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A filter-based dynamically dimensioned search algorithm for constrained global optimization

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Abstract

This work presents a filter-based dynamically dimensioned search (FDDS) algorithm for solving nonconvex constrained global optimization problems. The FDDS is an extension of the dynamically dimensioned search algorithm, which is a stochastic heuristic method based on dynamic adjustment of a subset of coordinates of the best solution. The proposed method uses a filter technique to handle the constraints, reformulating the optimization problem as a bi-objective one. Computational experiments are carried out with a set of benchmark global test problems available in the literature to analyze the performance of FDDS algorithm. The results are compared with other stochastic methods and evaluated in terms of quality of solutions and computational effort required.

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