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AUTOMATED IT WEBINAR

Reaping the Rewards of AI and Machine Learning

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Reaping the Rewards of AI and Machine Learning

Government agencies are consuming more data than ever before, but turning this information into actionable insights isn't easy. Thanks to advancements in artificial intelligence (AI) and machine learning (ML), organizations are now able to create automated systems for gathering, analyzing and leveraging data to make smarter decisions. Learn how Austin Energy is reaping the benefits of these innovative technologies and what new challenges may lie in store.

IMPROVING THE POWER GRID: AI AND MACHINE LEARNING IN PRACTICE

The growing adoption of AI and ML is having a profound impact on the energy industry, especially when it comes to power distribution and outage management. Austin Energy, a department of the City of Austin, is currently in the early stages of data automation, but it has plans to expand its capabilities over the next decade. Currently, the organization provides electricity to around 1 million people in the Austin, Texas, area. But as demand increases, department heads are looking for new ways to make their operations more intelligent, efficient and resilient.

To understand how AI and ML are transforming energy management, we spoke with Greg Flay, chief technology officer at Austin Energy, and Eric Forseter, general manager. When asked about their implementation goals, the pair highlighted four objectives that are helping guide the adoption of new technologies:

- Reducing the frequency and length of power outages
- Enabling faster outage response
- Improving the customer experience
- Enhancing the resiliency and efficiency of the power grid

To achieve these goals, Austin Energy is testing out innovative use cases for AI and ML at different points in the utility supply chain. Most of the proposed applications have been suggested in the past, but bringing new capabilities to live environments requires more than a proof of concept. Here are a few ways Austin Energy is planning to integrate AI and ML into their operations:

Meter data: Historically, utilities have sent someone out to check analog meters and take down readings by hand - this process would typically yield one data point, once per month, for every customer. However, with automated metering infrastructure, Austin Energy would be able to take readings remotely once every 15 minutes, resulting in 100 data points per customer per day. This would enable more accurate demand forecasting and improve resource allocation by making the most use of customer data.

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Austin Energy is leveraging AI and ML to aggregate and analyze data from disparate sources. For example, CVR/VVO optimization has allowed the organization to put out the least amount of energy possible on transmission lines while still meeting load demands.

Power management: The amount of energy power plants generate has to match (at least closely) the amount that customers are absorbing. By integrating AI and ML capabilities, Austin Energy would be able to identify normal and abnormal patterns in customers' energy usage, which could help optimize power distribution. To further improve energy resourcing, the organization has built a distributed energy resource management optimization engine that enables real-time monitoring and balancing.

Distribution automation: Back in 2014, Austin Energy deployed an advanced distribution management system (ADMS) to help optimize load on the system. Prior to ADMS, utilities would learn about outages when customers called in to report them. Now, Austin Energy is able to detect outages and abnormal distribution patterns before customers even notice, allowing for a faster overall response. When paired with their supervisory control and data acquisition (SCADA) system, Austin Energy is able to maintain oversight and control over what's happening in the field.

CREATING AN AI/ML-DRIVEN FRAMEWORK

Beyond the above use cases, Austin Energy is leveraging AI and ML to aggregate and analyze data from disparate sources. For example, CVR/VVO optimization has allowed the organization to put out the least amount of energy possible on transmission lines while still meeting load demands. This has also improved the agency's fault location, isolation and system restoration efforts - the ability to reroute energy remotely can help mitigate the impact of power outages and other service interruptions.

Despite these advances, there are still plenty of challenges left to solve before AI and ML can be used to their full potential. Specifically, our speakers cited data availability, data access and organization, the need for centralized analysis platforms and the difficulty of creating a culture of data analytics as key barriers to wider adoption.

More than the latest tools and technologies, organizations need to focus on education and awareness to ensure their AI and ML applications deliver the desired results. Agencies must understand how different lines of business are driving significant use cases, impacting their bottom line, expanding operational intelligence and affecting customer satisfaction. Decision-makers should also take steps to empower data scientists by giving them the tools needed to solve complex problems and create a data management framework to inform new proof of concepts around AI and ML integration.