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TECHNOLOGY

Practical Uses of AI-ML in Utilities Billing and Customer Service Operations

Guest Post | DC Correspondent

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Amidst challenges like sluggish growth in commodity loads and rising maintenance expenses for aging infrastructure, companies in the energy sector are increasingly embracing AI. (Representational Image)

We are witnessing an unprecedented convergence of two trillion-dollar industries: utilities and big data. AI and ML analysis of data is revolutionizing safety, optimizing water and electricity usage, and enhancing user experience while preserving the environment. Amidst challenges like sluggish growth in commodity loads and rising maintenance expenses for aging infrastructure, companies in the energy sector are increasingly embracing AI.

A Gartner report from the 2023 CIO Agenda Insights for the Utilities Industry reveals that an impressive 96% of respondents expect AI and machine learning to become the predominant technologies in the sector by 2025.

AI can mimic human intelligence, with machine learning (ML) being a subset that utilizes algorithms to analyze extensive datasets, identify patterns, and make informed decisions or forecasts. These attributes make AI and ML indispensable components in utility bill management software. They enhance efficiency by streamlining billing operations, automating error-prone manual tasks, and providing precise revenue predictions for utility companies.

What determines the performance of utility billing services?

Before delving into how the use of AI in the energy sector can help to improve utility billing systems, let us first understand the factors that influence billing performance:

1. **Educating the customer:** A company's ability to provide information on the correct energy use affects customer satisfaction and energy conservation. It can leverage utility tracking software for real-time insights to inform customers about their consumption patterns and how they can be modified to reduce their carbon footprint while saving more on bills before arrival.
2. **Ensuring more accuracy in billing:** Utility companies are expected to model every bill component without any errors. This is done by collecting and analyzing data from smart meters and other sources across the utility network.
3. **Choosing effective communication channels:** Optimizing communication channels for invoicing and collection letters hinges on grasping customer profiles and payment trends from historical data and demographic information. By sending invoices and notifications through these channels, suppliers can enhance utility bill payment services, ensuring timely payments for a steady cash flow.
4. **Forecasting revenue:** When utility management systems software provides detailed insights on expected payments, it helps forecast revenue, and a company can optimize its cash flow position. It can also handle its accounts payable better and build long-term vendor relationships.
5. **Resource allocation for customer service:** By keeping track of customer inquiries or complaints on billing and other services, a utility company can allocate its resources where they are most needed – this helps them stay prepared to address concerns on time and avoid complex escalations.

How ML and AI for utilities support billing systems and improve other services:

Understanding AI's potential to enhance human productivity and automate operations, many energy & utility companies have invested in AI-ML to some extent or plan to do so in the next two years. [According to a survey by PwC](#), 54% of the leading organizations using the technologies believe they support financial, sales, and marketing planning, while 45% affirmed that they help them better monitor physical assets.

Here are key strategies utility and energy companies can employ to enhance billing and customer service:

Consumption Tracking: Using smart grids, AI empowers utility suppliers to anticipate electricity or water consumption. This data can be stored in their utility management software, enabling the development of dynamic pricing systems. These systems can recommend changes in usage patterns to help customers save on their bills.

Dynamic Pricing: Many countries now implement varying electricity tariffs for peak and non-peak hours. AI provides insights into household interactions with different appliances through advanced disaggregation and customer segmentation. Consequently, utility companies can offer lower-cost options to specific customer categories, reducing their bill sizes when appropriate.

Improving energy production and scheduling: To achieve this, enterprises must shift from centralized power plants to decentralized microgrids, combining various energy sources. ML and AI in the energy sector can optimize production during peak conditions, like sunny or windy periods, while predicting high energy demand times for efficient distribution across a city's industrial, institutional, and residential areas.

Finding defects and implementing predictive maintenance: Timely detection of issues in pipes, wiring, grids, and meters is essential to prevent costly repairs and safeguard brand reputation. AI and ML, combined with IoT, excel in this area. AI's image recognition capabilities process video streams, and ML's pattern recognition algorithms flag anomalies before they escalate. Engineers can then apply predictive and preventive maintenance measures based on gathered data to ensure service continuity.

Conclusion and Next Steps

Most utility companies already possess the first AI and ML deployment component: data. The next step involves identifying the best use cases, data cleaning for algorithm deployment, and reaping the benefits of a successful AI model. Rather than offering one-size-fits-all AI platforms, there is a need for tailored solutions to meet specific needs, whether it's creating feature-rich utility billing software or automating processes for smart metering and field activities reporting. The power of ML and AI for utilities must be harnessed to maximize the benefits of these use cases.

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artificial intelligence (AI)

machine intelligence

