

光电信息获取与处理

基于最大散度差准则的阈值图像分割

王志斌;谷越;李志全

燕山大学电气工程学院, 河北秦皇岛066004

摘要:

针对目标和背景的面积相差很大时,最大类间方差阈值法(Otsu阈值法)得到的阈值是“有偏”的,从而造成阈值图像分割失败的问题,提出一种最大散度差准则的阈值图像分割方法。最大散度差准则以广义散度差——类间方差减去C倍的类内方差作为分离性度量,同时考虑类间方差和类内方差在可分性中的作用,可有效克服最大类间方差阈值法(Otsu阈值法)的阈值“偏移”现象。实验结果表明:通过选择适当的参数C,该方法能得到比最大类间方差法更好的分割结果。

关键词: 图像分割 最大散度差 最大类间方差

Threshold image segmentation based on maximum scatter difference discriminant criterion

WANG Zhi-bin;GU Yue; LI Zhi-quan

Institute of Electrical Engineering, Qinhuangdao 066004, China

Abstract:

Previous research results show that threshold obtained by maximum between-class variance method (i.e. Otsu method) is biased when the area of object and background differs significantly and may lead to failure segmentation. A new image segmentation method based on maximum scatter difference is proposed. Maximum scatter difference uses generalized scatter difference, i.e., the difference of between-class scatter difference and C times of within class scatter difference, as the discriminant measure. Maximum scatter difference considers simultaneously the function of discrimination of between class scatter difference within-class scatter difference. The proposed method can prevent the threshold biasing from maximum between-class variance method. Experimental results show that the proposed method can obtain better segmentation result than otsu method by appropriately selecting parameter C.

Keywords: image segmentation maximum scatter difference maximum between-class variance

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通讯作者: 王志斌(1977-),男,河北行唐人,副教授,博士,主要从事图像处理、模式识别与光纤传感技术研究工作。

作者简介:

作者Email: wzb\_ysb@sina.com

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