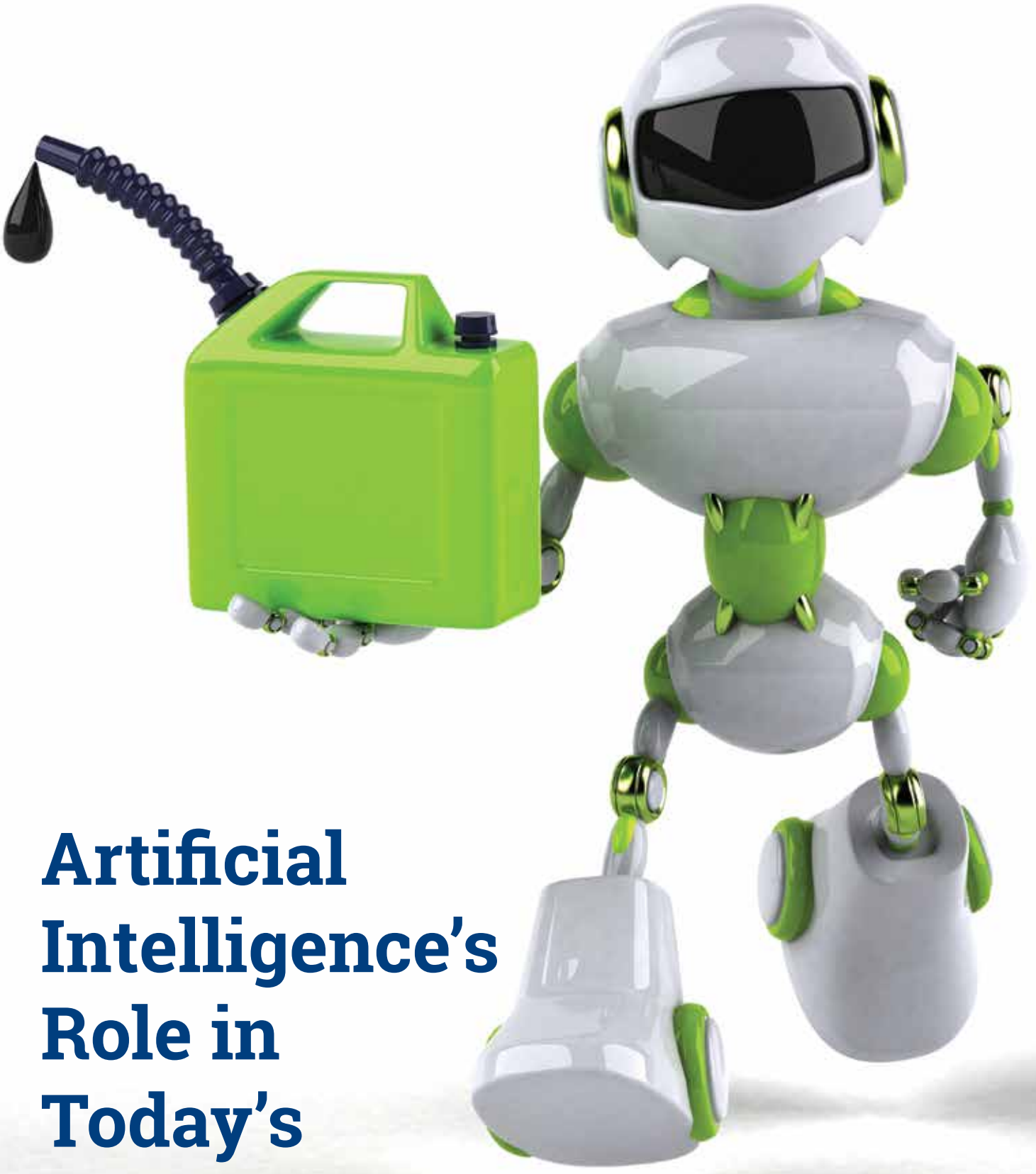

Artificial Intelligence's Role in Today's Gasoline Industry

BY MAURA KELLER

ChatGPT. Generative artificial intelligence (AI). Machine learning. These are just some of the terms surrounding the artificial intelligence landscape that is capturing the attention of c-suite executives across many industries and the gasoline marketing industry is no exception.

Rick Bentley is the CEO of Cloudastructure, an award-winning AI surveillance and remote guarding platform. He was previously a senior advisor to Google as well as the CEO of Televoke, which he sold to Uber. He's worked in AI since 2016.

According to Bentley, generative AI (GAI) is a type of artificial intelligence technology that can produce various types of content, including text, audio, imagery, and synthetic data. Bentley says that while everyone's talking about GAI text bots and computers drawing pictures, the single biggest impact AI is currently having on the industry is in the area of security.

"With AI video surveillance and with remote guarding, business owners can finally get proactive with their security and stop crime in real time," Bentley says. "We're seeing about 93% of theft and vandalism attempts being deterred. AI for security might be the biggest security improvement since the alarm system with police dispatch. Humans just can't watch video feeds all day, but a computer can."

As Bentley further explains, the problem is that the computers lack the subtlety to know the difference between things like dancing and fighting, whereas humans understand that naturally.

That's why Bentley suggests the best use of AI for video surveillance is to let the computer watch all the video all the time, something that would be very expensive to pay humans to do, but then hand off to humans when there is something going on that needs human judgment and intervention.

"When the humans see someone breaking into a store after hours, they can talk down to the perpetrators over a loudspeaker and/or dispatch security or police," Bentley says.

Reiko Feaver, partner at Culhane Meadows and a technology, privacy and data security attorney whose practice focuses on artificial intelligence, says that when talking about generative AI, today's companies are really in a "let's see what the possibilities are."

"They are looking into offerings but not necessarily deploying any enterprise-wide use. They may have small groups of select users trying out bespoke solutions, for example," Feaver says. "GAI is being considered as a tool for humans – helping to gather and synthesize information with phenomenal speed to create presentations, sales decks, analysis, etc. The intent is not to displace the human but to help the human process certain tasks with previously unheard of speed to focus on activities that GAI isn't (yet) highly capable of doing – analytical thinking and advice, for instance."

Indeed, any number of processes that require sifting through vast amounts of data very quickly can probably be done better by AI. This includes such things as predictive maintenance, fault detection, operational optimization, and supply chain management.

"Likewise, anything that needs to be done all the time is better done by computers than humans. This could be watching video feeds, monitoring the levels in the fuel tanks, etc.," says Bentley. Within the gasoline marketing space, GAI can find, process, and synthesize enormous amounts of data and create extrapolations from there. According to Feaver, this functionality and capability can be key to marketing campaigns and customer-specific presentations (of course, the risks relating to where the data came from and how it might be protected are real when used for these purposes).

Josh Amishav, founder and CEO at Breachsense, an organization that works with other companies on data breach monitoring, has integrated AI into a number of Breachsense's business processes.

"Within the gasoline marketing industry, AI also can be used for forecasting market trends and consumer behavior," Amishav says. "AI can also be leveraged to improve fuel supply logistics as well as increase customer engagement through personalized loyalty plans and promotions."

In Breachsense's human resources department, they rely on AI-driven tools for resume screening, employee onboarding, and personalized training programs. "This has not only reduced biases in the hiring process but increased the team's efficiency in identifying highly suitable candidates quickly," Amishav says.

Amishav suggests businesses should be utilizing AI to increase efficiency and automate tasks to help reduce human error. For example, Breachsense uses AI chatbots to handle initial customer inquiries. This has significantly reduced response times, freeing up human agents for more complex support issues.

"Businesses are embracing AI because it helps them make better use of their available resources, including human talent," Amishav says. "It also helps drive innovation in products, services, and processes."

Bentley further says that AI surveillance with remote guarding could transform security into a major asset for marketing gas stations. A full 2 to 3% of all violent crime occurs around gas stations and their convenience stores. ▶

"Customers will start to look for monitored stations because they're safer: there's facial recognition, license plate recognition, etc. If someone is in jeopardy at a monitored station, remote guards can 'voice down' the perpetrator, let them know they're being watched and recorded, and simultaneously call or send footage to law enforcement: here's what he looks like, what he's wearing, who he is with, and what direction he's heading in," Bentley says.

Ed Watal is the founder and principal of Intellibus, an IT strategy consultancy based in Reston, Virginia. He has also built and sold several technology and AI startups. According to Watal, the advent of AI is impacting all areas of the gasoline marketing industry, across upstream, midstream, and downstream – from oil exploration to fuel stations.

"Per a 2023 EY survey more than 92% of oil and gas companies are either currently investing in AI or plan to in the next two years. By 2028 the AI spend in the Oil & Gas industry will be over $4.6 B," Watal says. "These estimates are likely understated with the rapid growth of generative AI tools and proliferation across all roles in business operations."

Watal points to some key areas of AI infiltration i n the marketplace:

AI for Exploration – Companies like Shell are already leveraging the power of generative AI upstream right at oil exploration. Exploration requires collection and processing of significant seismic data. Seismic technology sends sound waves to explore subsurface areas and uses the data from the scans to create subsurface imagery. Through generative AI the same imagery can be created through a lesser number of seismic scans. This could cut down exploration costs and timeline from months to weeks if not days.

AI for Staff Safety – Biometric devices that capture real time data on the staff in hazardous locations can significantly reduce the chances of hazards and overall safety and well-being of the staff.

AI for Inventory – Improved predictive inventory management and ordering leveraging predictive analytics and forecasting. Shell's inventory analysis and prediction time reduced to 45 minutes from 48 hours.

AI for Ecology – Timely oil spill detection can significantly reduce the ecological impact of accidents involving tankers, barges, pipelines, refineries, drilling rigs, and storage facilities.

AI for Fuel Stations – Companies like ADNOC in the UAE are leveraging Computer Vision AI to create AI powered fuel pumps. These pumps can not only recognize license plates of vehicles, but also auto select the fuel type and quantity that needs to be dispensed.

"Use of AI in fuel stations is not new. Companies like BP have been leveraging machine learning and IOT devices to work in conjunction to collect sensor data from fuel stations for preventive maintenance alerting on the health of pumps," Watal says. "Artificial intelligence has seen a dramatic shift since 2022 with the advent of generative AI. The key change has been that the cognitive capabilities of AI are getting closer to how the human mind works. Generative AI continues to mature down the path with its abilities to perceive, reason, interact, learn and consequently solve problems creatively."

James Hill, president and CEO of MCF Energy, says one of the ways MCF Energy is using machine learning and AI is through the processing of seismic data and interpretation. Using available 3D and 2D seismic data, they are applying cluster analysis and pattern recognition techniques to help visualize the subsurface in ways that have not been seen before.

"This process involves breaking down the conventional seismic interpretation method — what's referred to as wavelet analysis – and looking statistically at seismic data based on sample analysis, which goes way beyond what the human eye can discern," Hill says. "We use technology to analyze and review all of this data."

This process gives MCF Energy insight into where the oil and gas in the rock really are, as opposed to making assumptions. Not only does this help reduce the risk of drilling poor wells or dry holes, but MCF Energy can calculate the volume and the types of reserves that are in the ground.

"AI can help to automate many of the activities that take place in oil fields; everything from handling fuel gauges to monitoring pipelines can benefit from AI. However, oil and gas exploration is one of those very special industries where experienced geoscientists will always be necessary," Hill says. "They are needed to interpret what the computer has generated, and in that respect, we do not see AI or machine learning replacing geoscientists. Overall, the industry is ecstatic about new advancements. The sector has grown exceptionally over the last few years, and the adoption of industry-specific technology has really accelerated economic and operational activity."

Things To Consider

GAI is a new technology for the vast majority of users; and, as Feaver explains, as with any new technology there must be safeguards and rules of use. Companies have to be aware of the risks.

"It's easy to get carried away. AI is still very young and not actually all that smart yet," Bentley says. "When it comes to making judgment calls, those should be made by a human. For instance, a video camera might be able to help detect a fire at a gas pump, but you'd want a human involved to deploy the fire extinguishers. AI can decide when it's time to order more gas, but you will want a human to make the actual purchase."

"It's also become more key to know what applicable regulatory bodies are doing. For instance, the Colorado Department of Insurance in September published final rules for a comprehensive law regulating use of AI by life insurance companies," Feaver says. "State bar associations are also rapidly publishing advisory opinions on considerations attorneys must take into account in use of AI."

Watal suggest that not incorporating AI into the business operations would surely keep a company at a competitive disadvantage due to higher costs and operational inefficiencies.

"Fuel stations that are not AI powered in the future for almost every aspect of their operation may be less favored by consumers than those that are AI powered offering the consumer a simpler faster fueling experience," Watal says. However, the impact would vary depending on who the fuel consumers are. "Fuel stations that are not pure fueling stations but more fuel retailers (a hub for mobility and convenience) are less likely to be impacted in the short term. While, those that are more for long-haul refueling with no retail element are more likely to be impacted."

Amishav says that over-reliance on AI also is a common problem. "AI needs oversight. Having a human verify the output before making sensitive decisions is a must," Amishav says.

In the near future, Feaver still sees GAI being a tool to assist humans with necessary tasks that take a tremendous amount of time but are only prerequisites to the human being able to provide its true value – independent thinking, evaluation, perspective, etc. How long or short "near" is, though, is a big question – and this moves so quickly that next week a response might be completely different.

Bentley believes that someday, AI will fully automate gas stations. Tesla already made a snake-like charging cable to charge electric cars. It hangs out on the wall and when you pull your car into the garage it snakes its way out and connects to the charging port of the vehicle.

"It's only a matter of time before a robot can open up your gas cap, insert the nozzle, select the fuel type and dispense the fuel … but not for a while," Bentley says. "Just imagine all the ways this can go wrong – "the robot fuel pump scratched my paint opening my gas flap," "the robot dispensed gas into my diesel truck," or "the robot overfilled/underfilled my tank." My great grandfather used to say 'be not the first on which the new is tried, nor the last to put the old aside.' The future will be amazing." ★