Zhang, Zhihong
A new multi-population-based differential evolution. (English) Zbl 1453.90227

Summary: Differential evolution (DE) is an efficient population-based stochastic search algorithm, which has shown good search abilities on many real-world and benchmark optimisation problems. In this paper, we propose a new multi-population-based DE (MDE) algorithm. In MDE, the original population is divided into multiple subpopulations. For each subpopulation, two DE mutation schemes are alternatives to be conducted. Moreover, a Cauchy mutation operator is utilised to enhance the global search. To verify the performance of MDE, 12 well-known benchmark functions are used in the experiments. Simulation results show that MDE performs better than the standard DE and several other DE variants.

MSC:
90C59 Approximation methods and heuristics in mathematical programming
90C26 Nonconvex programming, global optimization

Keywords:
differential evolution (DE); multi-population DE; Cauchy mutation; global optimisation

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