عنوان مقاله:

Model Order Reduction based on meta-heuristic optimization methods

محل انتشار:

اولین کنفرانس بین المللی دستاوردهای نوین پژوهشی در مهندسی برق و کامپیوتر (سال: 1395)

تعداد صفحات اصل مقاله: 6

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خلاصه مقاله:

In the real world, most of physical systems havecomplex high order models. This kind of complexity causes somedifficulties in all aspects of analysis, simulation and control. Themain idea of the model order reduction is to provide a low ordersystem model and therefore a low order system controller whichmay have less hardware requirements. This paper presents a newapproach for model order reduction based on optimizing thePade rational approximator to solve the complex model reductionproblems The numerator and denominator polynomial of thereduced order model are achieved by minimizing the IntegralSquare error of the step response between the original high orderand reduced order system using World Cup OptimizationAlgorithm. Meta-heuristic algorithms guarantee the reducedorder model system stability if the original high order model isstable. the proposed method illustrated through numericalexample from literature and the final results are compared withother model reduction techniques.

کلمات کلیدی:

Pade Approximation; Transfer Function; World Cup Optimization Algorithm; PSO; QIWO; Pade Integral Square Error