

面向对象的深度搜索遗传算法及其工程应用(II)——算法验证与工程应用

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摘要 利用Matlab的非线性约束优化工具, 通过数以千计的算例比较, 对面向对象遗传算法的深度搜索策略的有效性进行了验证。研究表明, 遗传算法的深度搜索策略是有效的, 可最大限度地搜索到待优化问题的全局最优解。将滑坡支挡结构和深基坑支护结构的方案优化程序应用于多个实际工程以检验这些程序在结构优化和结构选型方面的性能。研究表明, 单个的程序能较好地优化相应结构的设计方案, 而多个程序的组合使用则可辅助工程人员选择合理的支挡结构型式。

关键词 [土力学](#); [面向对象](#); [深度搜索](#); [遗传算法](#)

分类号

OBJECT-ORIENTED DEEP-SEARCHING GENETIC ALGORITHM AND ITS APPLICATIONS TO ENGINEERING(II)—ALGORITHM VALIDATION AND ITS APPLICATIONS TO ENGINEERING

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Abstract

The deep-searching strategy of the object-oriented genetic algorithm is validated by comparing its optimum results with the corresponding results obtained by the nonlinear constrained programming tools“constr”of Matlab through thousands of optimum calculation examples. The results indicate that the deep-searching strategy of the genetic algorithm is valid; and it can get the best optimum result of the problem to the most extent. The programs of optimizing the landslide support structure and deep foundation pit support structure are applied to many practical engineering to check up their performance of optimizing the structure and selecting the reasonable structure type. The result indicates that the single program can well optimize the corresponding structure; and the combined programs can help engineers to select reasonable type of support structure.

Key words [soil mechanics](#); [object-oriented](#); [deep-searching](#); [genetic algorithm](#)

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