projects/myrobt
$ python robt.py
Listning....
Recognizing....
user said:Sachin Tendulkar Wikipedia

Sachin Ramesh Tendulkar ( (listen); born 24 April 1973) is an Indian former international cricketer and a former captain of the Indian national team. He is wi
dely regarded as one of the greatest batsmen in the history of cricket.
Listning....
Recognizing....
```

Flow chart :-


Speech processing for Cortana with Bing Speech API
1,Voice input
2,Bing Voice Recognition API
3,Compare voice command with command configuration file
4,Perform defined bash command
5,Bing Voice Output API
6,Voice output

Conclusion

Virtual Personal Assistants are very effective way to organize your schedule. Now there are many Smart Personal Digital Assistant applications available in market for various device platforms.

These new Software Applications are performing really well than PDA devices as they provided with all resources of your smartphone.

VPAs are also reliable than Human Personal Assistant because, VPAs are more portable and you can use them anytime. They also have lot of information than any assistant as they are connected with internet.

References : -

[1]^ *Hoy, Matthew B. (2018). "Alexa, Siri, Cortana, and More: An Introduction to Voice Assistants". Medical Reference Services Quarterly. **37** (1): 81–88. doi:10.1080/02763869.2018.1404391. PMID 29327988.*

[2]^ *Daniel B. Kline (2017-01-30). "Alexa, How Big Is Amazon's Echo?". The Motley Fool.*

[3]^ https://www.cnet.com/news/google-finding-its-voice/

[4]^ Jump up to: [a] [b] *"Feature: Von IBM Shoebox bis Siri: 50 Jahre Spracherkennung - WELT" [From IBM Shoebox to Siri: 50 years of speech recognition]. Die Welt (in German). Welt.de. 2012-04-20. Retrieved 2017-12-10.*

[5]^ *Zwass, Vladimir (2016-02-10). "speech recognition | technology". Encyclopædia Britannica Online. Britannica.com. Retrieved 2017-12-10.*

Thank You !