

# 基于 LVQ 神经网络的人脸朝向识别算法研究

## 摘 要

人脸识别的主要任务是从现场录像中提取出人脸，与已经建立的数据库中的人脸图像进行对比，辨识出特定人物的身份。研究人脸朝向的识别，因为同样的人脸拍摄角度不同，得到的特征向量也会有较大的差别，所以同一张人脸稍有偏向，计算机却可能会出现识别误差。如果拍摄角度相同，那么同样的人脸对应的特征向量变化不大。所以人脸朝向问题的分析研究对于整个人脸识别问题具有重要意义。根据 LVQ 神经网络的原理，利用 MATLAB 神经网络工具箱，完成网络的建立、网络训练和网络测试，通过实验来实现人脸定位识别，并且与 BP 神经网络进行了实验对比分析。实验结果表明，LVQ 神经网络可以根据输入图像的二值信息，更能准确判断该图像的人脸朝向。

**关键词：**人脸朝向识别；LVQ 神经网络；特征提取；MATLAB 神经网络工具箱

## Abstract

The main task of face recognition is to extract the face from the live video and compare it with the face image in the established database to identify the identity of the specific person. To study the recognition of face orientation, because the same face shooting angle is different, the obtained feature vectors will also have larger differences, so the same face is slightly biased, but the computer may treat it as a different person. If the shooting angles are the same, the feature vector corresponding to the same face does not change much. Therefore, the analysis and study of face orientation problems has significant improvement importance for the overall face recognition problem. In order to meet the position of the face in the image and the video, the orientation and rotation are not fixed characteristics, the LVQ neural network model is used to study the face orientation recognition in the image. In the experiment, Matlab toolbox was used to design LVQ neural network to realize the judgment of the face orientation, and compared with the BP neural network for experimental comparison analysis. The experimental results show that LVQ neural network can judge the face orientation of the image with high accuracy according to the binary information of the input image.

**Key Words:** Face recognition; LVQ neural network; feature abstract; Matlab toolbox

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