

可变光照下彩色多维人脸图像自动识别方法研究

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摘要: 光照变化和环境噪声会引起人脸识别正确率下降, 为了有效地解决这一问题, 需要进行可变光照下彩色多维人脸图像自动识别. 但是采用当前的方法进行人脸图像自动识别时, 收敛速度慢, 极易陷入局部极小, 存在识别误差较大的问题. 为此, 提出一种基于粒子群优化神经网络的可变光照下彩色多维人脸图像自动识别方法. 该方法先利用小波变换获取人脸图像的低频分量, 用二维鉴别分析 (2DLDA) 方法提取人脸图像低频分量的线性鉴别特征, 利用粒子群优化 BP 神经网络进行分类识别, 并在 AR 和 Yale2 个人脸数据库中验证了所提方法的可行性. 实验仿真证明, 所提方法识别精度较高, 有效减弱了光照不均匀对人脸识别的影响.

关键词: 可变光照; 人脸图像; 识别

Research on Automatic Recognition of Color Multi Dimensional Face Images Under Variable Illumination

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Abstract: The illumination changes and environmental noise cause facial recognition accuracy will be reduced, in order to effectively solve this problem, need to be multidimensional variable light color face image automatic identification. But with the current method for automatic face image recognition, slow convergence speed, easy to fall into local minimum, the existence question of error identification. For this, put forward a based on particle swarm optimization neural network of variable light color multidimensional automatic face image recognition method. The method using wavelet transform to obtain first face image of low frequency component, using two-dimensional differential analysis (2 dllda) algorithm to extract the face image linear differential characteristics of low frequency component, using particle swarm optimization and BP neural network for classification and recognition and in ORL face database verify the feasibility of the proposed method. Experimental simulation show that the proposed method the identification accuracy is higher, effectively reduces the influence of uneven illumination in face recognition.

Key words: variable illumination; face image; identification

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