Anomaly Detection and Fraud Prevention in Energy Billing: A Management Learning Application (MLOps)

U. Ponselvam, K. Sakthi Karuppasamy, J. Senthil Murugan, M. Vairamani, S. Vijay Anandh
UG, Department of EEE

ABSTRACT

The energy sector, particularly organizations like the Tamil Nadu Electricity Board (TNEB), faces substantial losses due to fraudulent activities within their billing systems. In response to this challenge, this project aims to develop a robust Management Learning Application (MLOps) focused on predicting and detecting anomalies in energy billing data, ultimately preventing fraudulent activities.

The project leverages cutting-edge machine learning and data analytics techniques to scrutinize historical billing data, customer behavior, and transaction patterns. By employing advanced algorithms and artificial intelligence, the application identifies unusual billing patterns that may indicate potential fraudulent activities. It also provides actionable insights for the billing team to take necessary measures.

Key features of the MLOps system include data preprocessing, feature engineering, model training, and deployment in a production environment. The application offers real-time anomaly detection capabilities and generates alerts for suspicious billing events, enabling the energy company to act swiftly.

Keywords: MLOps, electric sector, billing system.