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短文

遗传交叉运算的可达性研究

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摘要
定义了遗传交叉运算的可达性及其达概率的概念, 指出传统的单点交叉运算只使得参与交叉运算的个体对所张成子空间的边缘是可达的, 且为非均匀可达的, 从而大大地限制了该运算的搜索能力. 为此, 讨论了一致交叉运算的可达性, 指出它使得参与交叉运算的个体对所张成子空间的全空间都是可达的, 且可以构造交叉字串使得它是均匀可达的, 从而有效提高算法的搜索能力. 同时讨论了个体对交叉运算的可达性与群体进行交叉运算的可达性的关系.

关键词 标准交叉运算 一致交叉运算 个体 群体 可达集合 可达概率

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Attainability of Genetic Crossover Operator

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Abstract
Attainability of genetic crossover operation is introduced, and the attainability of both canonical and uniform crossover operations are analyzed. The result is that the two offspring from their parents, upon which the canonical crossover is undertaken, are only on the rim of the subspace their parents span, while the two offspring are on the overall such subspace when uniform crossover is undertaken; also, the rim of the subspace is attained in an uneven probability for canonical crossover, while for uniform crossover the crossover string is designed to make the overall subspace attainable in an even probability. This attainability and attainable probability analysis for crossover operation indicates that the uniform crossover is much powerful than canonical crossover in problem space searching ability.

Key words Attainable set attainable probability canonical crossover uniform crossover individual population

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