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SPEAK IT OUT

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1. Introduction

¹Real-life conversations can become interactive with artificial intelligence. While chatbots have been around for some time, AI voice assistants are a relatively new craze. Voice assistants have revolutionized how people use technology and connect with brands. According to a report by Google, almost 27% of the online global population uses voice search on their phones.

1.1 What is Voice Assistant

²Voice Assistants are web-connected software tools that listen for commands, interpret them, and perform actions as they are spoken. Some popular voice assistants are Amazon Alexa, Apple Siri, Google Assistant and Microsoft Cortana. Using them, you can answer questions, interact with apps, turn on the lights, order food, and even find lost phones. Today, voice assistants are a common feature on numerous devices, including cell phones, computers, and smart speakers.

1.2 History of Voice Assistance

³The history of Voice assistants dates back to over a hundred years when the first Voice activated product, Radio Rex, was released in 1922. This was a very simple toy wherein a toy dog would stay inside a dog house until the user exclaimed its name, “Rex” at which point it would jump out of the house. It included an electromagnet which was tuned to a frequency similar to the vowel found in the word “Rex”.



¹⁴Siri Alexa



¹⁵**Amazon Alexa**



¹²**Radio Rex**

IBM launched their first voice assistant in 1962 at World's Fair in Seattle when they announced IBM Shoebox. This device recognized digits from 0-9 and six simple commands such as "plus, minus", so it could be used as a calculator. It contained a microphone connected to three audio filters to determine the electric frequencies of what was being said and matched it with already assigned values for each digit. Over the next decade, many advancements were made in the field of speech recognition, allowing most voice recognition devices to go from understanding a few hundred words to understanding thousands, and eventually reaching consumers homes.

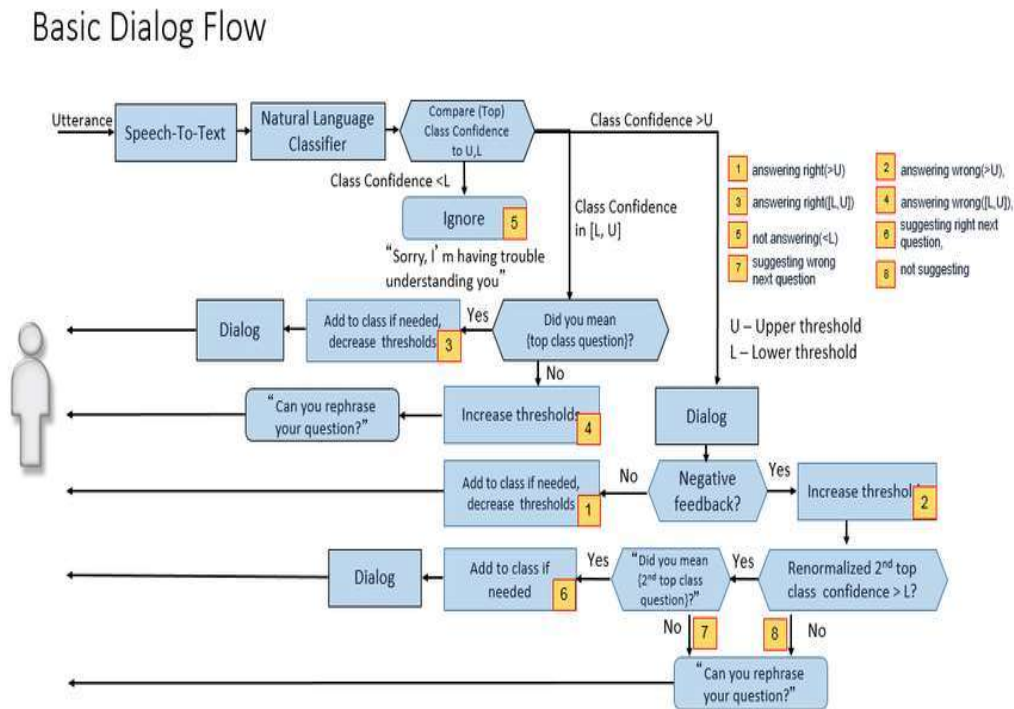
Google began offering voice search for its Google mobile apps in 2008 with the release of Android, and in 2011 released its own Google Voice Search app. This led to more and more advance features, eventually leading to Google now and Google Voice Assistant.

Siri was released in 2010 on the iOS App Store with speech recognition provided by Nuance Communications. Developed by SRI International, the app was acquired by Apple two months later. Apple's Siri voice assistant was released as an integrated part of iOS with the release of the iPhone 4s. Since then, Siri has extended its reach to every Apple device available and has created a single ecosystem across all Apple devices.

In 2015, Amazon Alexa was announced, its name taken from the Library of Alexandria. Alexa also has a hard "X" in its name, helping with better voice recognition. With Alexa, the Echo line of smart devices are announced to bring smart integration to consumers homes for an inexpensive route.

1.3 Types of Voice Assistants

⁴A rule-based bot is often useful for solving small-scope requests, like "How can I retrieve my password?". These questions don't require intricate algorithms for an answer to be provided, so they can be scripted in the back-end. However, the design process can be fairly complex and involves a bit of analysis and producing dialogue flows. Once created, you can validate it by filling out the elements with examples before testing the flow with users.



¹³Basic Dialogue Flow

Artificial Intelligence Assistants are capable of analysing the user, solving complex problems, and predicting the user's behaviour through learning instead of following hard-coded rules. These algorithms are developed by Artificial Intelligence (AI) systems by providing instructions and training data. AI powered systems can perform tasks that would be impossible using traditionally scripted algorithms. A lot of data is required to power these assistants. Tech giants like Google, Meta, Amazon and Apple invest heavily in AI-based assistants, whereas smaller companies rely more on scripted bots.

A grouping assistant is a voice assistant which consists of more than one artificial assistant that can be used to create a voice user experience. Such an experience would represent a more engaging and credible experience for users.

1.4 Popular Voice Assistants

⁵Apple Inc. developed Siri, an intelligent digital assistant that enables iOS users to send text messages, set schedules, make calls, play music and videos, etc.

Google Now is an intelligent assistant that is built into all Android devices. Originally released in 2012, Android users can use Google Now to schedule appointments, send text messages, find addresses, etc.

With the release of the Windows Phone 8.1 operating system in the year 2014, Microsoft released its primary digital assistant, Cortana. It is currently the most popular among Windows devices.

Alexa is a voice-activated digital speaker created by Amazon that responds to the name “Alexa”. Users can interact with Alexa by using their voice and can set alarms, create to-do lists, and download podcasts. The device can even be used to order items from the Amazon website.

2. Application of Voice Assistant

2.1 Voice Assistant at Home

¹¹Nowadays, Voice Assistant technology has been incorporated into household devices like smart speakers, Television sets, Air Conditioners, Fans, etc. Users are able to control all their household items with the use of their Voice. This feature is also available for use remotely.

Smart speakers at our homes can be used to play music, listen to the news, listen to podcasts and your daily weather forecast.

Users can also create a shopping list with the use of their voice. Simply tell the assistant what items you need and it will automatically search for the best items on the internet for the cheapest price and order them for you.

Smart Home Security Devices can be connected to your Voice Assistant to keep your property safe.

2.2 Voice Assistant for Business

⁶By offering a completely open architecture for enterprise voice assistants, companies are enabling their users to experience natural voice interactions with business systems such as IT service management(ITSM), operations management, business management, IT functions, office management, and HR management. During meetings, smart speakers are often used for various tasks. If someone needs to know a fact or an address, the voice assistant can find the information and provide an answer. It can also take notes, record action items, set meetings on calendars, and create to-do and follow-up lists, all of which save time and keep people focused on the meeting.

In the E-Commerce business, these voice enabled chatbots are a big thing to delight their customers, as they enable them to shop online in a conversational manner, wherever they are, on whatever device they are using. In addition, companies benefit greatly from consumer data that is more categorized based on interests, device, access location, purchase history, and so on. Data like this can be used to customize marketing efforts.

2.3 Voice Assistant for Education

⁷A Voice Assistant manages educational institutions efficiently and saves time by analyzing data. The technology of voice assistants is very adept at analyzing large amounts of data. A teacher can find out the attendance statistics or academic performance statistics of a class by simply conversing with the assistant. This way, they can get the required details from their virtual assistant within seconds.

Students can get personalized feedback from voice assistants on where they stand in their class with the ability to track their academic progress. Additionally, students can also be reminded about what subjects they have enrolled in, when they need to turn in their assessments and more.

One of the major advantages of using voice assistants in educational institutions is that it will enable the parents to keep close contact with their children's schools and universities. Parents can get all the information they need about their children's progress through the Voice Assistant, without having to attend meetings at school or university.

3. Pros and Cons of virtual assistant

3.1 Advantages

⁸It saves time by eliminating the need to open laptops, computers, or mobile phones. Merely voice your commands, and your speakers will recognize them and conduct the search.

The multilingual feature in Voice Assistant Technology allows us to Voice Search regardless of what language we speak.

Despite having no deep-thinking capacity, people who are bored or lonely can use their voice assistants as a form of entertainment and companionship. For example, you can ask Siri or Alexa to tell you a joke, and these assistants will search the Internet for a joke for you.

While using Voice Search on your smartphone, speaking your commands will be more convenient than typing them on the very small keyboard that is present on your device. You can also access your mobile apps without touching your device. Voice searches will also give you hands-free use of your mobile phones even when you are driving, which will help keep you safe.

¹⁰Voice Assistant Technology is a life saving tool for people with disabilities. This technology can read out emails, messages, audiobooks and websites for visually impaired people. The audiobooks, messages and emails can be converted to text and displayed on the screen for people with hearing disability.

3.2 Disadvantages

⁹Despite consumers using voice assistants more often, they are still concerned about how their data is stored and how much access companies have to their data. They are also concerned about what happens to their information once it is collected.

A second disadvantage is that, as a channel, voice assistants provide less enriching interactions than other platforms. Rather than visual interactions, voice assistants typically repurpose existing content.

¹⁰Many smart home devices that are controlled by virtual assistants are expensive, and not everyone can afford them. They also consume a lot of energy, so you can expect a higher electricity bill if you have a lot of smart home devices. These devices cannot be used during a power cut.

Trying to accomplish tasks while using a virtual assistant with voice recognition can cause you to lose concentration on the task at hand. You are providing instructions to the virtual assistant, while also having to focus on the task at hand. If you do two things simultaneously, you are prone to making a mistake.

Voice recognition technology has come a long way, but it is not perfect. You occasionally find yourself repeating the command so that the speaker can understand it and initiate the action.

4. Opinion on Voice Assistant

Voice assistants are creating new possibilities to touch lives and bring a meaningful change. The fact that you can control your devices, play music, listen to podcasts, create shopping lists, engage customers, create data points, initiate conversations just with the use of your voice is mind boggling in its own sense. It is just amazing to see how fast voice assistant technology has grown.

What we are seeing is only the tip of the iceberg when it comes to what voice technology can do. Voice assistants are becoming a key part of our everyday lives. It will continue to unfold newer possibilities to transform lives across age, gender, and diversities.

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