

عنوان مقاله:

Optimum sliding mode controller design based on skyhook model for nonlinear vehicle vibration model

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خلاصه مقاله:

In this paper a new type of multi-objective differential evolution employing dynamically tunable mutation factor is used to optimally design non-linear vehicle model. In this way, non-dominated sorting algorithm with crowding distance criterion are combined to fuzzified mutation differential evolution to construct multi-objective algorithm to solve the problem. In order to achieve fuzzified mutation factor, two inputs as generation number and population diversity and one output as the mutation factor are used in the fuzzy inference system. The objective functions optimized simultaneously are namely, vertical acceleration of sprung mass, relative displacement between sprung mass and unsprung mass and control force. Optimization processes have been done in two bi- and three objective areas. Comparison of the obtained results with those in the literature has shown the superiority of the proposed method of this work. Further, it has been shown that the results of ۳-objective optimization include those of bi-objective one, and therefore it gives more optimum options to the designer

کلمات کلیدی:

non-linear vehicle model, Pareto, Multi-objective optimization, Differential evolution, Fuzzified mutation :

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