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Hybridizing harmony search algorithm with sequential quadratic programming for engineering optimization problems. (English) [Zbl 1194.74243](#)

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Summary: This study presents a hybrid harmony search algorithm (HNSA) to solve engineering optimization problems with continuous design variables. Although the harmony search algorithm (HSA) has proven its ability of finding near global regions within a reasonable time, it is comparatively inefficient in performing local search. In this study sequential quadratic programming (SQP) is employed to speed up local search and improve precision of the HSA solutions. Moreover, an empirical study is performed in order to determine the impact of various parameters of the HSA on convergence behavior. Various benchmark engineering optimization problems are used to illustrate the effectiveness and robustness of the proposed algorithm. Numerical results reveal that the proposed hybrid algorithm, in most cases is more effective than the HSA and other meta-heuristic or deterministic methods.

MSC:

[74P10](#) Optimization of other properties in solid mechanics

[90C20](#) Quadratic programming

Cited in **19** Documents

Keywords:

[heuristic](#); [harmony search algorithm](#); [hybridization](#); [sequential quadratic programming](#); [engineering optimization](#)

Software:

[Genocop](#)

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