

# 遗传增强蚁群优化算法

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摘要: 针对蚁群优化算法易陷入局部最优的问题, 提出遗传增强蚁群优化算法. 在算法迭代过程中, 维护历史最优解, 将历史最优解与当前部分较好解作为遗传算法的初始化染色体, 采用遗传算法在更广阔的空间中搜索较好解. 将蚂蚁搜索解与遗传算法搜索解合并选择当前最优解, 防止蚁群优化陷入局部最优. 以二分类问题中的特征选择为例, 与粒子群优化算法与差分进化算法进行对比, 在 3 个标准测试数据上进行试验, 结果表明算法的有效性及其优越性.

关键词: 蚁群优化算法; 遗传算法; 局部最优; 粒子群优化; 差分进化算法

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## Enhanced Ant Colony Optimization Combined with Genetic Algorithm

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Abstract: In order to solve the problem that ant colony optimization is easily trapped into local optimum, a new algorithm called enhanced ant colony optimization based on genetic algorithm was proposed. It maintained a history best optimal solution which was combined with part of current best solutions as the initial chromosomes during iterations, and adopted genetic algorithm to search better solutions at a larger space. It selected the current best solution from results of ants and chromosomes to prevent ant colony optimization from being trapped into local optimum. It was tested on feature selection problem of binary classification and compared with particle swarm optimization and differential evolution, the experiments were implemented on three benchmark datasets, and the results show the efficiency and superiority of the proposed algorithm.

Key words: ant colony optimization; genetic algorithm; local optimum; particle swarm optimization; differential evolution algorithm

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