Applied AI:
Accelerating Impact at Customer Service

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Despite the Recent Hype, AI Is Not New

For contact centers and customer service organizations, the rapid proliferation of Artificial Intelligence (AI) technologies currently making waves across the globe is presenting both unprecedented opportunities and unexpected pitfalls. It may seem as though AI has just recently exploded onto the business scene, but the enabling advancements in deep learning, neural networks, and natural language understanding have been percolating for decades now.

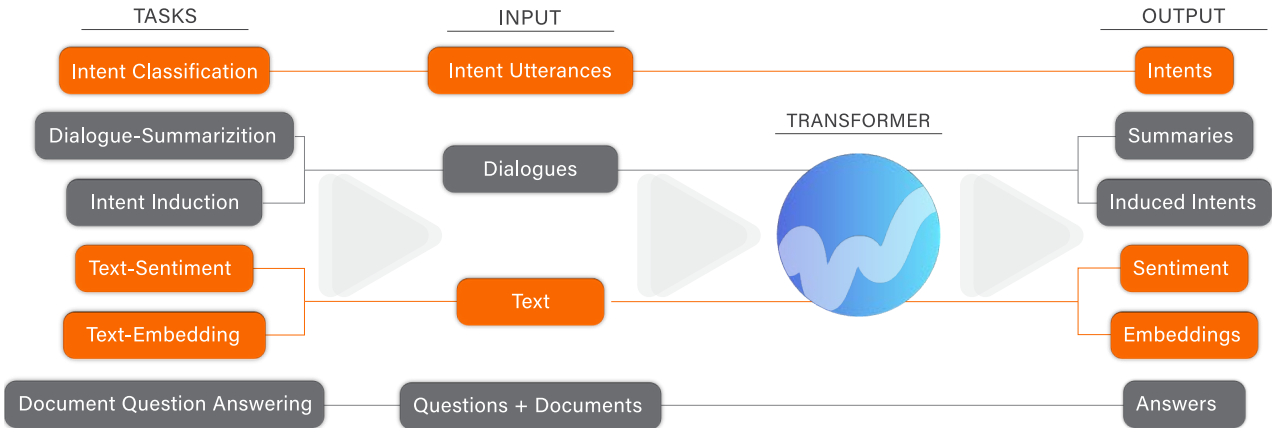
To glean the most value from AI, specifically Conversational AI, Large Language Models (LLMs), and Generative AI, organizations need to strategize an approach to embrace it head-on. This includes better understanding the fast-evolving AI platforms with potent new foundational models and bringing to light the use cases where data, AI, and technology are pushing the envelope for customer service. Ultimately, these technologies that apply natural language understanding and Conversational AI significantly improve customer experience while making operations more efficient for agents and employees.

Language Models Are Foundational to Understanding Customers

Large Language Models (LLMs) are AI models that are trained on vast amounts of text data to understand and generate human-like text. They recognize patterns, semantics, and contextual relationships within the language used in the data they ingest. They learn to predict the next word or sequence of words based on the patterns observed in their training data. This enables them to generate coherent and contextually relevant responses to queries, engage in conversation, provide information, and perform various language-related tasks.

One of the key advantages of LLMs is their ability to understand user intents and extract entities with minimal or no further training because they are pre-trained. NLP and BERT-based NLU (natural language understanding) models help reduce training time and require a minimum of resources to build Conversational AI applications. Unlike dialog models in the past that were trained on specific tasks, LLMs can quickly adapt to new contexts and user inputs, making them more versatile and agile. This adaptability is particularly valuable in dynamic customer service environments, where customer demands and queries are constantly evolving.

Figure1: Associated Tasks by LLM Models Using Customer Interactions

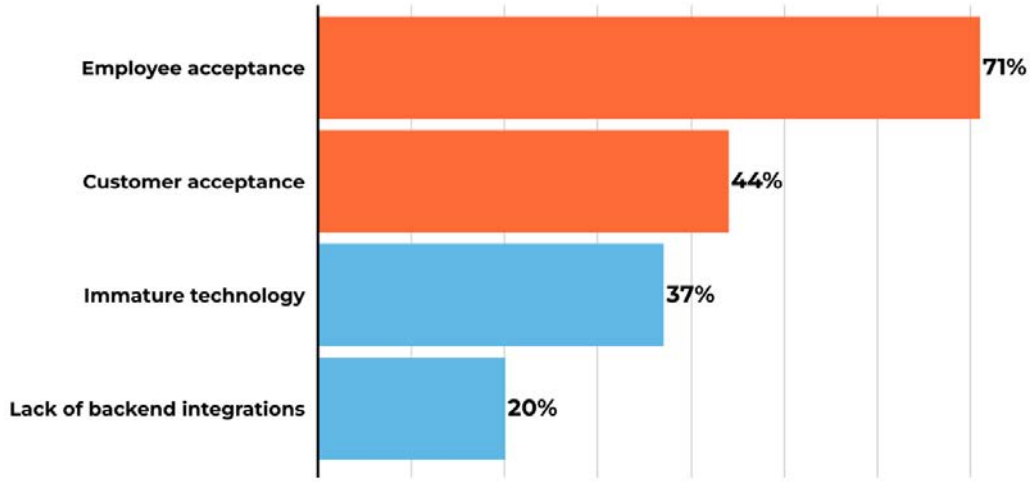


Real-World Perspectives: Survey on AI

However, obstacles remain in the adoption and implementation of AI technologies. Opus Research recently conducted a survey of 250 decision-makers in North America about the use of Conversational AI technologies and enterprise intelligent assistants.

When asked about the biggest challenges in realizing the full potential for automation and intelligent assistants, a whopping 71% of respondents pointed to employee acceptance of Conversational AI and bots as a significant obstacle.

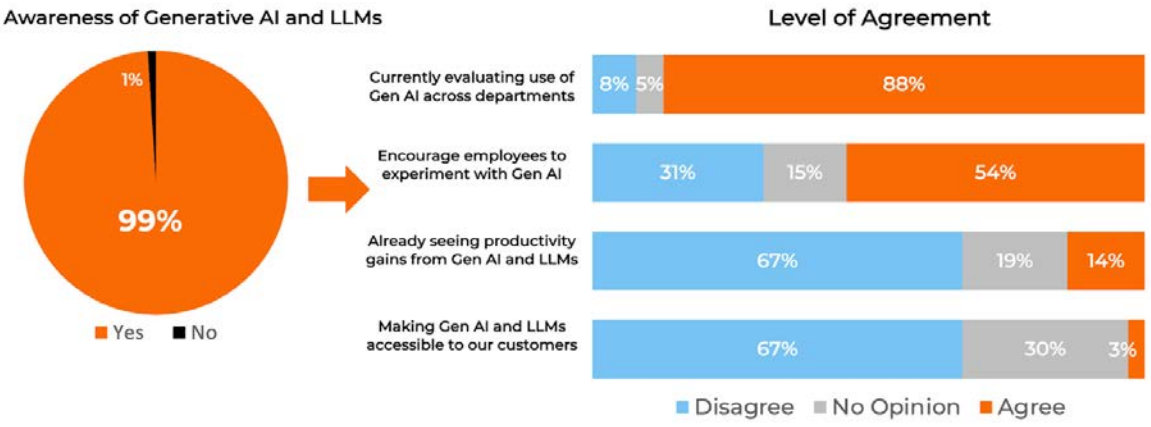
Figure 2: Biggest Obstacles in Realizing the Full Value of AI and Bots



The reluctance among employees is understandable as these new systems are introduced into business workflows. There is a considerable ramp-up time to realize the potential value of Conversational AI, and indeed automation raises fear of employees losing their jobs.

Another data point from the Opus Research survey illustrates how early we are in adopting AI technologies. In Figure 3 below, respondents showed a comprehensive awareness of Generative AI and LLMs (99%), but only a very small number of respondents (3%) are making these technologies available to customers.

Figure 3: Current State of Evaluating Uses for Generative AI



"While there is no need to rip out existing solutions, it is important for organizations to begin quickly evaluating and understanding LLMs to future-proof or transform them as generative AI technologies evolve and eventually replace older, less flexible models."

LLM Breakthroughs Present New Opportunities...and Pitfalls

Indeed, several concerns are associated with LLM implementation in contact centers and other operations. These include:

- **Generic LLMs Lack Specialized Expertise:** Generic LLMs may struggle in situations requiring specialized industry expertise or company-specific knowledge. This limitation makes them less suitable for creating bots or addressing enterprise-specific challenges.
- **Resistance from Employees and Customers:** As noted above, employee reluctance can be a challenge, but businesses may also face resistance or skepticism from customers who prefer human interaction.
- **Data Privacy, Security, and Compliance:** Training material for LLMs often contains personal information. Ensuring data privacy, security, and compliance with industry regulations, such as GDPR or HIPAA, is crucial when implementing Gen AI solutions in contact centers.
- **Complex Conversations:** Complex conversations involving context, sentiment, and intent can be challenging for Gen AI solutions to understand and interpret accurately. LLMs may struggle to interpret or generate responses based on visual or auditory inputs, limiting their effectiveness in scenarios where multimodal communication is crucial.
- **Changing Behavior of LLMs:** Although updates are required to enhance since LLMs are black boxes, updates in LLMs may result in different responses to predetermined prompts. These unexpected changes require a certain amount of testing and redesign effort.

It is essential to recognize that LLMs and AI need not replace existing systems (or employees) entirely. Rather, they can complement and enhance the performance of older NLU systems (including those that power existing chatbots, voice bots, or speech-enabled IVRs) when it comes to intent detection. By combining the strengths of traditional models with the versatility of LLMs, companies can create more robust and accurate conversational agents.

Start Testing with Experienced Vendors

Today, many organizations are finding opportunities to implement foundational forms of AI in use cases for self-service and virtual agents, conversational analytics, and intelligent customer authentication. Adopting a systematic approach and working with vendors and solution partners who have proven experience in analytics and in-house proprietary technologies can help customer care organizations leapfrog their competitors and maximize the full benefits of AI.

Domain-ready Virtual Agents

Developing a virtual assistant or chatbot for customer contact centers has typically been a laborious, manual process. Conversation designers had to identify and define all possible intents explicitly, followed by extensive training in an NLU system using a set of sample utterances. Additionally, entities had to be defined and explicitly included in the language model to handle different user inputs effectively.

Now, virtual assistants can be directed to carry out specific tasks simply by controlling them through natural language prompts. This enables superior self-service to offer real-time customer assistance, addressing customer queries as they occur and improving customer satisfaction.

Knovvu Virtual Agent, developed by SESTEK, is an example of a virtual assistant that leverages advanced NLU technologies. It trains faster and serves with more consistent, faster NLP and BERT-based NLU, resulting in shorter training time and fewer resources. Key features include:

- **Text normalization:** Cleans interaction data for more effective communication.
- **Named entity recognition:** Automates translation data with customizable entities for seamless CRM integration.
- **Sentiment analysis:** Analyzes both customer-agent and customer-bot interactions based on sentiment.
- **Multilanguage SR & NLU models:** Adds ability to recognize, understand, and operate on multiple languages to the projects with expertise in both voice and text processing technologies.

Topic Categorization and Sentiment Analysis

In the context of conversational analytics, LLMs can be used for AI topic discovery and speech analytics. Topic categorization uses AI algorithms to instantly categorize support requests by topic, urgency, language, and sentiment. This helps contact centers prioritize and route customer inquiries more effectively, ensuring that agents can address customer concerns promptly and accurately.

AI-powered proprietary technology that automatically categorizes customer interactions without prior guidance leverages summarization as a pre-processing step, helping to find relevant items and enabling better clustering. This technology helps organizations generate reasonable responses to off-path questions or novel scenarios. Unlike rigid rules-based systems, LLMs can produce contextually appropriate answers even when faced with unfamiliar queries, minimizing the likelihood of frustrating interactions and enhancing the overall customer experience.

SESTEK applies analytic capabilities for sentiment analysis. This technology measures customer emotions in real-time, speaker diarization, and language detection. Sentiment analysis enables organizations to gauge customer emotions and respond with empathy, leading to more personalized and engaging interactions.

Biometrics: The Future of Security

Biometric authentication, which uses unique physical or behavioral characteristics to verify a customer's identity, also leverages AI technology. Another voice solution from SESTEK, Knovvu Biometrics, identifies callers using more than 100 unique parameters of their voice. Specific features include:

- **Caller Verification:** Employing advanced Deep Neural Network (DNN) algorithms to compare a caller's voice with the voice stored in the verification database to authenticate callers within seconds. Additionally, the blacklist identification feature crosschecks caller voiceprints with a blacklist database, enhancing security measures against fraud.
- **Deepfake Detection:** With the rise of AI-generated synthetic voices, deepfake detection has become a crucial aspect of biometric authentication. Knovvu Biometrics is designed to identify synthetic voices generated by AI technology, ensuring that only genuine live voices are used for authentication.

State-of-the-art DNN models can securely authorize customers within seconds, reducing call durations and enhancing the overall customer experience. Also, biometric authentication is language, accent, and content-independent, making it a versatile solution for businesses across various industries.

Let's look at some real-world where AI made tangible differences in customer service efficiency.

Case Study 1:
Insurance Giant Increases Call Quality with Analytics

Using SESTEK's Speech Analytics, one global insurance company started to monitor and evaluate 100% of customer-agent interactions at its contact center. Using the root cause analysis feature, they were able to pinpoint granular differences between top-performing agents and others. Designing customized training according to the insights provided by the solution enabled the company to improve the call quality by 23% and increase tele-sales by 48%.

Case Study 2:
Global Bank Slices Call Durations Using Biometrics

One global bank aimed to simplify the authorization process for its customers by calling the contact center for financial transactions. Achieving this goal was challenging since the company did not want to compromise its security measures and protocols. Using SESTEK's biometrics, the bank improved security processes, authorized customers using their voices, and decreased call durations requiring authentication by 19 seconds.

Case Study 3:
Largest Airport Serves Travelers Better and Faster

With passenger capacity close to 100 million, one of the largest global airports collaborated with SESTEK to offer the same experience at every customer service channel. They were searching for an intelligent solution to automate customer replies and reduce the workload of customer service employees. A virtual agent was deployed on the website, mobile app, WhatsApp, and IVR channel, and this virtual agent managed to respond to monthly 100K customer inquiries without the need for live agents.

"No stranger to LLMs, SESTEK can help match solutions with ready-made, use-case-driven implementations, taking care of complexities and proving tremendous business value."

Conclusion: Proven Success from Proven Technologies

In these fast-evolving times, organizations demand flexibility and multiple paths to success. Vendors like SESTEK can deliver proven use cases supported by a single suite of technologies by melding authentication, automation, and analysis. It provides a single set of solutions that are very modular with an easy-to-understand topology.

The newly hyped technologies may sound disruptive, but they are more accurately seen as transformational tech that can help companies leverage previous investments in personnel, applications, and specialized dialog models. Enterprises have no need to start from scratch to embrace the new AI paradigms and incorporate them into the workflows of customers, contact center agents, or all employees.

About SESTEK

SESTEK is an R&D company helping organizations with AI and Analytics solutions to be data-driven, increase efficiency and deliver better experiences for their customers. SESTEK's AI-powered solutions rely on its patented text-to-speech, speech recognition, natural language processing and voice biometrics technologies. Founded by Prof. Levent Arslan in 2000, SESTEK brings more than 2 decades of expertise in the customer service vertical.

About Opus Research

Opus Research is a diversified advisory and analysis firm providing critical insight on software and services that support multimodal customer care. Opus Research is focused on "Conversational Commerce," the merging of intelligent assistant technologies, conversational intelligence, intelligent authentication, enterprise collaboration and digital commerce.

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