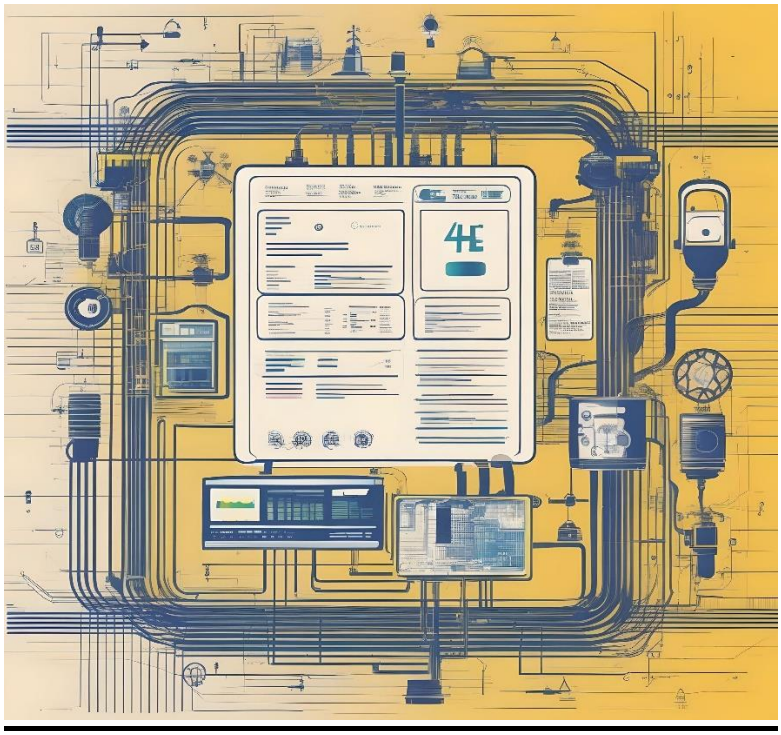
Machine Learning Unsupervised Learning-2

Group 10 Proposal

Title of the Assignment:

Electricity Bill Analysis: Time Travel Through Energy Consumption.



Problem Statement:

"Developing a Time-Traveling Electricity Bill Analysis System Through Unsupervised Machine Learning"

In this project, the goal is to create an unsupervised machine learning system that can analyse historical electricity consumption data to identify patterns, trends, and anomalies over time. We hope the system should be capable of time-traveling through energy consumption data, allowing users to explore and understand how electricity usage patterns have evolved.

Research Questions:

- ## Segmentation and Clustering:
  What clustering algorithms are most effective in grouping consumers based on their electricity usage behaviour, and how can the system adapt to changing consumption patterns over time?

- ## Anomaly Detection:
  What unsupervised anomaly detection techniques are most suitable for identifying irregularities in electricity consumption data, and how can their performance be optimized?

- ## Temporal Pattern Recognition:
  How can unsupervised machine learning algorithms effectively recognize temporal patterns in electricity consumption data at different time scales?

- ## Energy Efficiency Recommendations:
  What mechanisms can be implemented to evaluate the effectiveness of the recommendations over time, considering the evolving nature of consumer behaviour?

Implications:

If successfully addressed, these research questions could result in the creation of a sophisticated, user-friendly, and adaptable time-traveling electricity bill analysis system. This achievement would empower users with valuable insights into their energy consumption patterns, facilitating informed decision-making, fostering energy efficiency, and contributing to a more sustainable and optimized use of electricity resources.