

图形、图像、模式识别

## 结合图像融合的PCA与NMF相融合的人脸识别

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**摘要** 提出一种结合图像融合的PCA与NMF相融合的人脸识别的识别方法。采用小波变换对图像进行处理, 对于包含主要信息的低频子图用PCA进行特征抽取, 而其他三个高频子图, 虽然描述信息相对较少但包含重要的分类信息。为了减少计算量, 对高频子图进行图像融合, 再用NMF进行特征抽取, 采用最近邻分类方法进行分类。最后对这两个识别结果进行加权处理, 得到最终的识别结果。实验证明可以有效地提高识别率。

**关键词** [小波变换](#) [图像融合](#) [主成分分析 \(PCA\)](#) [非负矩阵分解 \(NMF\)](#)

**分类号** [TP391.41](#)

## Fusion of PCA and NMF combined with image fusing for face recognition

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### Abstract

A new fusion of PCA and NMF combined with image fusing for face recognition method is proposed. The original images are decomposed into high-frequency and low-frequency components by wavelet transform. PCA is used to subtract the features of the lowest-frequency subimage. To the others, although they contain less energy than lowest-frequency subimage, they contain important information about classification. NMF is used to subtract the features of the fusing image. The nearest neighbor classifier is used to classification. And fusing the classification with weight. Experimental results show the method can improve face recognition rate.

**Key words** [wavelet transform](#) [image fusion](#) [Principal Component Analysis \(PCA\)](#) [Non-negative Matrix Factorization \(NMF\)](#)

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