

JIMS STUDENT IT PRESS

IT KALEIDOSCOPE

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DIVING DEEP INTO IVAS

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INTRODUCTION

Virtual assistants, also known as artificial intelligence assistants or digital assistants, are applications that comprehend the natural language spoken by users and function as their assistants. Most virtual assistants require internet connections and/or access to applications to operate. A virtual assistant such as Siri, Alexa, or Google Assistant can greatly simplify our lives. As a virtual assistant's technology is powered by massive amounts of data, it provides a steady stream of information to artificial intelligence (AI) platforms, such as machine learning and natural language processing. As the virtual assistant interacts with the end-user, it learns from data input and becomes better at predicting the customer's needs based on a set of sophisticated algorithms. Virtual assistants track behaviors and build data models, predicting and recommending actions based on predictions.

The most common virtual assistants should be known. Among them are:

- **Alexa-** The virtual assistant Alexa is created by Amazon. Several devices are compatible with Alexa; including smartphones, smart displays, and speakers. Alexa debuted on Amazon's Echo speaker in 2014. Fire TV is compatible with a wide range of third-party devices as well as Amazon's assortment of devices.
- **Siri-** users of Apple's iPad, iPhone, and iPod touch devices have Siri as a built-in virtual assistant. Siri was developed as a spin-off from an AI project at the SRI International Artificial Intelligence Center. As users continue to use it, Siri adapts to their language usages, searches, and preferences.
- **Cortana-** One can use Cortana on a variety of devices, as well as on a variety of Microsoft 365 products and services.

For the AI-powered assistant to function, one must enable Cortana through their Microsoft account before saying, "Hey Cortana." Current versions of Cortana are geared towards productivity, with tools such as Play My Emails and Briefing emails helping you save time and increase productivity.

• Advantages of Virtual Assistants

Accessibility is a major benefit of virtual assistant technology. All users have access to it, which makes multitasking extremely convenient. Driving and cooking are excellent examples.

• Disadvantages of Virtual Assistants

These virtual assistant devices can save you both time and money, but they aren't always cheap. Amazon and Google have developed some of the best technologies for voice recognition in recent years.

-ADITI JAIN

(BCA 1ST YEAR 1ST SHIFT)



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"Data is the fuel for the future" & "Data is the future gold"

These are some quotes that are becoming immensely popular nowadays. As Facebook renames itself as **Meta**, the world foresees the future being completely dependent on data. Gathering, managing, and maintaining a big amount of data such as millions of likes on a post of a sports personality, etc. is really difficult to do..

A recent report by the American tech giant HP states how they have created a virtual assistant ecosystem for workflow and workplace optimization. Their proof of concept leverages some interesting features, such as:

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- Context-based interactions with the focus set on featuring intent recognition and multi-context dialog management

- Proactive monitoring and actionable recommendations based on proactive maintenance of the workflow

- **Channels:** Channels refer to the platforms that help clients to access the services of a virtual assistant. These channels are basic application platforms that are using smart bots for work optimization.

- **Input Media:** The main function of a virtual assistant depends on the input given to the smart bots by the back end. The back end uses client input as the command for virtual assistants to work. Gestures that have been used to give the commands to virtual assistants are by tap, typed input, audio input, or pre-programmed cards being inserted in bots.

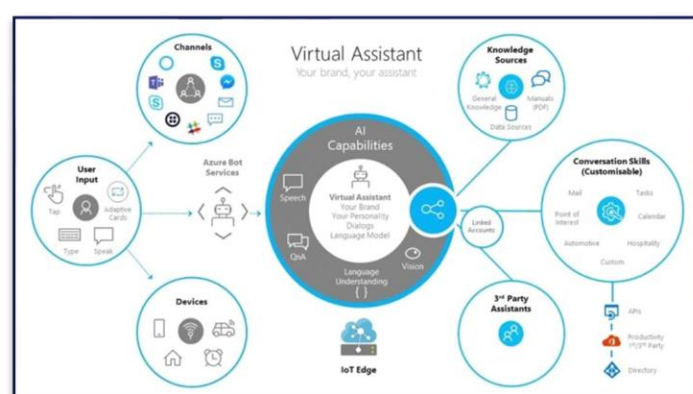
- **Devices:** Devices are the output centre of the command given to virtual assistants. Devices that are being connected to an IoT network majorly use the concept of smart bots. From complex frameworks like smart cars and smart home architecture.

• Data Sources

Virtual assistants use various sources to fetch the data that is being demanded from them by the clients.

All the above components make up an efficient virtual assistant ecosystem.

-HARDIK MUDGIL
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IMPLEMENTATION OF VIRTUAL ASSISTANT USING VARIOUS PROGRAMMING LANGUAGES

Conversational AI is required for knowledgeable virtual secretary software to interact with people constructively properly. Here, we look at some of the important technologies that are powering IVAs' capacity to conduct a wide range of business functions and procedures.

We looked at how intelligent virtual assistants (IVAs) are being implemented to simplify different corporate procedures in part one of our two-part essay on IVAs. Here, we look at some of the important technologies that are powering IVAs' capacity to conduct a wide range of business functions and procedures.

Natural Language Processing

Natural language processing (NLP) is essential for IVAs to be helpful. It indicates that some translation between artificial computer languages and genuine human languages is required for computers and people to communicate. Many computers allow humans to communicate with them. Alternatively, computer software may be able to interpret a restricted number of human words based on pre-defined fields and replies. A major aspect of any IVA is natural language understanding (NLU). Natural language understanding is a subset of the larger idea of natural language processing (NLP). NLU provides a higher degree of function for IVAs as an advanced version of NLP, allowing them to take on more sophisticated duties for their human customers.

Programming Languages used to build Virtual Assistants

AI has achieved biometric intelligence, self-driving car autopilots, and other applications that necessitated the use of various artificial intelligence code languages

during their development. As a conclusion, the relevant artificial intelligence programming language is now finalized as follows:

- **Java:** Another programming language, Java, is a multi-paradigm language that adheres to object-oriented ideas and the "Once Written, Read/Run Anywhere" philosophy (WORA). It's an AI programming language that can operate without recompilation on any platform that supports it. Java is one of the most widely used programming languages, not just in AI development. It borrows a lot of its syntax from C and C++ and some of its other utilities. Java is suitable for both NLP and search algorithms and neural networks.

- **LISP:** Another programming language for artificial intelligence is LISP. It is the second oldest programming language after Fortran, and it is a family of computer programming languages. LISP has evolved into a powerful and dynamic coding language throughout time. Unlike most AI programming languages, LISP is better at solving specific problems since it adapts to the needs of the solutions a developer is creating. It's ideal for projects involving inductive logic and machine learning.

- **Prolog:** Prolog is also one of the earliest programming languages, making it ideal for developing artificial intelligence programming. It's a primary computer language for artificial intelligence, just like Lisp. Because it contains facts and rules that determine its artificial intelligence coding language, it is a rule-based and declarative language.

-SNEHA KAUSHIK
(BCA 1ST YEAR 1ST SHIFT)



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CURRENT IMPLEMENTATION IN VARIOUS SECTORS

Customers expect efficiency and promptness from businesses in today's fast-paced society. Intelligent Virtual Assistants (IVAs) play a vital role in this.

Virtual assistants have gained popularity across many global organizations because of their configurable features, self-learning ability, and scalability.

They respond to user questions by detecting the main intent and returning a single pre-defined answer. They can handle simple regular inquiries such as FAQs, reservations, online orders, and appointment scheduling

•**EDUCATION:** In the field of education, voice technology is becoming increasingly significant. Companies have developed deep learning and neural networks to discern emotion in text and produce human-like voices with the help of IBM Watson Machine Learning Accelerator solutions. Voice technology, according to the organization, may help pupils with spelling and times tables practice, as well as teach them about AI and the future.

•**HEALTHCARE:** Amazon Alexa, Microsoft Cortana, and Google Home are among the AI virtual assistants that are rapidly making their way into healthcare. They aid in the transformation of day-to-day operations for doctors, other staff, and patients, and ensure compliance, thanks to advanced machine learning and natural language processing algorithms.

Virtual assistants let patients get real-time responses to questions about health symptoms, illnesses, possible medication side effects, treatment alternatives, drug availability, and therapeutic advice. Patients can now arrange an appointment with their favorite doctor by just chatting with their digital assistant, thanks

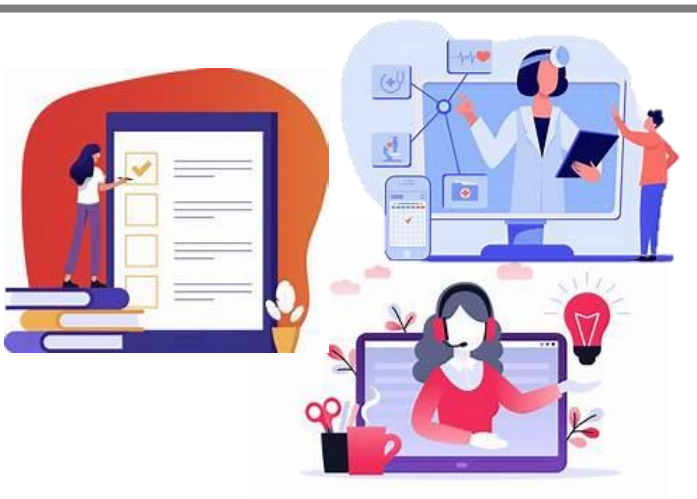
to the integration of AI-powered voice assistants into healthcare systems. It enables patients to receive precise and trustworthy medical advice, reducing the risk of readmission.

• BUSINESS

AI assistants are swiftly moving away from personal applications and towards a more business-oriented landscape. Oracle's Digital Assistant, for example, is designed to be an ideal platform for sales, marketing, and other industry verticals by integrating with a vast software app portfolio. IVA technology is employed in a variety of industrial applications, such as acting as sales agents or customer support representatives, making it a scalable and enticing alternative for businesses. Businesses use digital assistants to increase productivity, improve ROI, streamline operations, and reduce workloads.

IVAs assist brands in delivering excellent customer experiences by addressing a variety of factors. For example, AI assistants may promptly resolve customer issues via the channels that the consumer prefers, assuring speed and ease. They can also interact with a variety of brand-specific systems and databases, providing a solid information base from which to provide customized solutions to customers.

-ROHAN SINGH
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FUTURE SCOPE

VIRTUAL ASSISTANT (VA) is a smart application that can perform tasks and can provide various services to the users by listening to their voices. This can be used in giving answers to the questions, managing other devices, and also just by saying we can increase and decrease the volume of the media which is playing and many more.

Nowadays, almost all people are using virtual assistant apps like we have **ALEXA**, **APPLE SIRI**, **CORTANA**, and many more in the line. It seems like we are slightly dependent on these apps for our basic tedious things also like we can search an application's name and can directly go there but as you know each of us likes finding shortcuts of everything. In 2017, there were around 1 billion people who were using VA apps worldwide and that number is rapidly increasing. Till now virtual assistants are doing basic activities, such as redeeming the data and basic calculations. As natural language processing (**the potential of a computer application to understand human speech as it is spoken and written**) continues to develop, virtual assistants' understanding must be improved for their worldwide usage. At present, many companies are developing VA apps. Consumers are not able to switch between various platforms easily. In 2017, the first partnership had occurred between Microsoft and Amazon to merge **CORTANA** and **ALEXA**. Whereas **ALEXA** manages the household market, while **CORTANA** handles the business sector. Imagine you are a relaxing in your home after a very long and hectic day and then you realize you need to reschedule a meeting. No problem it will be done in a second. As expected, by 2023 there will be coming many partnerships to ease the user's work. Nowadays, reciting a message is

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becoming possible because of the natural language process. (NLP) developments. In the manufacturing sector, many machines have started to be operated through voice command. It's possible that IT industries could be working in the same manner. Shortly, we will be joining meetings with a voice command, instead of writing the whole meeting ID and password. Virtual Assistant technology has a bright future ahead mainly in smartphones and many other industries. Other than the smartphone industry, VA has a good future in medical applications, many of the surgeons and researchers are already working on robots and robotic arms which are using VA technology which will help them in the surgeries and treatment process.

Google is currently working on an automated car. Many of the functions in that car will be served by VA only.

For virtual assistants to become fully dependent, they must overcome a few difficulties. There should be security that whichever data we are transmitting by voice command will be confidential so that we feel free to use this. It is calculated that VA can save you up to 40 percent of expenses. Where you don't need to occupy yourself with non-essential tasks and your routine is managed by a responsible professional, you can focus on designing your business. free to use this. It is calculated that VA can save you up to 40 percent of expenses. Where you don't need to occupy yourself with non-essential tasks and your routine is managed by a responsible professional, you can focus on designing your business. free to use this. It is calculated that VA can save you up to 40 percent of expenses. Where you don't need to occupy yourself with non-essential tasks and your routine is managed by a responsible professional, you

can focus on designing your business. IVA technology is employed in a variety of industrial applications, such as acting as sales agents or customer support representatives, making it a scalable and enticing alternative for businesses. Businesses use digital assistants to increase productivity, improve ROI, streamline operations, and reduce workloads. IVAs assist brands in delivering excellent customer experiences by addressing a variety of factors. For example, AI assistants may promptly resolve customer issues via the channels that the consumer prefers, assuring speed and ease. They can also interact with a variety of brand-specific systems and databases, providing a solid information base from which to provide customized solutions to customers.

Virtual assistants are rapidly improving to give users with more features and value. The ability of a virtual assistant to understand and carry out requests will improve as speech recognition and natural language processing improves. Virtual assistants will become more prevalent in commercial procedures as voice recognition technology improves.

Virtual assistants of the future will be constructed with more advanced cognitive computing technologies, allowing them to understand and carry out multistep requests and execute more difficult activities.

-ISHIKA GUPTA
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FACT

- At first the famous iOS virtual assistant "Siri" was launched as an iOS app that was available on the app store. At that time Siri, Inc. announced that the software would also be available to blackberry and android devices shortly but the plan was called off after Apple purchased it.
- Since July 2018, the number of MAUs (Million monthly active users) using Xiaomi's Ai assistant worldwide has continuously increased. There were nearly 102 MAUs in June 2021.
- NLP based virtual Assistants are making their places permanent as they are becoming more efficient and are saving the costs for the companies deploying them.
- 63% of the people would prefer to message an online chatbot than a person to communicate with a business or brand.

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