

Model Order Reduction Using Hybrid Genetic Algorithm and Simulated Annealing

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Abstract : Model order reduction has been one of the most challenging topics in the past years. In this paper, a hybrid solution of genetic algorithm (GA) and simulated annealing algorithm (SA) are used to approximate high-order transfer functions (TFs) to lower-order TFs. In this approach, hybrid algorithm is applied to model order reduction putting in consideration improving accuracy and preserving the properties of the original model which are two important issues for improving the performance of simulation and computation and maintaining the behavior of the original complex models being reduced. Compared to conventional mathematical methods that have been used to obtain a reduced order model of high order complex models, our proposed method provides better results in terms of reducing run-time. Thus, the proposed technique could be used in electronic design automation (EDA) tools.

Keywords : genetic algorithm, simulated annealing, model reduction, transfer function

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