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Antioptimisation of trusses using two-level population-based incremental learning. (English)

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Summary: Practical optimum design of structures often involves parameters with uncertainties. There have been several ways to deal with such optimisation problems, and one of the approaches is an antioptimisation process. The task is to find the optimum solution of common design variables while simultaneously searching for the worst case scenario of those parameters with uncertainties. This paper proposed a metaheuristic based on population-based incremental learning (PBIL) for solving antioptimisation of trusses. The new algorithm is called two-level PBIL which consists of outer and inner loops. Five antioptimisation problems are posed to test the optimiser performance. The numerical results show that the concept of using PBIL probability vectors for handling the antioptimisation of truss is powerful and effective. The two-level PBIL can be considered a powerful optimiser for antioptimisation of trusses.

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