Keith Kirkpatrick

# AI in Contact Centers

*Artificial intelligence technologies are being deployed to improve the customer service experience.*

CUSTOMER CONTACT CENTERS are most efficient when they are able to automate routine tasks and quickly route callers to human agents who can solve issues in a timely and courteous fashion. In years past, rules-based decision matrices (such as "press 1 for sales, press 2 for technical support") were the de facto standard for "intelligent" customer service systems, and often left customers frustrated and angry by the time they reached a live human being.

Advances in artificial intelligence are yielding significant benefits for organizations that deploy the technology in their call centers. Indeed, rather than simply being used to replace contact center workers, artificial intelligence (AI)-based technologies, including machine learning, natural language processing, and even sentiment analysis, are being strategically deployed to improve the overall customer experience by providing functionality that would be too time-consuming or expensive to do manually.

"It's a lot more prevalent than people think," explains Justin Robbins, content director for the International Customer Management Institute and HDI. He cites the example of cross-language email support that is made more seamless by the integration of natural language processing.

"You may be speaking German, but when it comes to me as an agent, I read it in English that is fully contextual, and when I reply in English, thanks to natural language processing, it is returned to you in German, and it's back in your natural language, in context," Robbins says, discussing the technology that is currently available and deployed in some international contact centers via their text-based chat applications. "To the customer, it has no impact on your experience, but we as agents, it now allows me to help you without the frustration of language barriers."



### Adoption Driven by Customer Expectations

Perhaps the biggest driver of AI in customer contact centers is the consumer acceptance of AI technology in devices such as Apple's Siri, Amazon's Alexa, and Google's Home Assistant, which have conditioned consumers to be able to ask a question in a conversational, natural tone, and have the answer returned to them quickly. That has conditioned consumers to demand the same level of interaction when dealing with the customer care division of the companies and brands with which they interact on a regular basis.

"There's a set of evolutions in consumer behavior," says Alex George, chief technology officer of Astute Solutions, a provider of call center technology to businesses such as McDonald's Corp., British Airways, L'Oreal, and Dunkin' Donuts. "We see that people are trying to achieve more in short conversations."

Astute Solutions uses artificial intelligence technology in a few distinct ways. The company uses AI "bots" to handle routine tasks by utilizing natural language processing to interpret what customers are asking, search the business knowledge base system for an answer, and then interpreting this raw data into an intelligent, human-friendly response.

For example, according to George, "80% of the calls an airline receives to change a ticket do not result in the ticket changing," because the person may not efficiently be made aware of all of the terms and conditions involved, such as change fees or scheduling issues. The AI system can quickly provide this pertinent and relevant information to the caller, without engaging the services of a live agent. "By using bots, customer call volume can be reduced [significantly]."

Indeed, AI is being used by customer contact centers as a contextual knowledge management system. "Some of the work we do is around specifically making sure that customers and contact center agents have the right information in real time," George says, which allows them to serve customers with the information they need immediately, eliminating the need to escalate an issue to a specialist or manager.

Astute Solutions also uses machine learning to track the behavior of its agents, so the system can learn the most appropriate responses to questions, for use in its automated bots and to train other agents. The company using the system can specify thresholds for what constitutes a successful behavior—such as requiring that 80% of agents must recommend a specific course of action in order for the system to recognize that action as the "ideal" response, and can set the appropriate learning period, reviewing interactions over the past day, week, month, or other time frame.

### Multi-Channel Support

Artificial intelligence can do more than simply recognize patterns in call center interactions. Andrew Burgess, a strategic advisor at Celaton, a U.K.-based provider of machine learning technology to contact centers, says that when deployed correctly, AI can provide enhanced service across a variety of platforms, which is how today's customers demand to engage with companies.

For example, Celaton's inSTREAM platform allows many routine information requests, which often come in via email, to be automatically handled by an intelligent 'bot' that assesses the nature of the request, and then routes the query to the proper second-level live agent, rather than relying on costly front-line service agents.

"The best example we have at the moment is with one of our clients, a train operating company," Burgess says. "A lot of people email them, and they may be complimenting, complaining, or querying something. For example, the customer could be emailing in because they were on the 8:56 from London to Manchester and the Wi-Fi was out."

Burgess highlights the power of machine learning and natural language processing to quickly process front-end requests, which often make up a significant amount of call volume and labor costs. "inSTREAM essentially reads that email, understands what the customer is asking, and then will categorize that email and send it to the right person in the organization," he says.

"It's really taking that front-end input, understanding what the problem is, and then finding the best person to [handle] it," Burgess says. The technology has "reduced the requirement for labor by 85% on that task."

AI technologies such as machine learning can also be used to help customer service agents in their real-time phone interactions with customers. One of the ways AI has been used is to monitor and analyze speech patterns and inflections of callers, as well as reviewing specific words, to determine when an interaction may be in danger of escalating. Indeed, "sentiment analysis," where a system will detect changes in tone, speech patterns, or volume, can often be useful not only in addressing a situation in real time that needs to be escalated to a manager, it can also be used as a training aid so agents can learn to better recognize signs of stress or anger during an interaction. It can also suggest ways for an agent to reduce the stress level of a conversation.

**Challenges with AI**
Despite the ability of AI to improve customer experiences, many call centers and organizations have not yet adopted the technology.

One issue slowing the proliferation of AI in customer contact centers is "the work and effort that's required to program on the back end ... it's not fine-tuned out of the box."

"Cost is the upfront issue," Robbins says, noting the initial implementation of new technology can be a barrier for an organization that has already made substantial investments into existing technology and agents. However, "the hidden one, which [companies that want to deploy AI-based customer service] don't realize until they start talking to people, is the work and effort that's required to program on the back end. That's the other thing about analytics and AI—it's not fine-tuned out of the box."

The sheer number of possible phrases, words, and interactions does make it more challenging to automate the customer service experience, though with machine learning technology that can review thousands or millions of interactions, organizations can tailor responses based on its learnings.

"The other area where inSTREAM has additional capability is it will suggest possible answers," Burgess says, noting that Celaton's machine learning technology can review thousands of possible answers to a particular question, and then filter and return three or four choices that best address the question.

"It makes the whole process much more efficient," Burgess says. "It's the ability to extract meaningful, structured data from unstructured input," like text or email messages sent by customers.

Nevertheless, ICMI's Robbins notes most of the systems currently available—even those that feature some degree of machine learning—still require a significant amount of training and programming to incorporate organization-specific terminology and processes. Even similar types of companies may not use the same words or phrases to refer to similar tasks, and it's up to the organization to customize the system for their needs, which can be a costly and time-consuming process.

"When [customer service] is done well, you still need live agents," Robbins says, noting that customer service features far more variability than other industries that have been successfully automated, such as automobile production.

"With production, to make a car it's the same process, the parts all need to come out the same, and programming the machines is always the same," Robbins says. "With this industry, humans aren't the same—they're highly volatile. The programming for [contact centers] varies; the language isn't always logical. That's where it gets more complicated."

That said, researchers are still encouraged by the progress being made in this area, and expect advances to continue.

"The amazing pace of technical innovation in the speech-to-text and text analysis area has lured researchers from diverse areas to work in fun and productive teams," says Mei Kobayashi, manager, Data Science/Text Analysis, for NTT Communications, formerly of IBM Research Japan. "There has never been a more exciting time to be working in this area." C

**Further Reading**

White Paper: How are Artificial Intelligence & Virtual Assistance Changing the Contact Center?:
https://www.callcentrehelper.com/report.php?id=185

Let's Chat: 4 Limitations of Automated Agents in the Contact Center:
http://www.bitpipe.com/detail/RES/1483926562_479.html

Video-IPSoft's Amelia:
https://www.youtube.com/watch?v=KgSw8ckG7Jo

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