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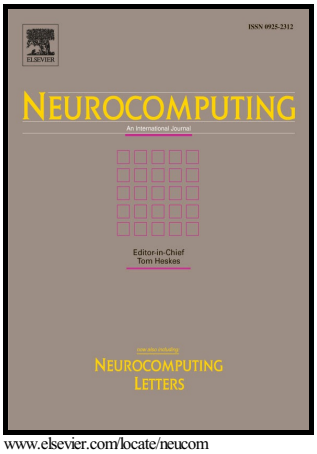

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An Intelligent Computing Technique to Analyze the Vibrational Dynamics of Rotating Electrical Machine

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Abstract

In this study, bio-inspired computational intelligence is exploited to analyze the nonlinear vibrational dynamics of rotating electrical machine (VD-REM) model by applying artificial neural networks (ANNs), genetic algorithms (GAs) and active-set methods (ASMs). The superintended mathematical relation of VD-REM is modelled with ANNs by employing an unsupervised error function. Design parameters of the networks are trained with meta-heuristic approach based on GAs, used as a tool for effective global search method, hybrid with ASM for efficient local search. The design scheme is evaluated for VD-REM models by taking different values of shaft stiffness along with an amplitude of force and parametric excitations. The performance of the proposed scheme is validated through the comparison of

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