

Application of machine learning methods for asset management on power distribution networks

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Abstract-

This study aims to study the different kinds of Machine Learning (ML) models and their working principles for asset management in power networks. Also, it investigates the challenges behind asset management and its maintenance activities. In this review article, Machine Learning (ML) models are analyzed to improve the lifespan of the electrical components based on the maintenance management and assessment planning policies. The articles are categorized according to their purpose: 1) classification, 2) machine learning, and 3) artificial intelligence mechanisms. Moreover, the importance of using ML models for proper decision making based on the asset management plan is illustrated in a detailed manner. In addition to this, a comparative analysis between the ML models is performed, identifying the advantages and disadvantages of these techniques. Then, the challenges and managing operations of the asset management strategies are discussed based on the technical and economic factors. The proper functioning, maintenance and controlling operations of the electric components are key challenging and demanding tasks in the power distribution systems. Typically, asset management plays an essential role in determining the quality and profitability of the elements in the power network. Based on this investigation, the most suitable and optimal machine learning technique can be identified and used for future work.

Index Terms- Asset Management; Power Distribution Network; Machine Learning (ML) Techniques; Power Systems; Time-Based; Activity-Based; Artificial Intelligence (AI) Models.

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