

人工智能

求解半定规划的新算法

于冬梅,高雷阜

辽宁工程技术大学 理学院,辽宁 阜新 123000

摘要: 为了提高求解半定规划问题的运算效率,提出了一种新的求解半定规划的非单调信赖域算法。将半定规划的最优性条件转化为无约束优化问题,并构造无约束优化问题的信赖域子问题,修正信赖域半径的校正条件,当初始搜索点处于峡谷附近时仍能搜索到全局最优解。实验结果表明,对于小规模 and 中等规模的半定规划问题,该算法的迭代次数都比经典的内点算法少,运行速度快。

关键词: 半定规划 信赖域算法 非单调策略 内点算法 无约束优化

New algorithm for semidefinite programming

YU Dongmei,GAO Leifu

College of Science, Liaoning Technical University, Fuxin Liaoning 123000, China

Abstract: In order to improve the operational efficiency of SemiDefinite Programming (SDP), a new nonmonotonic trust region algorithm was proposed. The SDP problem and its duality problem were transformed into unconstrained optimization problem and the trust region subproblem was constructed, the trust region radius correction condition was modified. When the initial search point was near the canyon, the global optimal solution still could be found. The experimental results show that the number of iterations of the algorithm is less than the classical interior point algorithm for small and medium scale semidefinite programming problems, and the proposed algorithm works faster.

Keywords: SemiDefinite Programming (SDP) trust region algorithm nonmonotonic strategy interior algorithm unconstrained optimization

收稿日期 2013-06-03 修回日期 2013-08-02 网络版发布日期 2014-02-14

DOI: 10.11772/j.issn.1001-9081.2014.01.0182

基金项目:

教育部高校博士学科点专项科研基金联合资助项目;国家自然科学基金资助项目;辽宁省教育厅基金资助项目

通讯作者: 于冬梅

作者简介: 于冬梅(1986-),女,辽宁鞍山人,博士研究生,主要研究方向:最优化理论与应用、半定规划、锥规划;高雷阜(1963-),男,辽宁阜新人,教授,博士,主要研究方向:最优化理论与应用、混沌动力系统预测。

作者Email: qingkong1113@163.com

参考文献:

本刊中的类似文章

扩展功能

本文信息

- ▶ Supporting info
- ▶ PDF(404KB)
- ▶ [HTML全文]
- ▶ 参考文献[PDF]
- ▶ 参考文献

服务与反馈

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ 引用本文
- ▶ Email Alert
- ▶ 文章反馈
- ▶ 浏览反馈信息

本文关键词相关文章

- ▶ 半定规划
- ▶ 信赖域算法
- ▶ 非单调策略
- ▶ 内点算法
- ▶ 无约束优化

本文作者相关文章

- ▶ 于冬梅
- ▶ 高雷阜

PubMed

- ▶ Article by Yu,D.M
- ▶ Article by Gao,L.F