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# An Intelligent Virtual Voice Assistant Using NLP

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**Abstract—**We are able to accomplish things in the modern era of rapidly advancing technology that we never imagined possible in the past, but in order to do so, we need an environment that makes managing all of our tasks simple and comfortable. As an outcome, we must develop a virtual assistant with extraordinary deductive abilities and interpersonal abilities. with its environment simply by using one of the basic modes of human contact, namely, HUMAN VOICE. The hardware device uses its built-in speaker module to respond to the user by processing the audio request it receives through its microphone. It serves as both a web and mobile application.

**Keywords—**Artificial intelligence, Natural language processing, Audio Encrypting, Personal Computing**.**

## I. INTRODUCTION

Its 21st century in everything headed towards automation are in your home or in transportation. Innovation has seen an astounding transformation, or rather progress, in recent years. In the modern world, you can interact with your device whether you want to or not. How can a person interact with a machine? It obviously needs input, but what if you were to give it using your voice rather than a keyboard? What if you were to instruct the device verbally, expecting it to serve as your Virtual assistants are the computer wasn't just giving you the best outcomes, but also giving you better alternatives. The main method of human-interaction is voice commands that can be easily entered into a software. We need to use speech to text API in order to comprehend the input in order to accomplish this. This is something that many businesses, like Google, Amazon, and Apple, are attempting to accomplish. The fact that you can set reminders by simply saying "remind me to" or "set alarm with wake me up at" is wonderful. We can find the significance of this, we made a human-interactive system that can be installed anywhere nearby and that you can ask to assist you with any task just by speaking to day today life. Additionally, you may use Wi-Fi to connect two of these devices and enable future communication between them. With continuous updates and reminders, this device can be highly useful for daily use and improve your performance. Why might we require it? because using your voice instead of a traditional enter key is becoming more and more popular. The structure of fundamental Virtual Assistants Device is shown infig1.


Fig 1. Structure of fundamental Virtual assistants

## II. RELATEDWORK

A Smartvirtual assistants system for the Android operating system was created as an windows application that demonstrates how NLP languages can be used to send messages and even use the built-in mobile application. This system was tested to leverage the calendar and mailing, allowing users to voice-create events and send emails. By attaching basic appliances to the Internet of Things-based home automation system, which was successfully used to control the appliances remotely via the internet, it was demonstrated that the system functions as intended. The created system not only keeps track of predicted data from things like temperature etc., but its procedure is necessary. Putting on the lights as it becomes dark is one example. Additionally, it promptly stores the sensor parameters in the database. We can able to analyze the state of numerous parameters in their homes from any location at any time with this assistance. Everyone must be familiar with virtual assistants like Siri, Cortana, Google Now, Watson, and the many others.These actual virtual assistants aren't as intelligent as Jarvis from Movie character, but they serve a similar purpose: voice-activated computing that is AI-powered. A question is answered by an answer. An order is followed by results. Here is an overview of a few personal assistant gadgets.

The Dutch business Atoms developed Homey, a voice-activated hub for home automation. It includes a multi-variant connecting app and can simultaneously communication with a large number of devices with various configurations. It speaks several languages, including English, Dutch, Spanish, and French. Many smart home items that can be controlled by apps are compatible with it.

Alexa, a "Virtual-Assistant" from Amazon, succeeds in standing apart. Alexa is well knowwithin specific, in-home Amazon products, most specified the Amazon, an always connected within a range of Intranet-connected speaker, in contrastto android-based virtual assistants like Apple, Android . Here we are listed some features.

- **Online music:** Requesting a song from the stored in your Library will cause BUMBLEBEE to play it.
- **Send WhatsApp Message**: Sending a message One communication to another.
- **Keeptrackthetemperature** :BUMBLEBEE will joyfullyfind the any location of weather and temperature
- **Tell a jokes**: You should call a functions and they tell some jokes.
- **send a mail** :BUMBLEBEE can send mail from users. We can send a message from user command through send and receivers .
- **Hot-word** :The technology behind the Hot-word Detection and Always-Listening Commands is the same, Keyword Spotting. With Always-Listening Commands, one may use multiple phrases such as “open sesame,” “turn the lights on,” “open in a new tab”, and “close the browser” to perform various tasks. With a hot-word, the phrases just activate a dormant application. For example, Alexa-enabled devices currently have five hot words: “Amazon," "Alexa," "Computer," "Echo,” and “Ziggy.”
- Sleek, Homey, and Alexa aren't the first voice-activated home automation systems, though. Despite being available since late 2012, Castle OS's central hub and Kinect voice control app are only compatible with Windows-based computers. The Voice Tracker fromHouse is another such voice-activated hub.

## III. METHODOLOGY

### *A.* Structure of the virtual Assistant-

Theoverallsystemdesignconsistsoffollowingphases:
(a) Using voice to collect information.
(b) Text translation and evaluation of voice
(b) Analysis and having of data
(d) Creating voice from computerized text result

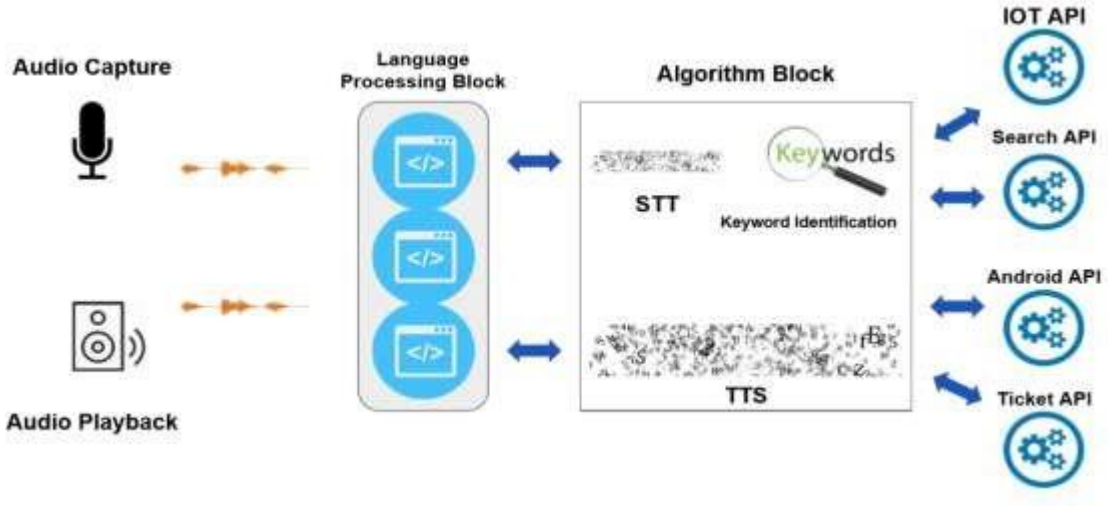


Fig2.System process of Virtual Assistants

Speech data is gathered and stored in the first step gather a information for processing in the second step. In the second step, STT is used to process the input voice in real-time and transform it to text[1]. Next, a Python script is used to examine and interpret the transformed text to determine the appropriate action to do in response to the command. The output is produced after the response has been identified.

The system process of virtual assistants is shown in figure 2.

***B.*** **System Component**

**1. PyCharm community:**

It is Online coding platform is free and open source. We imported few modules in PyCharm Community. They are listed below

- pyttsx3
- smtplib
- speech _recognition
- OS(operating system)
- Requests
- subprocess
- ssl
- pvporcupine
- pyperclip
- pyjokes

**2. Fire base cloud server:**

The user can easily and from any location share his individual data using an Android application. Through the built-in APIs of the network adapter, data is sent and processed. This generated data is accessible to the main system and is kept in firebase cloud storage. These jobs are all being completed concurrently. The main system has access to any information stored on the Firebase cloud server and has the ability in retrieving and manipulating such data. Along with ongoing data retrieval from the server, the need for the given data is also processed. Cloud structure for firebase is shown in figure 3.

**3. Python software:**

Python is a dynamic meaning, easy understandable programming languages. we can create many web application and android application using scripting from a source.It is particularly appealing for quick Application Development as well as for use as a scripting language to connect existing components. It is very easy understand a languages


Fig3.Cloud Structure for firebase

***C.*** **Sequential function flow**

***a.*** **Speech Analysis***:* Initialize the devicebycallingitsname.

***b.*** **Robust processing***:* Conversion of Speech-to-Textand Text-to-Speech is performed by task manager.

***c.*** **Speech recognition***:* Analysis of voice process and converted in machine flow and execute it

***d.*** **Implement Analysis**: Run through the corresponding python script once the command mach has determined.

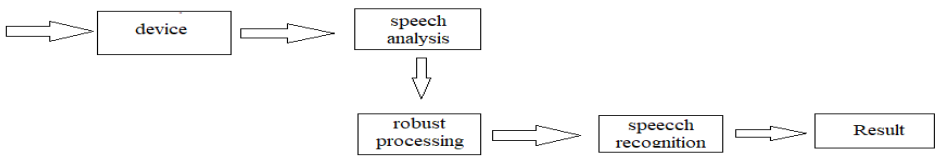


Fig4.Strucutre of data flow

## IV. PROPOSEDSYSTEM

The Suggested process will have the following capabilities:

1) It makes you remembers your wishes and lets you know what I can do to help.

2) It developed to educate the series of problem posed to its regarding its background, which it stores in memory for later. Therefore, it initiates a conversation when the same context is mentioned, and you ask pertinent questions.

3) Performing arithmetic computations in response to voice commands and speaking back the results.

4) Using the user's voice to search the Internet and returning the results with more interactive queries from the computer.

5) The data on the auto synchronization's cloud server will keep it current Cloud structure of fire base to

update the data on cloud.

6) ) IoT architecture will assist users in establishing connections between smart devices and the personal assistant and carrying out operations like on and off the light, and get control with smart devices.

7) Extra capabilities like Both spell-checking and the generation of reminders are feasible with user's voice.

## V. CONCLUSION

In order to develop a virtual assistant that can handle embedded applications and even resolve user inquiries utilizing web searches engine, voice controlled virtual assistant systems will use NPL languages and can be coupled with artificial intelligence techniques. It can be made to require less work from people when interacting with numerous different subsystems than would otherwise be necessary if done manually. This will allow the system to make comfortable for human day today life. This system is made to communicate intelligently and operate other subsystems, such as Internet of Things (IOT) devices or gadgets that receive news from the Internet, provide other information, or receive previously saved personal data. Clients should be able to input data such as calendar entries, alarms, or even reminders via the Android app. Access to many additional platforms and devices will be made simpler by the software. The device will consist of the following phases: voice to collect information.; Text translation and evaluation of voice; Analysis and having of data; and Creating voice from computerized text result.

Every phase generates data, which can be utilized later to identify patterns and make user suggestions. Artificial intelligence devices that learn and comprehend people may use this as a primary foundation. As a result, we came to the conclusion that the suggested approach, based on a survey of the literature and an analysis of the present system, will not just make it easier to interface with another systems and modules, but will also keep us organized.

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