基于对比度补偿的古籍图像二值化算法研究

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摘　要：环境因素及不当保存会使古籍退化严重，对此设计一种二值化算法来解决具有均匀字符大小的退化古籍图像的低对比度问题，从而更好地揭示古籍所记载内容.算法首先利用 Canny 算子提取图像文本的边缘信息并估计平均笔划宽度，根据笔划宽度来估计古籍图像背景，然后用背景信息来对古籍进行对比度补偿，从而提高古籍图像对比度，最后利用 Howe 的算法对补偿后的古籍进行二值化处理，后处理算法进一步提高了图像质量，得到最终的二值图像.实验结果证实了该算法的有效性.该算法优于在 ICFHR'2014 国际会议上获得第一名的 Mesquita 的算法.

关键词：　对比度补偿；古籍图像；二值化

Study of Ancient Books Image Binarization Based on Contrast Compensation

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Abstract：　Many environmental factors and improper handling cause ancient document to suffer a high degree of degradation. In order to solve the problems that arise in the binarization of old books images having a uniform character-size characterized by variations in image contrast, we try to design a binarization algorithm in order to better reveal the contents recorded in ancient books. Fist we will detect text stroke edges by Canny's method and calculate stroke widths, the ancient books image background is estimated through the calculated stroke width. Next step, we compensate the ancient document contrast by using the estimated background. Then, the document text is segmented by Howe's binarization algorithm. Further improvements are achieved by a postprocessing step. Finally the performance of the algorithm is analyzed and evaluated, the proposed method is better than Mesquita' method which achieved the best performance in the ICFHR'2014.

Key words：　contrast compensation; ancient books image; binarization

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