A Comprehensive Guide to Intelligent Virtual Assistants
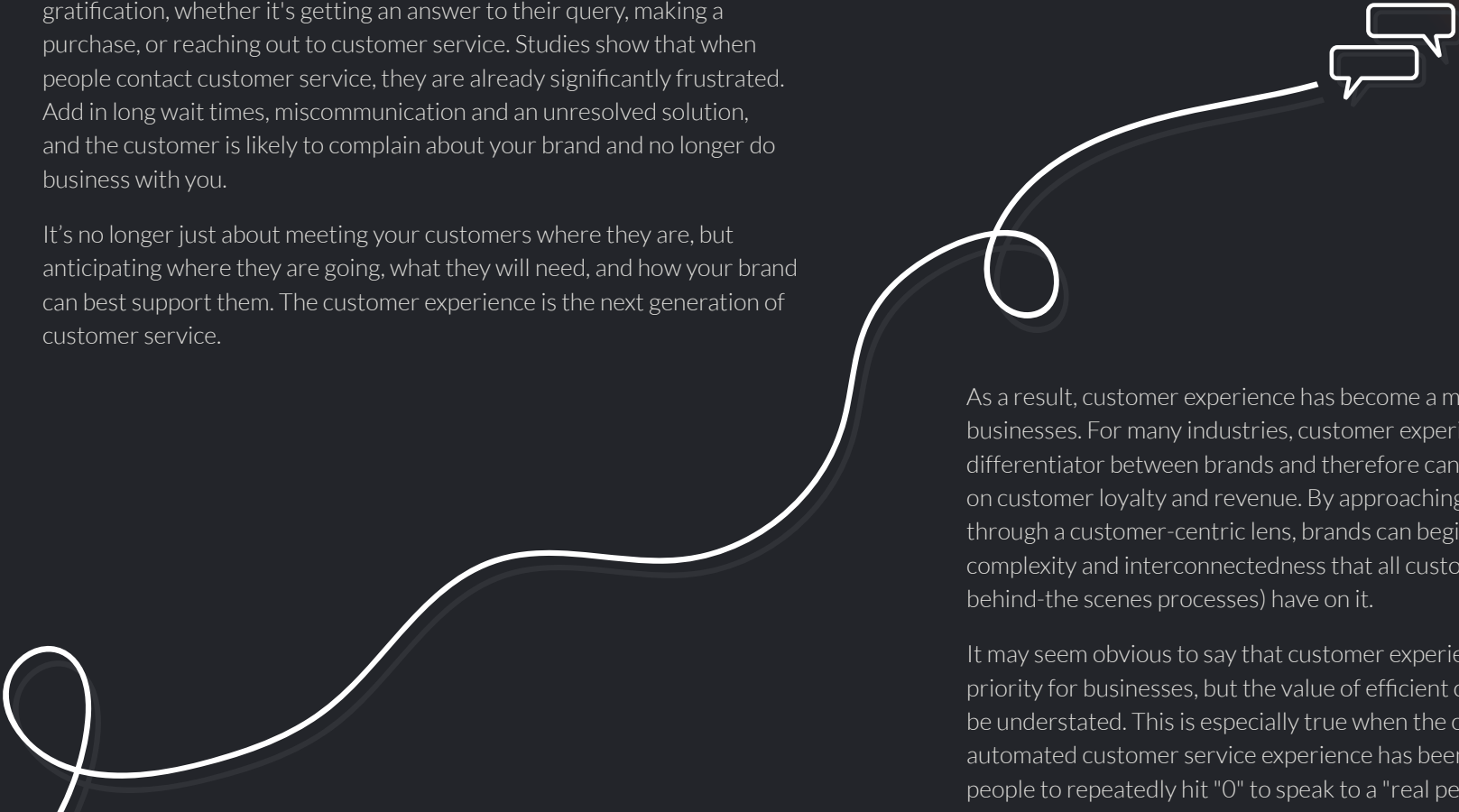
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interactions

The Future of Customer Service

In today's world, customers have become accustomed to immediate gratification, whether it's getting an answer to their query, making a purchase, or reaching out to customer service. Studies show that when people contact customer service, they are already significantly frustrated. Add in long wait times, miscommunication and an unresolved solution, and the customer is likely to complain about your brand and no longer do business with you.

It's no longer just about meeting your customers where they are, but anticipating where they are going, what they will need, and how your brand can best support them. The customer experience is the next generation of customer service.

As a result, customer experience has become a major priority for businesses. For many industries, customer experience is the top differentiator between brands and therefore can have a great impact on customer loyalty and revenue. By approaching all business decisions through a customer-centric lens, brands can begin to understand the complexity and interconnectedness that all customer touchpoints (and behind-the scenes processes) have on it.

It may seem obvious to say that customer experience should be a top priority for businesses, but the value of efficient customer service can't be understated. This is especially true when the overall perception of the automated customer service experience has been a frustrating one, leading people to repeatedly hit "0" to speak to a "real person."

There is a better way to offer automated, yet highly effective, customer service – utilizing Conversational AI and Intelligent Virtual Assistants (IVAs) to elevate the customer experience with effortless and productive automated conversations. But there's more to this technology than just what the customer hears (or sees), as you will learn about.

What is Conversational AI?

Conversational AI is the set of technologies behind automated messaging and speech-enabled applications that offer human-like interactions between computers and humans. Applied Conversational AI requires both science and art to create successful applications that incorporate context, personalization and relevance within human to computer interaction. Conversational design, a discipline dedicated to designing flows that sound natural, is a key part of developing Conversational AI applications. The best Conversational AI offers an end result that is indistinguishable from what could have been delivered by a human. Think about the last time that you communicated with a business and you could have completed the same tasks, with the same if not less effort, than you could have if it was with a human. That's Conversational AI at its highest quality.

What is an Intelligent Virtual Assistant?

As advancements in Conversational AI have improved its applied technologies, virtual assistants have become a popular choice for leading enterprises to improve both customer experience and operating costs.

In today's digital age, virtual assistants are not revolutionary. Living in a world of Siris and Alexas, we've become accustomed to having technology assist us with our daily tasks. While it's inarguable that Siri and Alexa are intelligent, our virtual friends are not the same as IVAs for customer service.

So what's the difference? While the two live in the same universe, Siri, Alexa and other similar assistants are what we call 'Personal Virtual Assistants,' whereas an IVA is typically used by enterprise businesses to effectively communicate with their customer base and provide highly functional self-service.

With IVAs, customers receive both a personal and human experience. They can speak in their own words and be understood, regardless of accent and background noises, across all channels.

> **THERE'S A PROBLEM WITH MY BILL.**

> **OKAY, I CAN HELP YOU WITH YOUR BILLING ISSUE.**

In fact, the intelligence behind this technology has the capacity for understanding, processing and learning – three key elements to focus on when providing customer service. This type of customer service improves the brand experience while offering customers a means to seamlessly communicate with businesses.

For businesses, this means that customer service agents can now focus on tasks that need their unique expertise. For executives, this means significantly reducing service costs. Most importantly, IVAs are essentially future-proof. A new generation of consumers are upon us, and they expect service to be effortless and immediate – two areas where IVAs excel.

IVAs can be utilized across many different channels, including voice, chat, SMS, messaging platforms and more. This allows the IVA to influence all stages of the buyer's journey – from engaging with the brand to resolving customer service issues. More importantly, IVAs are designed to mimic human interaction in a very practical and non-intrusive way. Unlike traditional automated customer service solutions, such as Interactive Voice Response systems (IVRs), IVAs allow customers to speak naturally and in their own words rather than forcing them to choose a menu option or follow a specific path. And unlike Alexa or Siri, who can help customers with general queries, IVAs are sophisticated enough to handle brand specific queries and transactions by accessing businesses' back office systems and following their rules. This allows IVAs to understand the customers better and offer a personalized and effective customer experience, making them an extension of the brand's persona.

IT'S IMPORTANT TO RECOGNIZE...

...that an IVA and an Interactive Voice Response (IVR) are not one and the same. An IVR is a rule based system that responds to speech or touch tone. In a time of hands-free and mobile-enabled conversations, IVRs are outdated and ineffective. Alternatively, IVAs offer enterprises a far more modern approach that is cost-effective, digitally enabled and intelligent.

Also commonly confused with IVAs are chatbots. IVAs and chatbots are not synonymous. Unlike IVAs, chatbots are mainly offered over text-based channels and can perform only a limited number of tasks. Not all chatbots can comprehend natural language and dynamic intents or work across all customer service channels.

Sure, I can help you with that.

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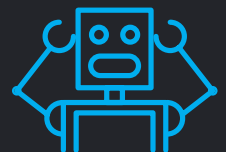
Sorry, could you repeat that?

Building the Ultimate Intelligent Virtual Assistant

Before discussing the underlying technologies that make an IVA the future of intelligent customer service, below are some of the 'must-haves' of an IVA:

CONTEXTUAL

Human interactions are influenced by context, which determines the words, phrases, and sentiments we use, and customers expect the same when interacting with an automated system. IVAs are able to understand and maintain the context of the conversation and are able to provide a personalized experience as the customer navigates through various channels.

SPEAKS THE BRAND'S LANGUAGE

IVAs need to understand the customer's intent, but should also understand certain keywords or nouns that are unique to the brand, such as product names, abbreviations or jargon. IVAs resonate with the brand's voice and automates customer service without sacrificing ownership of the brand or data.

PERSONALIZED

Customers are used to having a personalized experience everywhere they go – from their shopping experience to their customer service. Therefore, they expect companies to provide a concierge-like experience depending on their personal preferences, past interactions and demographics.

CONVERSATIONAL AND INTELLIGENT

Over the past few decades, we've made tremendous progress in speech and language technologies. An IVA allows customers to speak and interact in a way that works for them, not in a robotic and unnatural tone. Regardless of language or accent, an IVA can comprehend customer queries and respond accordingly.

OMNICHANNEL AND OMNIPRESENT

Modern customers have complete control over where, how, and when they want to interact with a brand. They often start an interaction with a brand on one channel and expect a seamless transition to other channels of service. Regardless of the time of day, customers expect the brand to be ready to answer their queries and address their issues. IVAs enable brands to handle customer service at all hours and maintain the history of customer transactions across all channels.
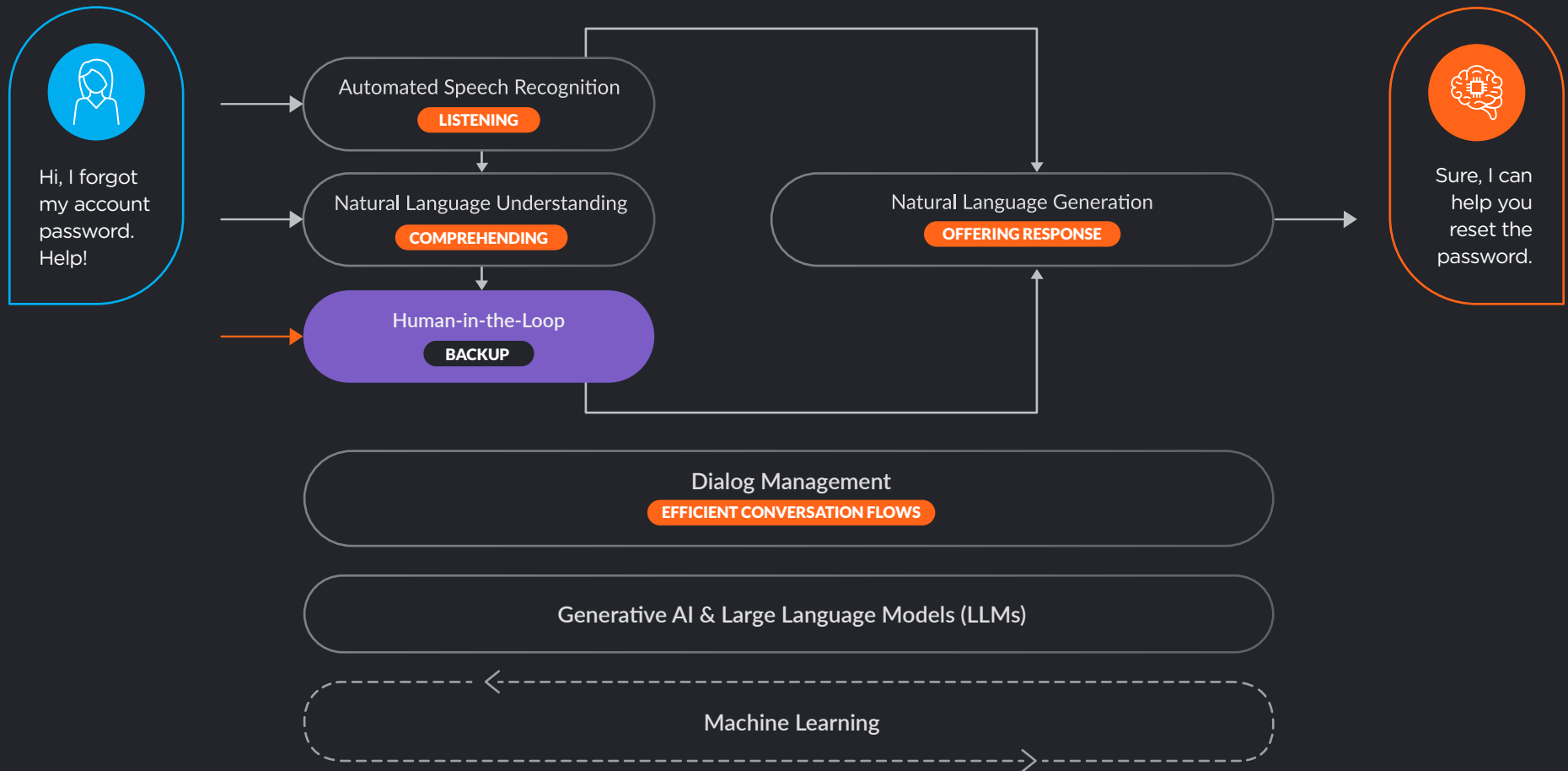
SECURE

The importance of data and identity security in today's day and age cannot be stressed enough. An IVA gives paramount importance to the security of client's private and personal data such as PII, PHI and PCI information. It employs all necessary encryption when storing the data and performs regular penetration tests and vulnerability scans.

Technologies

In order to make an efficient and accurate IVA, there are a number of technologies that it must include. Below are a few of the core technologies that help the IVA make sense of what customers are asking of them to provide truly effective self-service:

Hi, I forgot my account password. Help!

Automated Speech Recognition
LISTENING

Natural Language Understanding
COMPREHENDING

Human-in-the-Loop
BACKUP

Natural Language Generation
OFFERING RESPONSE

Sure, I can help you reset the password.

Dialog Management
EFFICIENT CONVERSATION FLOWS

Generative AI & Large Language Models (LLMs)

Machine Learning

ARTIFICIAL INTELLIGENCE (AI)

IVAs can use multiple AI technologies, including Automatic Speech Recognition (ASR), Speech-to-text (STT) and Text-to-speech (TTS), dialog management and advanced analytics to comprehend what a person is saying, process it and create a formal response. This technology allows customers to speak in their own words, rather than following a determined path.

NATURAL LANGUAGE PROCESSING (NLP)

NLP is an umbrella term which covers Natural Language Understanding (NLU), Natural Language Generation (NLG) and dialogue management. Because the human language is extremely complex, words can mean different things in different contexts. NLP enables an IVA to make sense of a customer's language, recognize his or her intent and produce a response.

GENERATIVE AI & LARGE LANGUAGE MODELS (LLMS)

Generative AI, which has started to rapidly replace traditional rules-based generation, refers to a type of AI that can generate new, unique data or content, such as text, images, music or videos. In the context of human-machine conversations, Generative AI is used to create personalized and engaging responses to user inputs, making conversations feel more natural and dynamic. LLMs are AI models, trained on very large datasets, that enable machines to understand and respond to natural language input contextually.

However, with known limitations around Generative AI & LLMs, particularly around hallucinations, enterprises are wary about directly exposing Generative AI and LLMs to end-users. Use cases are mostly centered around aiding employees (e.g., call summarization, suggested responses, etc.) and also in building IVAs, particularly in the design phase.

AUTOMATED SPEECH RECOGNITION (ASR)

ASR, one of the underlying technologies of AI, is the foundational technology that allows computers to understand spoken words. Today's ASR can be trained to understand languages, accents, and dialects, making it a crucial aspect of an IVA.

MACHINE LEARNING

Machine learning is a set of algorithms used to train a computer to perform certain tasks without being explicitly programmed. IVAs utilize machine learning and Deep Neural Networks (DNN) to learn and become more intelligent as they process more and more transactions.

HUMAN-IN-THE-LOOP

Even the latest and greatest Conversational AI technologies can struggle if a customer has a thick accent, uses uncommon language or even sneezes during an interaction. With Human-in-the-Loop technology, backend agents can see snippets of conversation and instruct the IVA on how to proceed, allowing for continued customer self-service where less sophisticated applications would need to escalate to an agent.

Solve Your Customer Service Issues with an IVA

The functionalities of an IVA go far beyond traditional customer service solutions, allowing them to solve complex customer service issues across a number of industries.

📝 COMMUNICATIONS

From internet outage support to new phone upgrades, communications providers are frequently being contacted for customer service requests so it's important to offer a seamless experience across all channels. Below are a few ways providers can simplify self-service with an IVA:

- **Service Management** - Activate devices, triage a service problem, update account settings preferences and enroll in programs and provide information without an agent
- **Billing and Collections** - Remind customers about upcoming or overdue payments, arrange and process payments, set up auto or paperless billing and provide balance information and due dates
- **Plan Management** - Enroll customers, change information, authenticate access, and provide information on promotions

💵 FINANCE AND BANKING

In the finance and banking world, it's imperative that companies put their customers' security first. With an IVA, banking and financial companies are able to offer customers a personalized banking experience that is quick, easy and available across multiple devices:

- **Fraud Alerts** - Enable authentication procedures, send proactive fraud message alerts and provide multichannel options for viewing and flagging fraud charges
- **Banking Transactions** - Request account information and balances
- **Loyalty and Rewards** - Enroll new members, replace cards and reset passwords, provide redemption options and fulfill requests

🩺 HEALTHCARE

Putting patients first is always a healthcare provider's top priority. With an IVA, medical professionals can assure that patients are at the center of the customer experience:

- **Prescriptions** - Fill new, refill and provide pharmacy location
- **Program Enrollment and Plan Selection** - Collect alphanumeric information, answer FAQs and automate new member enrollment
- **Billing and Collections** - Remind patients about near due payments, arrange and process payments, set up automatic and paperless billing and provide balance information and due dates

🛒 RETAIL AND TECHNOLOGY

Whether shopping online or in-store, customers expect a certain level of customer service. An IVA can provide shoppers with a superior experience that creates satisfaction and brand loyalty:

- **Shopping and Promotions** - Answer product or service questions, provide details on promotions and special offers and intake and process orders and payments
- **Rewards Programs** - Obtain and apply balance information, enroll in programs, replace lost cards and reset account passwords and review redemption options
- **Order Management and Returns** - Provide status updates, change or update orders, process returns and exchanges and update shipping options
- **Office Information** - Provide directions, hours, services, contact information or product information via text, email or chat

🕊 TRAVEL AND HOSPITALITY

Providing travelers with an easy and stress-free way to manage their travel plans creates a customer experience that increases customer loyalty:

- **Reservations and Booking** - Locate preferred properties, check availability and book reservations, check airline schedules and rental car rates without using an agent, securely provide payment information and confirm, change and cancel reservations
- **Logistics** - Provide property location and amenities, deliver flight status, gate and service information, provide ground transportation logistics, offer timely upgrades and promotions and respond to travel interruptions
- **Loyalty and Rewards** - Obtain loyalty program balance, request travel awards, enroll new members, replace cards, reset passwords and respond to questions
- **Concierge** - Streamline guest registration and checkout processes, handle in-room amenity requests and provide personalized recommendations for restaurants and attractions
- **Travel Alerts and Information** - Send timely and personalized alerts, enable customers to reschedule or cancel reservations, notify of changes or delays and provide information about local attractions

☂ INSURANCE

With over one-third of policyholders changing insurance providers each year, it's crucial for providers to keep their clients satisfied, and an IVA can make sure customers get things done quickly:

- **Policy Enrollment** - Collect alphanumeric information, answer questions and provide instructions to collect and submit information
- **Benefits and Eligibility** - Personalize policyholder experience with account-specific information and explain benefits, coverage dates and balances

⚡ UTILITIES

For utility companies, an IVA can increase customer satisfaction and increase contact center efficiency, while decreasing costs:

- **Start/Stop Service** - Collect information, validate move details and schedule new appointments
- **Billing and Collections** - Remind customers about near due payments, process payments, set up automatic or paperless billing and provide balance information
- **Program Enrollment** - Receive personalized offers, obtain information on cost and enrollment processes, determine program eligibility, register for programs and complete satisfaction surveys
- **Issue Reporting** - Collect outage information, enroll customers in voice or text updates, provide updates on outages and restored services, notify if repair work is needed and provide real-time ETA updates

📞 TELECOMMUNICATIONS

Skip the hangups: Give your customers easy, personalized customer service that gets it right every time.

- **Payments and Account Information**: Empower customers to make payments, see when their next bill is due and update account information
- **Outages**: Let customers report outages in their area and understand when they can expect service to return
- **Start/Stop Service** - Collect information, validate move details and schedule new appointments

The examples don't stop here.

Check out real calls here.
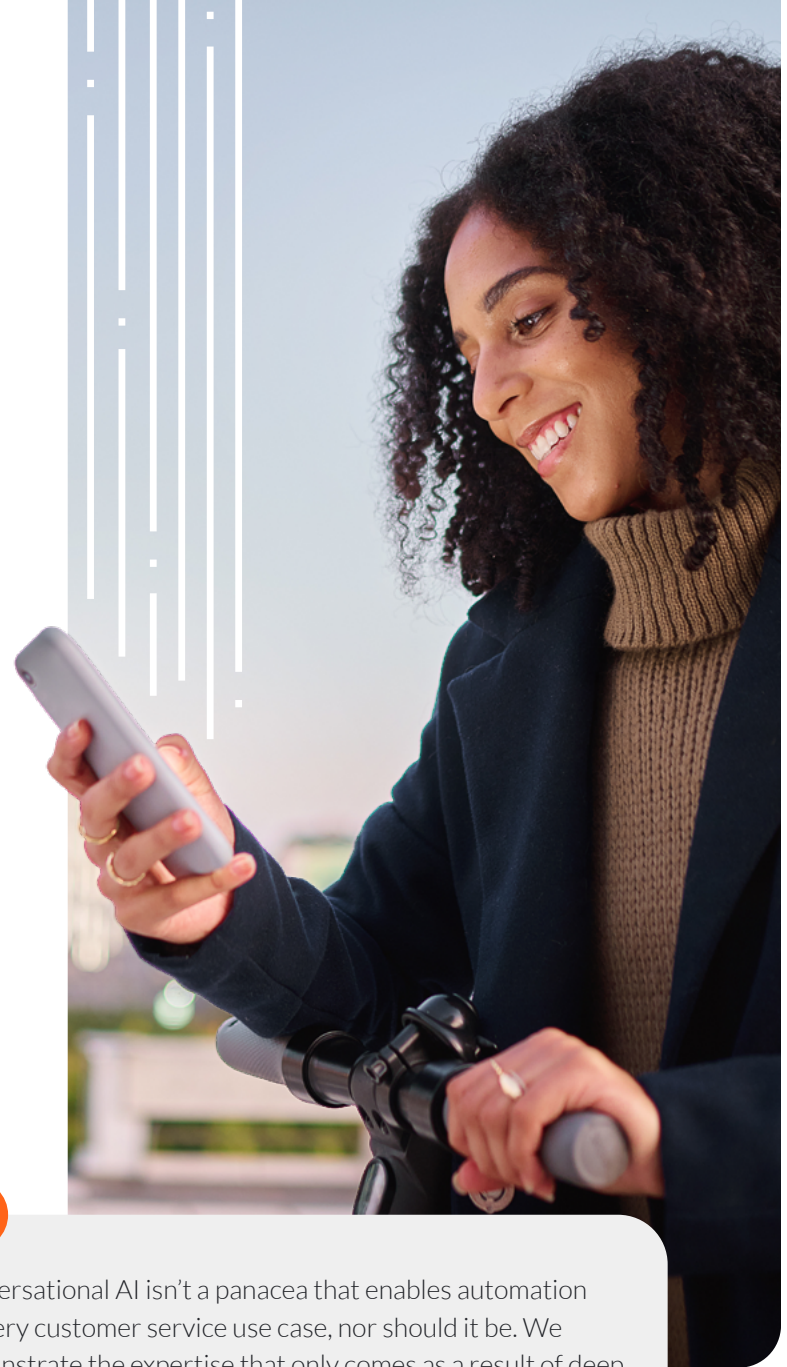
Conversational AI isn't a panacea that enables automation of every customer service use case, nor should it be. We demonstrate the expertise that only comes as a result of deep experience across multiple verticals, yielding a tremendous value to companies in their IVA implementations.

IVA Trends

IVAs will soon encompass more customer touch points and take on more complex tasks than ever before. With advancements in underlying technologies and possibilities of automating newer use cases - IVAs are set to revolutionize the customer service industry and beyond. Below are a few current and upcoming trends we expect to see from IVAs:

SELF-LEARNING

In time, IVAs will only become smarter, process more complex queries than ever and will learn on their own. IVAs will eventually be able to automate their decision-making based on user interaction and generate dynamic responses without the intervention of a human.

Generative AI & Large Language Models (LLMs)

Generative AI and Large Language Models (LLMs) represent the fastest evolving technology set, and they have had a significant impact on the development of virtual assistants.

INCREASED USE OF GENERATIVE MODELS

Generative models have been used to create more realistic and diverse synthetic data, such as text, images and speech. This enables IVAs to better understand and respond to user inputs and generate more natural and contextually appropriate responses.

FINE-TUNED DEPLOYMENT OF LLMS

LLMs, many of them open source, are being fine-tuned for various NLP tasks, including dialogue generation, question answering and sentiment analysis. These models are being deployed in IVAs to improve language understanding and response generation capabilities.

EXPANDED MULTIMODAL LANGUAGE PROCESSING

IVAs are increasingly being designed to process and generate multimodal input, such as text, speech and vision. This enables them to understand and respond to users in a more comprehensive and nuanced manner and to provide more personalized and contextually appropriate responses.

FOCUSED EXPLAINABILITY AND TRANSPARENCY

With the growing use of AI and machine learning in IVAs, there is a growing need to understand how these models work and make decisions. Explainable AI and transparent models are becoming increasingly important, as they allow developers and users to understand the reasoning behind the IVAs responses and actions.

INCREASED ETHICAL CONSIDERATIONS

As IVAs become more advanced and ubiquitous, there are growing ethical concerns around issues such as bias, privacy and accountability. Developers and researchers are working to address these concerns through techniques such as debiasing, data anonymization and transparency.

CONTINUED ADVANCEMENTS IN DEEP LEARNING

Deep learning techniques, such as reinforcement learning and transfer learning, are continuing to advance and improve the performance of IVAs. These techniques enable virtual assistants to learn from large datasets and adapt to changing user behaviors and environments.

Internet of Things (IoT)

Eventually customers would want to use a single or few selected devices to communicate with the brands they use. This will lead to IVAs working closely with countertop devices such as Amazon Echo or Google Home and Personal Virtual Assistants such as Siri. We expect to see warm handovers and information sharing between various virtual assistants.

HEAR IT IN ACTION ⊕

About Interactions

Interactions provides Intelligent Virtual Assistants that seamlessly assimilate Conversational AI and human understanding to enable businesses to engage with their customers in highly productive and satisfying conversations. With flexible products and solutions designed to meet the growing demand for unified, omnichannel customer care, Interactions is delivering unprecedented improvements in the customer experience and significant cost savings for some of the largest brands in the world. Founded in 2004, Interactions is headquartered in Franklin, Massachusetts with additional offices worldwide.

For more information about Interactions, contact us:

866.637.9049
interactions.com

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