

博士论坛

基于Gabor变换和双方向PCA的人脸识别

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摘要 提出了一种可以解决小样本问题的人脸识别新算法。算法首先把人脸图像经过Gabor小波变换后得到的每个输出图像都看成是独立的样本, 从而大大增加了每一类人脸样本的样本数。然后采用双方向PCA算法来提取人脸特征, 并专门设计了针对人脸特征矩阵的最近邻分类器和最小距离分类器来进行分类判决。在ORL人脸库和FERET人脸库中的实验结果表明, 算法能有效地解决人脸识别中的小样本问题, 甚至当每类训练样本数仅为1时, 也能得到较高的识别率。

关键词 [人脸识别](#) [小样本问题](#) [双方向PCA](#) [Gabor变换](#)

分类号

Face recognition based on Gabor transform and bidirectional PCA

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Abstract

A novel face recognition algorithm which can solve the Small Sample Size (SSS) problem is presented. Firstly, the sample size of each subject is increased greatly by regarding every output image after taking Gabor wavelet transform as an independent sample. Secondly, bidirectional PCA method is adopted for face feature extraction. Special nearest neighbor classifier and minimum distance classifier based on face feature matrix are designed for classification, respectively. The experimental results on ORL face database and FERET face database show that the proposed method can alleviate the SSS problem effectively, and can get a good performance even when the training sample size of each subject is only 1.

Key words [face recognition](#) [Small Sample Size \(SSS\) problem](#) [bidirectional PCA](#) [Gabor transform](#)

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