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Ai-MicroCloud™ for Utilities: Use Cases

Tangent Works   Time Series Data Analytics

- **Energy Consumption:** Accurate energy forecasting is a crucial factor underlying utility company financial performance. They need accurate energy forecasts since extreme wholesale price volatility requires hedging against volume and price risk. It is important to determine which input variables have the highest relevance in forecasting. Examples of explanatory data variables can be historical load data in different levels of aggregation, as well as real-time weather data, calendar information, day/night, etc.

- **Active Power Loss Forecasting:** Electricity distribution is impacted by line resistance, outside temperature and switching states in the grid, potentially resulting in energy grid losses. Transmission system operators (TSOs) must compensate and manage losses as they influence balance throughout the grid. Examples of explanatory variables include historical actual loss values and relevant power grid technical information such as load and weather data.

- **Heat Consumption:** Domestic heat consumption for water heating (cooking, bathing) and space heating. Continuous monitoring and detection of anomalous values can indicate issues such as ruptured pipes, loss of system pressure, water diversion or issues with radiators or boilers.

- **Building Energy Optimization:** Buildings produce, store, and consume power, interacting with multiple suppliers – Stable (nuclear, hydro), controlled variables (coal, gas) and variable (Solar, wind). Building managers can harness AI to enable decision-making on power optimization alternatives, including drawing power, producing and uploading energy; producing and consuming energy; and producing and storing energy.

- **Data Center HVAC:** HVAC failures can lead to full shut down of critical infrastructure operations. Managers can leverage AI to forecast HVAC malfunctions, allowing for predictive maintenance interventions and to plan maintenance during off-peak hours allowing for better system balancing and saving costs.