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基于子块优化及全局整合的局部判别投影法

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Locally Discriminant Projection Algorithm Based on the Block Optimization and Combination Strategy

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摘要 已有投影算法都直接通过完整的输入训练集求解最佳变换矩阵，难以进行增量式学习扩展。针对此问题，该文通过组合优化策略提出局部判别投影方法应用于分类问题。该算法同时包括类间判别信息和类内局部保持特征，求得的变换矩阵还具有正交性。此外，利用核函数将算法扩展至非线性应用，使之可以适应更多的数据类型。在ORL人脸库和小样本说话人辨认应用中验证了该算法的有效性。

关键词： 模式识别 局部判别投影 组合优化策略 核函数 子空间学习

Abstract： It is difficult for the traditional projection algorithms to extend to incremental learning since they use the whole training sets for solving out the projection matrix directly. To tackle this problem, a novel method, named Block optimization and Combination strategy, used for Locally Discriminant Projection (BCLDP) is proposed. This method takes into account both intra-class and interclass geometries; and has the orthogonality property. Furthermore, BCLDP is extended to nonlinear case using kernel function, which makes BCLDP better suits for diverse application. The experiments on ORL face database and speaker identification application demonstrate the effectiveness of the proposed algorithm.

Keywords： Pattern Recognition Locally discriminant projection Block optimization and combination Kernel function Subspace learning

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