

图形、图像、模式识别

二维直方图图形统计分析的分割方法

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摘要 一维阈值分割方法对噪声污染的图像很难达到理想的分割效果。二维直方图的分割方法结合了灰度和空间信息使分割精度提高, 但计算复杂度急剧增加, 并且传统二维直方图的方法对噪声和边缘像素的处理不够准确。改进了二维直方图的构造方法, 采用自适应滤波器平滑噪声的同时更高效地保持了图像边缘和高频细节信息。运用改进的Hough变换对二维直方图进行图形统计分析, 并搜索二维直方图的平面分割线, 将二维直方图划分为不同的分割区域。实验结果表明改进的算法对噪声污染的图像有更好的抗噪能力, 分割也更加准确。

关键词 [二维直方图](#) [自适应滤波](#) [改进Hough变换](#) [图形统计分析](#) [分割线](#)

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2D histogram segmentation based on graphic statistical analysis

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Abstract

Threshold segmentation methods based on one dimension are not appropriate to segment the images with high noise. Image segmentation methods based on 2D histogram combine the information of gray and spatial neighborhood in order to enhance accuracy. However the complexity of the algorithms based on 2D histogram increases sharply. Moreover, the conventional 2D histogram methods do not process noise and edge pixels appropriately. The establishment of 2D histogram is improved based on adaptive filter to smooth noise, protect edge and detail information of high frequency. Modified Hough transformation is applied to do graphic statistical analysis of 2D histogram and search segment line that divides 2D histogram into different segment regions. The experimental results show that the improved algorithm has better performance of anti-noise and more accurate precision.

Key words [2D histogram](#) [adaptive filter](#) [improved Hough transformation](#) [graphic statistical analysis](#) [segment line](#)

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