

论文

## 一种基于复数域中二维特征提取的人脸识别方法

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摘要

该文提出了一种新的基于复数域中的二维特征提取方法进行人脸识别。该方法首先对人脸样本进行镜像变换, 根据原始人脸样本和相应的镜像样本分别计算偶对称样本和奇对称样本, 通过奇偶加权因子将偶对称样本与奇对称样本组成复数样本, 然后在复数域中分别定义复图像类内散布矩阵和复图像类间散布矩阵, 并求解一组最优复投影轴, 将复人脸样本投影到这组最优复投影轴上来提取人脸特征, 最后采用最近邻距离分类器来分类所提取的特征。该方法在NUST603人脸图像库中进行了实验, 实验结果表明该方法获得了较好的识别效果。

关键词 [人脸识别](#) [特征提取](#) [模式识别](#) [图像处理](#)

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## A Method Based on Two-Dimensional Feature Extraction in the Complex Domain for Face Recognition

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Abstract

A new method based on two-dimensional feature extraction in the complex domain is proposed for face recognition in this paper. First, face images are performed by mirror transform, and the original face samples and the corresponding mirror samples are used to compute the even symmetry samples and the odd symmetry samples, respectively. The even symmetry samples and the odd symmetry samples are used to form complex samples by an odd-even weighted factor. Then the complex image within-class scatter matrix and the complex image between-class scatter matrix are defined in the complex domain, respectively, to calculate a family of optimal complex projection axes, and complex face samples are projected onto the family of optimal complex projection axes to extract the face features. Finally, a nearest neighbor classifier is employed to classify the extracted features. The method in the paper is evaluated on the NUST603 face image database. Experimental results show the proposed method achieves better performance.

Key words [Face recognition](#) [Feature extraction](#) [Pattern recognition](#) [Image processing](#)

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