

图形、图像、模式识别

应用Gabor滤波的指纹识别算法的研究和实现

贺颖, 蒲晓蓉

电子科技大学 计算机科学与工程学院, 成都 610054

收稿日期 2008-10-10 修回日期 2008-12-8 网络版发布日期 2010-4-21 接受日期

摘要 提出了一种基于Gabor滤波提取指纹全局及局部特征的识别算法。目前广泛使用的基于细节节点的算法识别性能较高,但由于需要前期预处理,增加了系统开销。另一方面,传统的基于结构特征的算法速度较快,然而对偏转指纹的识别性能较差。针对以上不足,利用滤波器定位参考点,并将以参考点为中心的特征提取区域划分为16方向的扇区,然后通过8方向滤波分别提取原始图像和旋转后图像的特征。在FVC2004指纹库上的对比实验证明,该算法同时具备了较好的运行效率和识别性能。

关键词 [指纹识别](#) [参考点](#) [Gabor滤波](#) [特征提取](#) [特征匹配](#)

分类号 [TP391.4](#)

Development and implementation of Gabor filterbank-based fingerprint recognition algorithm

HE Ying, PU Xiao-rong

School of Computer Science and Engineering, University of Electronic Science and Technology of China, Chengdu 610054, China

Abstract

This paper proposes a novel fingerprint recognition algorithm based on Gabor filterbank to extract both global and local features of the fingerprints. At present, the widely used minutiae-based algorithm performs well on recognition while the preprocessing is time-consuming. On the other hand, the traditional structure-based algorithm is highly efficient but performs poorly on rotated pictures. The proposed approach uses filters to locate the core point, then tessellates the feature region centered at the reference point with 16-direction-sectors. Finally the features of both original picture and the rotated picture are extracted respectively through the 8-direction Gabor filtering. The experimental results on the FVC2004 fingerprint database show the good performance of the method on both accuracy and efficiency.

Key words [fingerprint recognition](#) [reference point](#) [Gabor filtering](#) [feature extraction](#) [feature matching](#)

DOI: 10.3778/j.issn.1002-8331.2010.12.051

通讯作者 贺颖 heyingsheifei@126.com

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(1257KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献](#)

服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

相关信息

- ▶ [本刊中 包含“指纹识别”的相关文章](#)
- ▶ [本文作者相关文章](#)

- [贺颖](#)
- [蒲晓蓉](#)