

## A Literature Review on Smart Assistant

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**Abstract** - Smart assistants are a boon for everyone in this new era of 21 st century. Where we can ask questions to machines and interact with smart assistants. This Technology attracts almost everyone in the world in many ways like smart phones, laptops, computers, etc. It is a Smart Assistant with Voice Recognition Intelligence, which takes the user input in the form of voice or in the form of text and processes it after processing it will return the output in various forms like search result is dictated to the end user. Some of the smart assistants are like Google Assistant, SIRI and Alexa. They cannot do Voice recognition, and human interaction are the issues which are not solved yet. The issues with Google assistant, SIRI that they need WIFI and internet connection for user interaction. "Google Assistant" which is used in Android Phones. But this Application always works with Internet Connections. But our Proposed System has the capability to work with without Internet Connectivity as well.

**Key words:** SIRI, Google Voice Search, Mobile Device, Internet.

### I. INTRODUCTION

Nowadays the Mobile Technology is being very famous for the User Experience, because it is very easy to access the applications and services from anywhere of your geolocation. Smart Assistant is "an application that uses information, for example, the user's voice and data. The Smart assistant is nothing but an implementation of assistant virtually on the user's Personal Computer. The software can be used through voice, keyboard input, and also using the internet as remote access. A Smart Assistant Voice Command System essentially means a system that processes voice as an input or understands the aim of that input, processes it and generates voice output. Any voice command system needs few basic components which are speech to text converter, query processor, and a text-to-speech converter. Voice has been the main part of communication. Since, it is faster to process sound and voices than to process written to text, hence voice command systems are internal in computer devices. Some hardware that are used in smart assistant raspberry pi, SD card, cooler, GSM module.

In this project we are using this following components:

1. Raspberry Pi: Raspberry Pi 4 is a dual-display, single-board low-cost computer that is used in robotics and automation. We are using raspberry pi for the private cloud for data storage also we are using SD cards for the operating system and image restoration during facial recognition. The Raspberry Pi is a low cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse.
2. GSM Module: The Global System for Mobile Communications (GSM). If possible we can implement a GSM module in smart assistant for 2g, 3g mobile phones where internet connectivity is unavailable. The GSM module is interfaced with the Raspberry pi 4. GSM module reads the data from the GPS module and sends coordinates to mobile via SMS using a SIM card enabled in the GSM module. Then the location of the user is detected easily using data that has been sent through SMS.

### II. LITERATURE VIEW

Speech recognition has several waves of major innovations. Speech recognition for dictation of voice, search, and voice commands has become a standard feature on smartphones and various other devices.

To this aim, a conversational assistant, capable of answering common questions, has been combined with a content discovery engine that is more suitable for finding the proper answers from a collection of heterogeneous sources [1]. Many companies of voice assistants are trying to improve interaction and more features to the next level and many of the youth started using a voice assistant in daily life and from many sources the result showed very good feedback [2]. Smart assistants are useful in many fields such as education, home appliances, etc. and the voice assistant is also useful for blind people. They can get any information just by telling the assistant, and this is possible because voice-based Smart assistants. We are using raspberry pi for SSH and different module connections. Raspberry pi is a low cost and small size computer that plugs into a computer or monitor with the help of connectors and standard keyboard and mouse. Raspberry pi having 40 GPIO pins on its

hardware module [3]. It is based on the voice as the research object, it allows the machine to automatically identify and understand human spoken language through speech signal processing and pattern recognition [4].

### III. METHODOLOGY

This section represents a detailed project plan and its implementation carried out to design the smart assistant. The following block diagram for project:

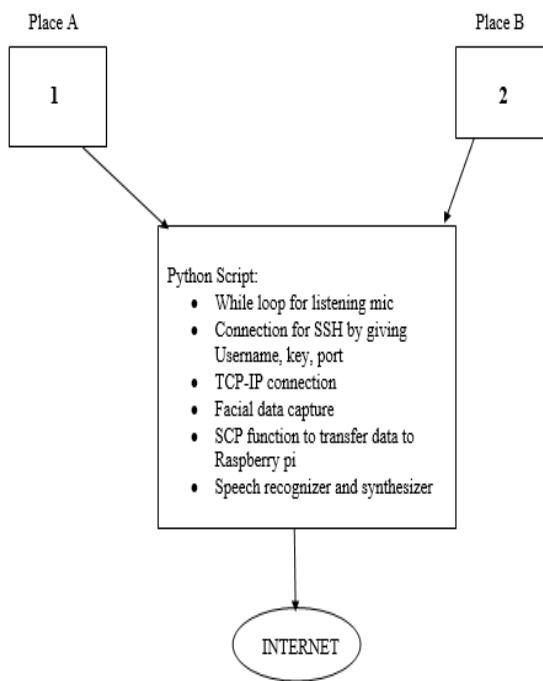
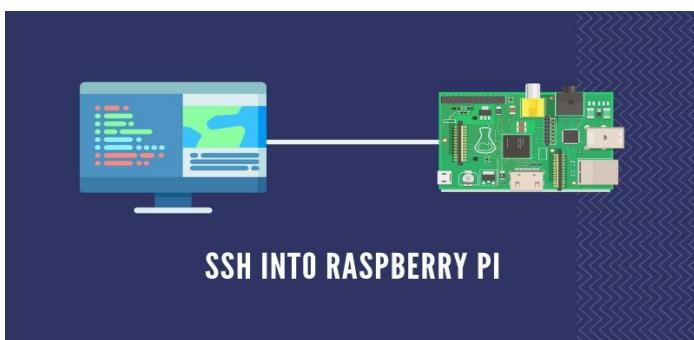


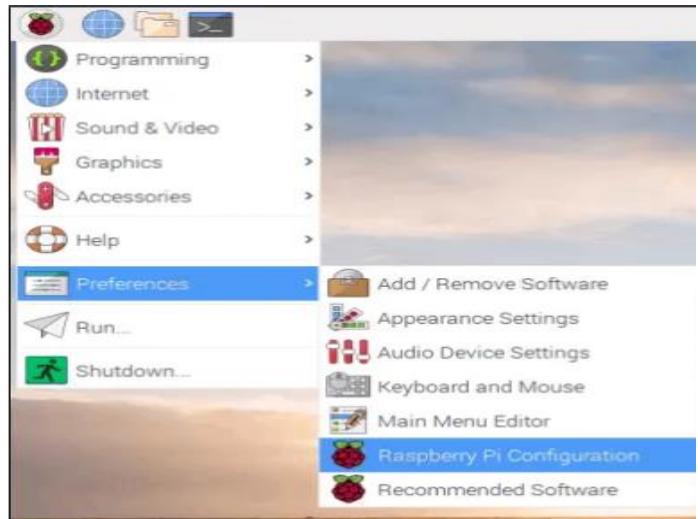
Fig. 1: Front END



#### Steps:

Step 1: Enable SSH on Raspberry Pi SSH is disabled by default in Raspberry Pi 4, hence you'll have to enable it when you turn on the Raspberry Pi after an installation of Raspberry. Go to the Raspberry Pi configuration

window through the menu. After that go to Advanced Options to select enable SSH.



Step 2: Find the IP Address of Raspberry Pi 4 using the old if configuration command or you can also use the IP address.

```
pi@Pi05:~ $ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
        inet 192.168.2.105 netmask 255.255.255.0 broadcast 192.168.2.255
                inet6 fd04:636e:631:1:ba27:ebff:fea0:d48c prefixlen 64 scopeid 0x0<global>
                inet6 fe80::ba27:ebff:fea0:d48c prefixlen 64 scopeid 0x20<link>
                    ether b8:27:eb:a0:d4:8c txqueuelen 1000 (Ethernet)
                    RX packets 2519 bytes 211449 (206.4 KiB)
                    RX errors 0 dropped 0 overruns 0 frame 0
                    TX packets 5743 bytes 6757404 (6.4 MiB)
                    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
        inet 127.0.0.1 netmask 255.0.0.0
                inet6 ::1 prefixlen 128 scopeid 0x10<host>
                    loop txqueuelen 1000 (Local Loopback)
                    RX packets 21 bytes 1244 (1.2 KiB)
                    RX errors 0 dropped 0 overruns 0 frame 0
                    TX packets 21 bytes 1244 (1.2 KiB)
                    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

pi@Pi05:~ $
```

Step 3. SSH into your Raspberry Pi 4 Now that you have enabled SSH and found out your IP address you can go ahead and SSH into your Raspberry Pi 4 from any other computer. Also need a password and username for the Raspberry Pi 4.

Username and Password is:

Username: pi

Password: raspberry

```
pi@Matrix-N:~$ ssh pi@192.168.2.105
pi@192.168.2.105's password:
Linux Pi05 4.14.98-v7+ #1200 SMP Tue Feb 12 20:27:48 GMT 2019 armv7l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.

Last login: Mon May 13 05:49:44 2019 from 192.168.2.116
pi@Pi05:~ $
```

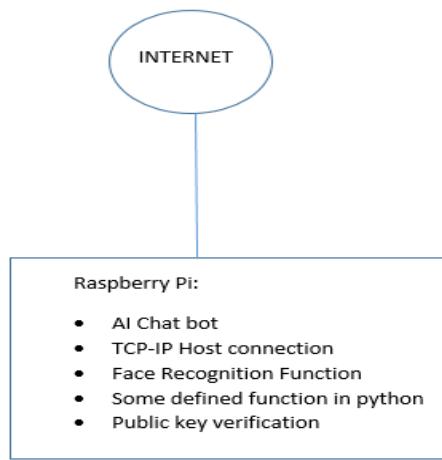


Fig. 2: Back END

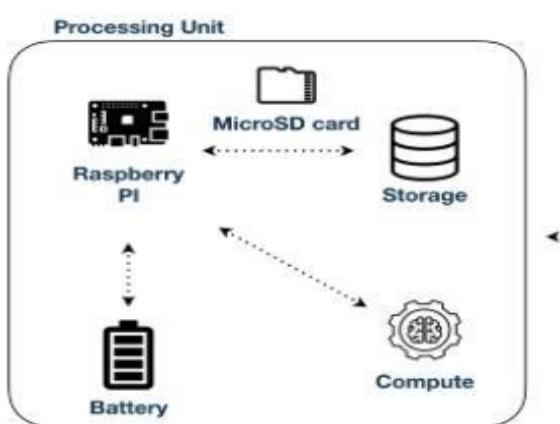


Fig. 3: Face detection using OpenCV and raspberry pi 4

Install open-source face recognition library on Raspberry PI Connect two Internet of Things devices.

In the end, we have two devices that will communicate with each other using Socket Programming in order to capture and process the images.

It will help to set up Raspberry PI 4 connect via Wi-Fi and enable SSH.

- First we have to install OpenCV-python. To start, we need to get OpenCV onto your Raspberry Pi.
- We need a 32 GB SD card for operating system installation and for image storage
- The way image recognition works are we first need to "train" a classifier like we would with any machine learning algorithm.
- In the case of faces, we'd want to grab 100 images of faces. After image processing, smart Assistants find the data if you are registered they are allowed using the smart assistant.

#### IV. CONCLUSION

In This paper, we have discussed voice recognition algorithms and how we enable SSH on Raspberry Pi 4 and Face detection using OpenCV and raspberry pi. Smart Assistant has various functionalities of mobile devices like network connection and managing various applications on just the voice commands. Smart Assistant Contains various key features like Voice Detection, Keyword Learning, etc. which are helpful for end-users to use Multiple functionalities. All the technical and implementation details are described to understand the system. Thus we have developed a Smart assistant such that most of the user tasks are now implemented at the user's command easily.

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