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Reducing the oversegmentation induced by quasi-flat zones for multivariate images

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Abstract

Quasi-flat zones are morphological operators which partition the image into homogeneous regions with respect to certain criteria. They are used in grayscale and multivariate image simplification and segmentation. However, they often induce an oversegmentation of the image, taking the shape of narrow transition regions between objects and small regions which are a few pixels wide. Various methods have been devised in order to reduce this oversegmentation, which remove the unwanted zones according to some criteria and then grow the remaining regions. In this paper we propose improvements in transition region and area threshold filtering. We also combine the two filtering methods for further-improved results. We apply the proposed approaches in color image segmentation and hyperspectral pixel classification.

Keywords:

quasi-flat zones, mathematical morphology, color image segmentation, hyperspectral pixel classification, EDICS: 4.4 morphological image analysis

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