

图形、图像、模式识别

基于组合式形态学算子的多尺度边缘检测

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收稿日期 2008-8-14 修回日期 2008-10-29 网络版发布日期 2010-2-8 接受日期

摘要 针对传统的边缘检测方法因卷积运算造成模糊图像边缘, 且对噪声敏感, 各种形态学边缘检测方法因检测到的边缘信息类型不同而容易使边缘信息丢失, 提出一种组合式抗噪型形态学边缘检测算子; 并利用不同尺度的结构元素具有不同的图像边缘检测效果, 进行形态结构元素的尺度调整, 得到不同尺度结构元素下的图像边缘位置; 然后进行加权合成来获得边缘图像; 实验表明, 与其他的传统或者形态学边缘检测方法相比, 该文方法不仅具有更好的噪声抑制功能, 而且其检测到的边缘轮廓更加清晰完整, 边缘细节更加丰富。

关键词 [数学形态学](#) [组合式边缘检测算子](#) [多尺度](#) [结构元素](#)

分类号 [TP391](#)

Multi-scale edge detection method based on synthesized morphological transform

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Abstract

The detection results of traditional edge detection method are fuzzing and sensitive to noise for convolution operation, and the detection results of morphological edge detection method are easy to lose edge information for various detection results. A new morphological edge detection method is proposed. This method realizes a modified morphological transform through combining various combined anti-noise-morphological edge detection transforms. The detection results of image edge are different morphologically for multi-scale structural elements. Thus, the image edges position under various sizes of structural elements is obtained by the size adjustment of the morphological structural elements, and then it is synthesized in a weighting way so as to form the edge image. Experiments show that, compared with other traditional or morphological edge detection methods, the method in this paper reveals its superiority over de-noising capacity, more complete and clearer edge contour with more exact details.

Key words [mathematic morphology](#) [synthesized edge detection transform](#) [multi-sacle](#) [structural element](#)

DOI: 10.3778/j.issn.1002-8331.2010.05.049

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