

图形、图像、模式识别

将Otsu用于多阈值彩色图像分割的方法及优化

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摘要 针对传统Otsu算法只用于单阈值分割的不足, 将Otsu算法推广到多阈值彩色图像分割中, 提出先在众多极大值中寻找有意义峰值, 根据峰值将直方图划分成多个待分割区间, 再在每个区间进行阈值选取的方法; 并且综合运用了形态学的方法对分割结果进行优化, 降低阈值法因不考虑图像空间特性而造成的对噪声敏感的影响。实验结果表明, 该方法能自动而快速地对彩色图像进行多阈值分割, 而且具有较强的抗噪能力。

关键词 [颜色量化](#) [多阈值](#) [有意义峰值](#) [形态学](#)

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Multi-threshold segmentation and optimization based on Otsu in color image

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Abstract

As it is of deficiency that the conventional Otsu algorithm is only applicable to single-threshold, the algorithm is extended to multi-threshold color image segmentation. Firstly, the selection of meaningful peak values among a group of maximum values is carried out. Then, according to the peak values, the diagram is divided into a certain number of segmentation intervals, in which the threshold is selected. Based on methodology of morphology, the segmentation is optimized. And the influence, as a result of ignoring the characteristics of space, which the threshold technique imposes on noises, is lessened. The results of the experiment indicate that the Otsu algorithm based on multi-threshold color image segmentation is able to implement automatic and rapid multi-threshold segmentation, and is noise-resistant to some extent.

Key words [color quantization](#) [multi-threshold](#) [the meaning peak](#) [morphology](#)

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