

基于指根边缘夹角平分线拟合的掌纹定位方法

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摘要: 针对移动终端复杂背景引起的感兴趣区域(Region of interest, ROI)定位不准确性, 提出一种基于指间边缘夹角平分线的掌纹 ROI 定位方法. 首先在 YCbCr 颜色空间提取边缘, 即追踪掌纹轮廓, 然后用椭圆模型去除伪边缘和噪声, 通过形态学操作对实际边缘进行平滑和修补, 从而将指根边缘区域化. 在所得两个边缘区域上, 用最小二乘法拟合边缘夹角平分线来定位指窝点. 该方法能有效去除指根附近背景的干扰, 克服手掌轻微旋转引起的 ROI 定位偏差, 实验表明该方法在移动设备环境下能够达到较高的正确率和认证精度.

关键词: 指根边缘; 角平分线拟合; 关键点定位; 移动终端; 最小二乘法

Angular Bisector Fitting of Finger Valley

Edge for Palmprint Localization

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Abstract: Aiming at the inaccurate positioning of region of interest (ROI), a method of ROI localization based on angular bisector of finger valley edge is proposed. Firstly, the edges are extracted in the YCbCr color space, i.e. tracing the palmprint contour. Then the pseudo edges and noises are removed with the ellipse model. In addition, the actual edges are smoothed and repaired with morphological manipulation, which leads to the regionalization of valley edges between fingers. On the two obtained edge regions, the two angular bisector are fitted with least square method to detect two key-points of finger valley. The proposed method cannot only remove the disturbance in the background near the finger valley, but also overcome the deviation of ROI localization resulted from the slight rotation of the palm. The experimental results confirm that the proposed method can achieve high accuracy and verification precision in mobile device environment.

Key words: finger valley edge; angular bisector fitting; key-point position; mobile terminal; least square method

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