POWER SYSTEM SECURITY ASSESSMENT USING ARTIFICIAL NEURAL NETWORK

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ABSTRACT

The management of power system has become more difficult than earlier because power system are closer to security limits, fewer operators are engaged in the supervision and operation of power system. Power system security assessment has become a major concern today to avoid the instability in power system occur.

One of the most significant considerations in applying neural networks to power system security assessment is the proper selection of training features. Modern interconnected power systems often consist of thousands of pieces of equipment each of which may have an effect on the security of the system. Neural networks have shown great promise for their ability to quickly and accurately predict the system security when trained with data collected from a load flow using Newton Raphson technique. A case study is performed on the IEEE 6-bus system to illustrate the effectiveness of the proposed techniques. This paper presented an application of Artificial Neural Network (ANN) in steady state stability classifications. A multi layer feed forward ANN with Back Propagation Network algorithm is proposed in determining the steady state stability classifications. The classification is divided into two, which is stable and unstable state. Extensive testing and training of the proposed ANN based approach indicates its viability for power system steady state stability classification assessment.

The contributions of the thesis also include the classification of the power system security by using different back propagation algorithm with multi layer perceptron. The main results obtained in this thesis are an algorithm to classify the critical stability of power system.

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