

# 基于自适应权重和柯西变异的鲸鱼优化算法

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**摘要:** 为了改进鲸鱼算法(WOA)容易陷入局部最优和收敛精度低的问题, 提出了基于自适应权重和柯西变异的鲸鱼算法(WOAWC). 首先通过柯西逆累积分布函数方法对鲸鱼位置进行变异, 提高了鲸鱼算法的全局搜索能力, 避免了陷入局部最优. 另外通过自适应权重的方法改进了鲸鱼算法的局部搜索能力, 提高了收敛精度; 实验结果表明, 改进的算法和原鲸鱼算法、遗传算法、粒子群算法相比, 收敛精度和算法稳定性上都要优于其它算法.

**关键词:** 鲸鱼算法; 自适应权重; 柯西变异; 遗传算法; 粒子群算法

## Whaleoptimization Algorithm Based on Adaptive

### Weight and Cauchy Mutation

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**Abstract:** In order to improve the problem that the whale algorithm (WOA) is easy to fall into the local optimum and the convergence accuracy is low, a whale algorithm based on adaptive weight and Cauchy mutation is proposed (WOAWC). Firstly, the variation of the whale's position is modified by the Cauchy inverse cumulative distribution function method, which improves the global search ability of the whale algorithm and avoids the local optimization. In addition, the local search ability of the whale algorithm is improved by the adaptive weighting method, and the convergence accuracy is improved. The experimental results show that the improved algorithm is superior to the original whale algorithm, genetic algorithm and particle swarm optimization, Convergence accuracy and algorithm stability are better than other algorithms.

**Key words:** whale algorithm; adaptive weight; cauchy mutation; genetic algorithms; particle swarm optimization

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