

关于解极大相关问题问题P-SOR算法的收敛性

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ON THE CONVERGENCE OF THE P-SOR METHOD FOR SOLVING MAXIMAL CORRELATION PROBLEM

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摘要 对求解极大相关问题的P-SOR方法的收敛性做了进一步研究. 得到了一些新的收敛条件. 为了提高收敛到全局最大解的可能性, 提出了一种新的初始向量选择策略. 给出了P-SOR算法的对称形式(P-SSOR). 还给出了一种算法精化策略. 最后, 用数值例子说明新方法的有效性.

关键词: 典型相关分析 极大相关问题 多元特征值问题 P-SOR算法 松弛因子 初始点策略 收敛性

Abstract: This paper concentrates on the convergence of the P-SOR algorithm for maximal correlation problems (MCP) proposed by Sun and contains four contributions. Several new results on the convergence of the P-SOR method are obtained. To increase the probability of finding a global maximizer, a new starting point strategy is proposed. A so-called P-SSOR algorithm is presented and shown that the new algorithm is less sensitive to the selection of the relaxation parameter ω than P-SOR algorithm. Finally, a refining strategy to compute the global maximizer is suggested. Some numerical examples are carried out to demonstrate the efficiency of the new algorithm with the new starting point strategy.

Key words: Canonical correlation analysis Maximal correlation problem Multivariate eigenvalue problem P-SOR algorithm the relaxation parameter starting point strategy convergence

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