

Can a probabilistic neural network optimize of PNN?

In this paper, a fault diagnosis method for power transformer is proposed using probabilistic neural network and bat algorithm to optimize uncertain parameter smooth factor ( $\sigma$ ) of PNN. In the proposed approach, BA can enhance the global convergence of network when optimizing PNN and outperformed other optimization algorithms.

Is PNN a good radial basis function feedforward neural network?

PNN is a radial basis function feedforward neural network based on Bayesian decision theory, which has a strong fault tolerance and significant advantages in pattern classification. However, one challenge still remains: the performance of PNN is greatly affected by its hidden layer element smooth factor which impacts the classification performance.

Can BA improve the global convergence of network when optimizing PNN?

In the proposed approach, BA can enhance the global convergence of network when optimizing PNN and outperformed other optimization algorithms. We conducted the experiments using the collected fault data from a practical transformer system to evaluate the performance of the developed models.

Is L-pnpu energy-efficient 3D PNN segmentation processor based on lidar?

Therefore, the entire system, from sensing to processing, must be taken into account for 3D PNN processor implementation. This paper proposes L-PNPU, an energy-efficient 3D PNN segmentation processor optimized with the unique mechanical characteristics of LiDAR.

Can artificial neural networks improve power transformer fault diagnosis?

Particularly, the application of artificial neural networks (ANN) „makes progressively the power transformer fault diagnosis more efficient and effective. However, there still reminds some challenges while developing ANN for domain applications, including local minimum and over-fitting .

How efficient is L-pnpu at 250 MHz and 1.0V?

At 250 MHz and 1.0V, L-PNPU achieves 1.27M points/s of throughput and 0.51 mJ/point of energy efficiency. Y. Guo, H. Wang, Q. Hu, H. Liu, L. Liu and M. Bennamoun. 2021.

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For example, during power system switching, the transformer becomes susceptible to overvoltage generated within the system. Before a fault occurs, the power system is protected by measures such as instantaneous overcurrent protection and overcurrent protection (Florkowski et al., 2010). During the fault diagnosis process, techniques such as ...

In the present study, a genetic algorithm-polynomial neural network (GA-PNN) was used for modeling proton exchange membrane fuel cell (PEMFC) performance, based on some numerical results which were correlated with experimental data. Thus, the current density was modeled in respect of input (design) variables, i.e., the variation of pressure at the cathode ...

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One popular and promising solution to overcome the abovementioned problems is using large-scale energy storage systems to act as a buffer between actual supply and demand [4]. According to the Wood Mackenzie report released in April 2021 [1], the global energy storage market is anticipated to grow 27 times by 2030, with a significant role in supporting the global ...

With the increase of energy demand, the scale of power grid is expanding, and the difficulty of power grid fault diagnosis is increasing. Aiming at the problem of large power grid fault diagnosis, a method of partition fault diagnosis based on improved Probabilistic neural network (PNN) and gray relational analysis (GRA)

integral is proposed.

The Advanced Power and Energy Program (APEP) at the University of California, Irvine addresses the development and deployment of efficient, environmentally sensitive, sustainable power generation and energy conversion worldwide. ...

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In ref. [15], A probabilistic neural network (PNN) based power transformer fault diagnosis model is developed, in which the smoothing factor of the PNN is optimised using the bat algorithm (BA ...

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Power system protection and asset management have drawn the attention of researchers for several decades; but they still suffer from unresolved and challenging technical issues. The situation has been recently exacerbated in the wake of the ever-changing landscape of power systems driven by the growing uncertainty and volatility subsequent to the vast ...

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Those great work, particular neural network-based fault detection models, advanced fault diagnosis for complex systems. However, when developing NN-based fault detection models, one challenge still remains: the performance of PNN is greatly affected by its hidden layer element smooth factor, and then the classification results are affected as ...

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