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Desktop Virtual Assistant

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Abstract: ***Changes in technology have impacted human life in a variety of ways. Because of technology improvements, the way we lived in the past and how we live now are vastly different. Previously, computers could only perform a limited number of jobs, but advances in machine learning, artificial intelligence, and other technologies have advanced*** **computers** ***significantly. As a result, various voice assistants such as Alexa, Siri, and Cortana, which function on speech recognition, have been developed to make computers more advanced and to eliminate the use of input devices.***
Keywords: Virtual assistant, Speech recognition, python, text to speech.

I. INTRODUCTION

Technology has advanced in the twenty-first century. Humans are increasingly compelled to communicate with computers. Today, we teach our computers to complete tasks on their own. As a result, the concept of a virtual assistant was born. Our virtual assistant is a desktop assistant that uses speech recognition. It can understand and carry out the audio instructions given by the user. We don't have to worry about using input devices like the keyboard and mouse, so we'll use them less. It also saves the user a lot of time. People who are blind, elderly, or physically disabled can engage with equipment via the virtual assistant. As a result, these impaired persons can now interact as well. So, with the voice assistant, we're moving to the next stage of technological innovation, when we'll be able to converse with our machines.

Here are some of the basic chores that can be accomplished with the help of a virtual assistant:

1) Conducting an online search
2) Reading Wikipedia
3) Applications that are open
4) Send electronic mail
5) Play music from a folder on your computer's desktop
6) Listen to music via YouTube
7) Create a website
8) Obtain the current date and time

II. WHAT IS VIRTUAL ASSISTANT

A virtual assistant is a software program created by humans that follows the user's directions. Its entire operation is dependent on speech recognition. Today, we can find voice assistants in Google search, YouTube search, and a variety of other program that respond to our voice commands.

The user must offer instructions in voice format, and the system will carry out the user's orders. The virtual assistant data flow diagram is shown below —



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III. RELATED WORKS

Siri, Alexa, and other voice assistants should be recognisable to everyone. They aren't as intelligent as Jarvis from Marvel Studios, but their functions are nearly same.

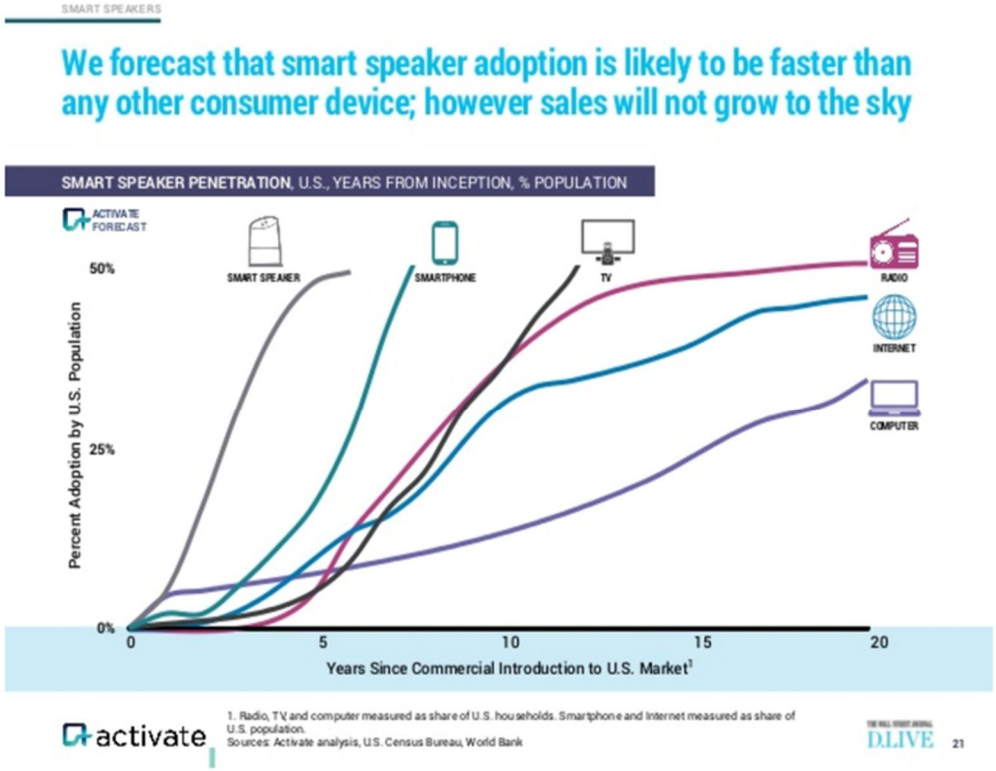
1) *Siri:* Siri was created as an iphone app by Dag Kittlaus and his colleagues at SRI International. Siri was later presented by Apple in 2010. Siri is a technology that is built into the iPhone, iPod Touch, and iPad.
2) *Cortana:* Cortana is a Microsoft-developed virtual assistant that leverages the Bing search engine to do tasks such as answering questions and making reminders.
3) *Google Now:* Is a search engine that was launched by Google in 2012. It may be found through a Google search and is used in a variety of ways.

IV. LITERATURE REVIEW

As a graduate student at Stanford University in the late 1960s, Raj Reddy was the first to tackle continuous speech recognition. Users had to pause after each word in older systems. For playing chess, Reddy's system uses voice commands. At the time, Soviet academics devised the dynamic time warping method, which they used to create a 200-word vocabulary recognizer. Speech can be processed by breaking it into short frames, such as 10ms segments, and processing each frame individually. However, we are unable to resolve the issue of speaker independence at this moment. By the mid-1980s, IBM's Fred Jelinek's team had developed Tangora, a voice-activated typewriter that could handle a 20,000-word vocabulary. In 1992, Kai-fu-Lee, a Raj Reddy student, went to work for Apple, where he helped design a speech interface prototype for the Apple computer Casper. Speech technology from L&H, which became Nuance in 2005, was launched by Scansoft. Apple originally licenced software from Nuance to give Siri, Apple's virtual assistant, speech recognition capabilities. Since at least 2006, the National Security Agency in the United States has used a sort of speech recognition for keyword spotting. We can easily distinguish speech recognition from speaker recognition by the early 2010s, and speaker independence was seen as a huge breakthrough. Until then, systems must go through a "training" phase.

V. POPOLARITY OF VIRTUAL ASSISTANT

Smart speakers are growing popularity and being accepted quicker than smartphones in the United States of America, according to a report by Activate Forecast. In the modern world, it is the most rapid adoption of any new technology.



Source:Activate Forecast

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VI. CHALLENGES

Virtual assistants confront a number of difficulties. Call them challenges or opportunities that can be taken advantage of.

1) *Accuracy:* The virtual assistant didn't always understand what we were saying. This is due to a variety of factors. It could be because of the way we speak, or because of our accent. It's possible that the assistant didn't know what to do with your inquiry.
2) *Privacy:* When it comes to smart speakers that activate with a wake word, privacy is a major problem. When the wake word was used to activate these speakers or virtual assistants, they began capturing sounds. These devices send these audio snippets to Google and Amazon.
3) *Lack of Vernacular Support:* Speech recognition is the most critical component of a virtual assistant, yet it lacks vernacular support. However, it is not available in all of the world's languages.

As a result, for a country like India, where linguistic variances and a lack of quality ASR are typically a limiting factor in offering a decent voice experience, ASR is often a limiting factor.

VII. FUTURE SCOPE

The most quickly adopted technology is the virtual assistant. From smartwatches to smart speakers, all products now have a virtual voice recognition model built in. The future has numerous potential for voice technology to advance. However, there are still adjustments and advancements to be made in this subject. The existing system's understanding has to be greatly improved. Virtual assistants using Artificial Intelligence, such as Machine Learning, Neural Networks, and IoT, will be the future of these helpers. By adopting this technology, we will be able to achieve new heights. Virtual assistants have the potential to achieve far more than we have so far.

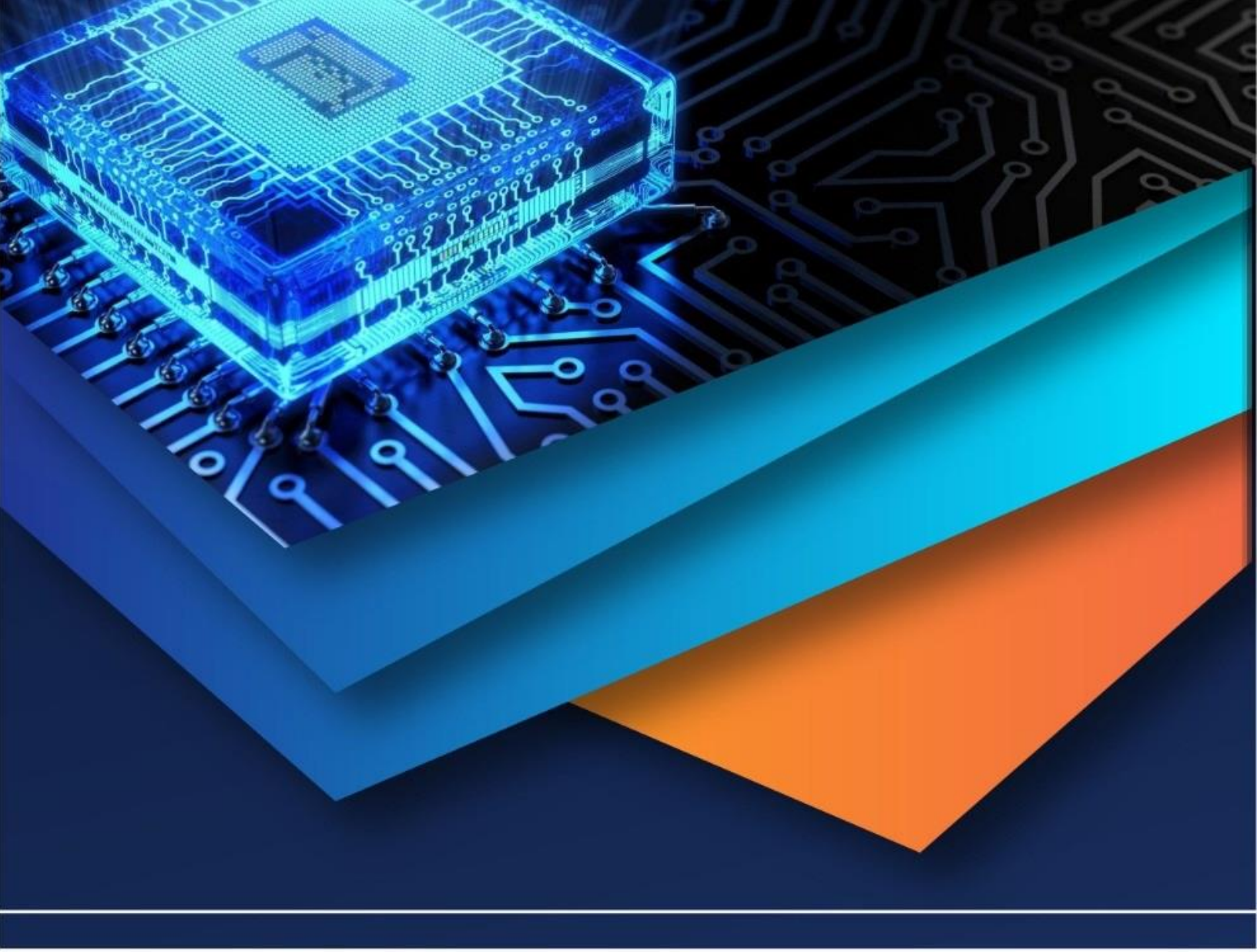
We will be able to make our computers and cell phones smarter in the future by utilising these built-in virtual assistants. We can make things smarter and better by employing artificial intelligence.

VIII. CONCLUSION

The popularity of voice activated virtual assistants, as well as their future potential, were examined in this study. Which may perform operations in audio format as directed by the user. It may open apps such as notepad, web searches, Wikipedia reading, alarm clock, audio player, and many others. These assistants make life easier for humans. We can use artificial intelligence and the internet of things to improve these gadgets.

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