

工程与应用

改进遗传算法在自动组卷中的应用研究

于淼, 王日宏

青岛理工大学 计算机工程学院, 山东 青岛 266033

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摘要 为了避免遗传算法在自动组卷中存在的未成熟收敛和收敛速度慢等弱点, 根据群体适应值的分布特点, 采用了基于小生境的改进自适应遗传算法。该算法采用模拟小生境法选择算子进行种群选取, 并对交叉算子和变异算子进行了优化, 实现了交叉和变异概率的非线性自适应调整。改进后的算法明显提高了组卷的成功率和收敛速度, 取得了满意的组卷效果。

关键词 [遗传算法](#) [自动组卷](#) [小生境](#) [自适应](#)

分类号

Application of automatic composing test paper based on improved Genetic Algorithm

YU Miao, WANG Ri-hong

School of Computer Engineering, Qingdao Technological University, Qingdao, Shandong 266033, China

Abstract

In order to avoid premature convergence and low convergence speed, an improved adaptive genetic algorithm based on niches is presented according to the feature of population fitness distribution. The algorithm adopts a new method that simulated niche is introduced in the selection operator for the population selection and makes the crossover probability and mutation probability adjust adaptively and nonlinearly. The test results show that the improved algorithm can evidently improve success ratio convergence speed and solve the problem of auto-composing test paper more effectively.

Key words [Genetic Algorithm \(GA\)](#) [auto-composing test paper](#) [niche](#) [adaptation](#)

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通讯作者 于淼 99-03-27@163.com

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