Is Government Ready for AI?

Tod Newcombe | July 1, 2018

When the 2008 Summer Olympics were about to open in Beijing, China, government authorities grew increasingly concerned about the city's notorious pollution problem. Rather than risk the health of athletes and guests at the games, dozens of nearby factories were ordered closed and driving restrictions reduced traffic by 90 percent, according to state news reports. While the moves were considered radical and impacted the region's economy, the Beijing government felt it had little choice.

Today, Beijing is saturated with sensors that can measure CO_2 content and other pollutants. Data from the sensors is now combined with information from the city's weather service and run through algorithms developed by IBM's Almaden Laboratory in Silicon Valley that help to predict whether or not the city is going to be impacted by high levels of pollution. Based on the findings, authorities can select which factories need to shut down if they want to reduce the chances of high pollution by 50 percent, before the problem emerges.

The technology behind all this is artificial intelligence. By collecting an enormous amount of data and combining it with historical data on weather patterns, the city can predict just how bad pollution will be and then modestly dial back the industrial sector and traffic, rather than shut down the entire city, which is what happened in 2008.

"This is a practical way of using AI to mitigate a problem, minimize the impact on the economy and reduce pollution overall," said Jeff Welser, vice president and director of the Almaden Laboratory.

Thriving on lots of data

If you're looking for a single word that sums up the status of artificial intelligence today, it could be "practical." While the general public might get excited or alarmed by the concept of computers that can see, hear and speak, government has become quite bullish on real-world applications of AI that can find ways to improve the environment, make public spaces safer and, most importantly, strip out the mundane, manual work that clogs up government operations.

This era of practical AI has already taken root in the private sector. In a special report, *The Economist* showcased how AI technology will reshape traditional business functions, such as supply chain, finance, human resources and customer service. For example, companies will use AI to predict when equipment might fail or when a client is going to pay late. Already, 30 percent of companies now have standalone bots that can answer questions and solve problems. In HR, companies are building systems that can predict which job candidates are worth interviewing and can virtually screen candidates to increase diversity in hiring.

These are just some of the examples of what experts define as narrow AI, in which machine learning, neural networks and predictive analytics produce an output that is well understood. " Narrow AI is about intelligent automation of processes that have too much manual intervention, as well as questions that require decisions that can be off-loaded to the computer," said Rick Howard, vice president of research at Gartner.

AI thrives on data. Lots of it. Until recently, trying to store and process that data was a costly endeavor for any organization. But there's been a precipitous drop in storage and computer costs, according to Benjamin Cheatham, a senior partner with McKinsey and Company. "Those costs were a huge barrier to AI adoption," he said. "Now, we're inundated with data, but storing and processing it no longer costs so much. The result? AI adoption has picked up rapidly."

But, so far, the adoption of AI in state and local government follows the same arc of adoption as technology in general: It's happening at a much slower pace and smaller scale when compared to the private sector. "About 20 percent of our survey respondents in government — CIOs — are actively experimenting or have made investments in AI," said Howard. "But compare that to a rate of 50 percent among what Gartner calls top performers in other industries."

Howard said that government should benchmark its adoption and deployment of AI against similar industries in the private sector, such as finance, banking and other financial services. But when you look at the top performers in those fields, 15 percent have made significant investments and have deployed scalable applications versus just 2 percent in government. That shows you how big the gap is, and more importantly, how much quicker government needs to move with AI, said Howard.

Conversing with government

Despite what have been modest efforts to use AI in states and localities, the desire to try AI is strong and experimentations have become increasingly useful. Nowhere has this been more evident than with conversational AI. "A lot of governments are starting with chatbots," said Kim Nelson, executive director of state and local government solutions at Microsoft. "It's one of the emerging areas where AI will have an impact in state and local government, and it's where they are experimenting to get comfortable."

Nelson reeled off a series of examples, mostly having to do with bots that provide support by answering routine questions, such as registering a business. But then she mentioned how the San Diego County Sheriff has launched a bot that helps deputies get crucial information while they are in their cruiser. Typically, deputies call their dispatcher to run a license plate number or to get a profile check on a possible suspect. "It can take up to 30 minutes for that information to get back to the deputy in the cruiser," she said.

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Bots are probably the most recognizable form of AI in government. For now, they tend to be used in very narrow applications, answering simple and routine questions. But their value increases as they listen to more conversations, hear more questions, learn from them and provide feedback that can improve customer service.

Jeff Gallino is the founder and chief technical officer of CallMiner, an AI software company. "We listen to phone calls," he said. "We take every word spoken, how it was spoken, put it into a database and mine that for insight."

Those insights include whether or not a customer was satisfied, whether there might be a risk in the conversation and other outcomes, such as the ability to pay a bill. Over time, the algorithms that CallMiner has developed can improve the efficiencies of call center agents manyfold, saving companies millions of dollars.

But Gallino sees a real opportunity to use this special form of AI as a way to improve customer service in government, particularly 311 call centers. Gallino calls 311 an "inbound" form of phone service. The public calls 311 to get answers to questions, to request a service or to complain about a problem. By collecting all types of calls into a database and then building a machine learning system, local governments could start to predict who is calling — based on whether the call is from a mobile phone or a landline — whether the person has called before and the history of their previous calls. By mining that information, AI can route particular callers to specific agents who would be able to answer their query or complaint more quickly and with more accuracy.

Gallino refers to this as call deflection and when done right, it can quickly increase caller satisfaction.

As Gallino and other AI experts point out, the value in the technology right now is in its ability to sift through vast amounts of data, find certain anomalies or patterns that would take humans far too long to notice, and then use alerts or nudges to get agents to ask more pertinent questions, or trigger the bot to provide a more targeted and accurate answer. When those nudges, alerts and intelligent responses are spread across the vast number of government service centers — from municipal 311 systems to Medicaid eligibility programs — the efficiencies begin to have an outsized impact on operations, not to mention a surge in constituent satisfaction.

Augment, not replace

Gallino envisions a point in the near future where bots will answer a growing number of the calls, queries and complaints on 311 calls, and predicts that bots could also siphon off some of the initial questions that may happen on a 911 call before handing it over to a live dispatcher. But the technology isn't quite there yet.

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"Getting to that natural kind of conversation, where a bot can replicate how a caller and agent go back and forth to understand a problem, is an active part of research," he said.

Welser points to other challenges that can arise as the use of AI spreads. One issue is developing a better understanding of where certain correlations are coming from. It's one thing to have correlations that might help predict future air pollution patterns, but it's quite another when it comes to decision-making that affects health and safety or some other important public policy.

"AI should augment what a person is doing, not replace them," he said. That means the human expert who is making a decision based on AI needs to understand where the sources of data came from, where the outcome came from and the reasons the system came up with a particular recommendation or connection.

Keeping bias out of AI results is another ongoing challenge. Almaden Labs spends a lot of time figuring out how to make sure unintentional bias hasn't been built into an AI system. But Welser admits the problem won't be easy to fix.

State and local governments face their own particular barriers to deploying AI, beyond the fundamental challenges with AI itself. Not surprisingly, the historically low levels of IT investment in the public sector have slowed the introduction of AI in government. "If you look at the technology stack in state and local government, it's very antiquated," said McKinsey's Cheatham. "The fundamental technology infrastructure hasn't been upgraded at the rate found in the private sector."

Cheatham also points to the lack of data scientists in the public sector as another reason AI is spreading so slowly. Without the knowledge or expertise to craft AI solutions, state and local governments will be heavily dependent on others to figure out the best way to use AI. Then there is just the public's leeriness about AI. "What does it mean to have algorithms supporting public policy and decision-making?" he asked. As a result, government will need to be far more transparent than the private sector when it comes to adopting and using AI.

Mind the technology gap

In a bullish report on potential uses of AI in government, published in 2017, Deloitte Insights predicted that, with adequate investment and support, "AI could free up 30 percent of government workforce's time within five to seven years. Just as digital spreadsheets transformed finance departments, AI is expected to make routine, back-office work more efficient," reported *The Economist*.

That kind of efficiency is expected to ripple throughout state and local government. "There is a huge value potential for government customers that use AI," said Microsoft's Nelson. She points to the enormous possibilities to curtail fraud, waste and abuse using AI. " There's two trillion dollars spent annually by government. Imagine the potential to save on fraud and waste using cognitive services."

The best way to get started with AI is by identifying the major pain points in a program that is amenable to AI, according to Welser. "Second, you want to make sure there's enough data in that program to train a system effectively."

The good news for state and local government is that if they have a good candidate for AI and they have the data, there are now a number of pre-developed, cognitive programs out there that can help launch a productive application. The vendor community is increasingly turning its attention to the government market, as far as AI is concerned.

To be strategic about AI's future role in government, Gartner's Howard suggests that states and localities focus on how they can become more conversational with a greater percentage of citizens. " It's all about becoming more intelligent," he said.

Given that citizens are already used to interacting with AI in the commercial space and have come to expect to use a digital assistant, bot or some type of intelligent service, it's important that government not fall too far behind with AI.

"If you let the technology gap window grow more than 30 months, you are not doing anything to increase the trust and confidence in public institutions," said Howard. "There is a digital urgency today; time is not your friend."

http://www.govtech.com/products/Is-Government-Ready-for-AI.html