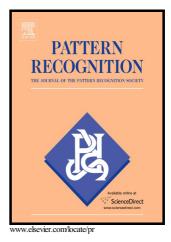
Author's Accepted Manuscript

Regularized max-min linear discriminant analysis

Guowan Shao, Nong Sang



 PII:
 S0031-3203(16)30451-4

 DOI:
 http://dx.doi.org/10.1016/j.patcog.2016.12.030

 Reference:
 PR6002

To appear in: Pattern Recognition

Received date: 10 October 2015 Revised date: 30 December 2016 Accepted date: 31 December 2016

Cite this article as: Guowan Shao and Nong Sang, Regularized max-min linea discriminant analysis, *Pattern Recognition*. http://dx.doi.org/10.1016/j.patcog.2016.12.030

This is a PDF file of an unedited manuscript that has been accepted fo publication. As a service to our customers we are providing this early version o the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain

Regularized max-min linear discriminant analysis

Guowan Shao^{a,*}, Nong Sang^b

 ^aCollege of Mechanical and Electrical Engineering, Hunan University of Science and Technology, Hunan Xiangtan 411201, PR China
 ^bScience and Technology on Multi-spectral Information Processing Laboratory, School of Automation, Huazhong University of Science and Technology, Wuhan 430074, PR China

Abstract

Several dimensionality reduction methods based on the max-min idea have been proposed in recent years and can obtain good classification performance. In this paper, inspired by the idea, we develop max-min linear discriminant analysis (MMLDA), which maximizes the minimum ratio of each two-class scatter measure to the within-class scatter measure. However, the method ignores equal emphasis on the distances between class centers and there may be room to improve the classification performance. We then propose regularized max-min linear discriminant analysis (RMMLDA), which introduces the Shannon entropy and the corresponding distance difference regularization terms based on MMLDA. The changing trends of distances between class centers can be precisely controlled in optimization and the separation between classes can be emphasized approximately

Preprint submitted to Pattern Recognition

^{*}Corresponding author. Tel.: +86 18973279902.

E-mail address: gwshao_ezhou@163.com, 821211624@qq.com (G. Shao).

¹Abbreviations: max-min linear discriminant analysis (MMLDA), regularized max-min linear discriminant analysis (RMMLDA), principal component analysis (PCA), linear discriminant analysis (LDA), small sample size problem (SSS), worst-case linear discriminant analysis (WLDA), max-min distance analysis (MMDA), semidefinite programming (SDP), complete large margin linear discriminant analysis (CLMLDA), regularized max-min distance analysis (RMMDA), Complete LDA (CLDA), constrained concave-convex procedure (CCCP), approximate pairwise accuracy criterion (aPAC)

Download English Version:

https://daneshyari.com/en/article/4969728

Download Persian Version:

https://daneshyari.com/article/4969728

Daneshyari.com