

DESIGN FOR ENERGY CONSUMPTION

DATA COLLECTION AND PREPROCESSING:

- . Select Data Sources: Identify the sources of energy consumption data, which may include energy meters, sensors, utility bills, or building management systems.
- . Data Types: Determine the types of data you need to collect, such as electricity, gas, water usage, or other relevant parameters.
- . Data Integration: If you're collecting data from various sources or different types of energy, integrate and format it into a single dataset for analysis.
- . Feature Engineering: Create additional features or variables that may be relevant to your analysis, such as weather data, occupancy data, or production levels.

MACHINE LEARNING MODEL:

- Identify which features are most relevant for predicting energy consumption.
- Create new features or transformations that could enhance the model's performance, such as lagged variables or moving averages.

MODEL EVALUTION:

- Implement cross-validation techniques, such as k-fold cross-validation, to assess how well the model generalizes to unseen data. Cross-validation helps detect overfitting and provides more robust performance estimates.

PLATFORMS:

Data Analytics and Visualization:

- Tableau: Data visualization software that can be used to create interactive dashboards for energy consumption analysis.
- Power BI: Microsoft's business analytics service that allows you to visualize and share insights from your energy data.

DASHBOARD AND VISUALISATION:

Custom Web Development: Consider developing a custom web-based dashboard using HTML, CSS, and JavaScript for full control over design and functionality.

Commercial Energy Management Software: Some energy management software solutions, like Schneider Electric's EcoStruxure, offer built-in dashboard and visualization capabilities.

CONTINUOUS MONITORING AND IMPROVEMENTS :

1. Real-Time Data Collection: Implement real-time data collection systems using energy meters, sensors, or IoT devices to monitor energy consumption at regular intervals.

2. Benchmarking: Continually benchmark your energy consumption against industry standards or your own historical data to assess progress and identify underperforming areas.

FEATURE EXTRACTION :

- Mean: The average energy consumption over a specific time period.
- Median: The middle value of the energy consumption data, which can provide insights into central tendencies.
- Standard Deviation: Measures the degree of variation in energy consumption, indicating how spread out the data is.

Points to Remember :

Remember that effective energy consumption management requires a proactive and holistic approach, involving data collection, analysis, action, and continuous improvement. Stay committed to your energy goals and regularly assess progress to ensure ongoing success.