

A GENERALIZED APPROACH FOR THE AUTOMATIC RECOGNITION OF POWER QUALITY DISTURBANCES

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Keywords: diagnosis; disturbances; neurofuzzy; Parseval's theorem; power quality, wavelet transform

ABSTRACT

In this paper, a generalized classification method that is based on discrete wavelet transform and adaptive neuro-fuzzy inference system is proposed to classify power quality disturbances. First, the multiresolution signal analysis technique and Parseval's theorem are employed to extract discriminating features of the disturbance signal. Then, the proposed decision-support system can identify the type of problem. Single as well as combined disturbances can be successfully recognized and categorized using the proposed approach. The system design outlines are addressed and the diagnosis algorithm is described. The adopted feature vector consists only of four elements which greatly reduces the computational burden and speeds-up the system response. Four types of combined disturbances and eight types of single disturbances are considered and efficiently diagnosed on testing the system with a large number of power quality events. Furthermore, a second configuration of the classifier system is presented and the performance is compared.