

论文

基于二维Gabor小波的人脸识别算法

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摘要

该文提出了一种基于二维Gabor小波的人脸识别算法。该算法先对人脸图像进行多分辨率的Gabor小波变换,然后在图像上放置一组网格结点,每个结点用该结点处的多尺度Gabor幅度特征描述,采用主元分析法对每个结点进行去相关、降维,最后形成特征结。把每个特征结作为观测向量,对隐马尔可夫模型进行训练,并把优化的模型参数用于人脸识别。实验结果表明,该方法识别率高,复杂度较低。

关键词 [人脸识别](#) [Gabor小波变换](#) [主元分析](#) [隐马尔可夫模型](#)

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Face Recognition Based on Two-Dimensional Gabor Wavelets

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Abstract

A new approach based on two-dimensional Gabor wavelets transform for face recognition is presented. The Gabor wavelet representation of an image is the convolution of the image with a family of Gabor kernels. A set of vectors called nodes, over a dense grid of image points are formed, and each node is labeled with a set of complex Gabor wavelets coefficients. The magnitudes of the coefficients are used for recognition. Principal component analysis is a decorrelation technique and its primary goal is to project the high dimensional vectors into a lower dimensional space. Feature nodes, as observation vectors of HMM, is derived by using principal component analysis. A set of images representing different instances of the same person is used to train each HMM, and each individual in the database is represented by an optimal HMM face model. Experimental results show that the proposed algorithm has a high recognition rate with relatively low complexity.

Key words [Face recognition](#) [Gabor wavelets transform](#) [Principal component analysis](#) [Hidden Markov Model\(HMM\)](#)

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