

Diagnostic of power quality disturbance using wavelet-based neural networks

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Abstract: This paper presents a new method for automatically detecting, localizing, and classifying various types of power quality disturbances. It is based on wavelet transform analysis, particularly the dyadic-orthonormal wavelet transform, artificial neural networks, and the mathematical theory of evidence. The proposed method employs the wavelet transform using multiresolution signal decomposition techniques working together with multiple neural networks using a learning vector quantization network as a powerful classifier. The outcomes of the networks are then integrated using voting decision making scheme. As a result, the performance of the automatic detection and localization has 89.52% accuracy while error is less than 5%.

Ei controlled terms: Neural networks - Wavelet transforms - Vector quantization - Decision making - Error analysis