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Abstract

An accurate fault classification and distance location algorithm for Teed transmission Circuit based on application of artificial neural networks (ANN) is presented in this paper. The proposed algorithm uses the fundamental component of voltage and current signals of each section measured at one end of teed circuit to detect, classify and locate the faults. ANN has the ability to classify the nonlinear relationship between measured signals by identifying different patterns of the associated signals. The adaptive protection scheme based on application of ANN is tested for shunt faults, varying fault location, fault resistance and fault inception angle. An improved performance is experienced once the neural network is trained adequately, which gives accurate results when faced with different system parameters and conditions. The entire test results clearly show that the fault is detected, classified and located within one cycle; thus the proposed adaptive protection technique is well suited for teed transmission circuit fault classification, distance location and faulty section identification. Results of performance studies show that the proposed neural network-based module can improve the performance of conventional fault selection algorithms.

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Index Terms

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Keywords

Artificial Neural Network Teed Transmission Circuit Fault Detection Shunt Faults