Computational Intelligence in Sustainable Reliability Engineering

Chapter 3

Development of Laplacian Artificial Bee Colony Algorithm for Effective Harmonic Estimator Design

Aishwarya Mehta, Jitesh Jangid, Akash Saxena, Shalini Shekhawat, Rajesh Kumar

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Summary

Adverse effects of harmonic with ever increasing nonlinear loads is major concern these days. Harmonic estimation problem is an important problem as accurate estimation of harmonic signals can be used for designing the harmonic filters. The estimator design problem is considered as a challenging problem and still a potential area of research due to the fact that diverse operating conditions are having impact on the performance of the estimator. For designing the estimator a hybrid approach based on least square error minimization with the help of a new version of Artificial Bee Colony algorithm is proposed. The proposed version employs a Laplacian factor based update equation in scout bee phase. For proving the modification meaningful, first the proposed algorithm is tested on several standard benchmark problems and then it is applied on estimator design problem. Results reported in both parts indicate that proposed modification is meaningful and performance of LABC is comparable with many state of the art algorithms.

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