POWER SYSTEM FAULT DIAGNOSIS USING ARTIFICIAL NEURAL NETWORK (ANN)

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ABSTRACT

In power system, the phenomenon of fault is a name given to a situation called a failure in the system. Most faults are the results of short circuits which include thunder and wind of storms. Faults are the major concern in power generation, transmission and distribution since they occur frequently and without warning. The classification of the transmission line faults which are bus voltage, fault and line current are very useful in monitoring and performance of relays, circuit breakers and other protection and control element.

This thesis presents the usage of Artificial Neural Network (ANN) as an approach for predicting the fault in a large interconnected transmission system. The ANN developed is based on a three-layered back-propagation algorithm. The ANN was designed using MATLAB version 6.0 which deals with fault diagnosis in power system. By using MATLAB software modules, the balanced and unbalanced fault cases were simulated. The data generated from this software are to be used as training and testing set in the ANN. The input parameters of the ANN included fault impedance and bus location while the output data will be the fault current, bus voltage, fault location and type of faults. The ANN is trained by Back Propagation Algorithm. MATLAB results were about fault current, bus voltage, fault location and type of faults. ANN results also were about fault current, bus voltage, fault location and type of faults. The results from ANN (target output) were expected to be same value with MATLAB output (desired output). If these two results are approximately same, ANN proved that Fault Diagnosis can be done by using this method.

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