

博士论坛

一种自适应多目标离散差分进化算法

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摘要 提出一种自适应多目标离散差分进化算法。该算法将差分进化引入多目标优化领域, 采用一种新的自适应离散差分进化策略增强算法的全局搜索能力, 以获得更优的Pareto近似解, 并结合Pareto快速分层排序策略和基于聚集密度的按层修剪操作对种群进行更新维护, 使解集保持良好的多样性。实例测试和算法比较表明, 该算法能有效求解离散域和连续域上不同类型的多目标优化问题, 且在收敛性、分布性、稳定性方面均表现较好。

关键词 [多目标优化](#) [离散差分进化](#) [Pareto最优](#) [自适应](#)

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Adaptive multi-objective discrete differential evolution

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Abstract

An adaptive Multi-objective Discrete Differential Evolution (MDDE) is proposed. By introducing differential evolution to multi-objective optimization, MDDE adopts a new adaptive discrete differential evolution strategy to enhance the ability of global exploration so as to achieve better Pareto approximate solutions. Moreover, for keeping good diversity, MDDE integrates fast Pareto sorting strategy and truncating operation based on crowding density and rank. The experimental results show that the proposed approach is able to effectively solve the multi-objective problems with discrete or continuous solution spaces and has better performance on convergence, diversity and stability.

Key words [multi-objective optimization](#) [discrete differential evolution](#) [Pareto optimal](#) [adaptation](#)

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