Paper Title: Research on High Performance Computing of Power System Based on Machine Learning Algorithm

Paper Link: https://ieeexplore.ieee.org/abstract/document/9148442

1 Summary:

1.1 Motivation

This paper addresses the challenges arising from the increasing complexity and scale of power grids, emphasizing the limitations of manual adjustments made by operation mode. Due to the growing complexity, adjusting the power grid operation mode becomes inefficient and erroneous. The author stated that advancements in computer technology, particularly in handling big data, offer a solution to this problem. The goal of this research is to leverage TensorFlow's architecture and machine learning algorithms to study the high-performance calculation of power grid operation modes.

1.2 Contribution

The contribution of this research is that the proposed models in this paper can lead to a smoother workflow of the “operation mode” used by advanced computer technology.

1.3 Methodology

The author implemented logistic & linear regression, and deep neural network algorithms to power grid operation mode data from PSASP software parameters.The SVM model is used for training with the data samples and DLA helps to predict power grid calculation convergence.

1.4 Conclusion

Utilizing TensorFlow architecture and machine learning algorithms, this paper investigates the high-performance calculation of power grid operation mode. Employing the parameter model of PSASP software, it presents performance evaluation indices.

2 Limitations:

2.1 First Limitation:

The Lagrange function used in this paper poses an inequality known as the Lagrangian duality problem and it also introduces another problem, which is the minimax dual problem.

2.2 Second Limitation

The data was insufficient. According to this paper, the data points are only obtained through the PSASP software, which puts a barrier in accumulating large sums of data. This can potentially lead to lower accuracy and an unoptimized system.

3 Synthesis:

The data model in this research paper can be utilized to further optimize the functionalities of operation mode which can deliver better power distribution to the high computational needs of advanced systems.