Abstract

Image binarization is the separation of each pixel values into two collections, black as a foreground and white as a background. Thresholding technique is used for document image binarization. Image binarization plays vital role in segmentation of text from the document images that are badly degraded due to the high interintra variations between the foreground text of document images and document background. This paper, proposes technique to address the issues of degraded images using adaptive image contrast. The adaptive image contrast technique is a combination of the local image contrast and the local image gradient. And they are tolerant to variation of text and background. Such variations are caused by number of document degradations. The proposed technique, constructs adaptive contrast map for degraded image. The contrast map is combined with Canny’s edge map, for the identification of text stroke edge pixels. Thresholding technique can be applied as global technique and local technique. Global thresholding is suitable for a document where there is uniform contrast delivery of background and foreground. However global thresholding fails to the applications
where difference in contrast, Extensive background noise and difference in brightness exists. In such circumstances categorization of many pixels as a foreground or as a background is not so easy. Local thresholding plays significant role in such cases. Local thresholding technique uses local threshold $t$ w.r.t. local window to segment the document image. This local threshold $t$ is estimated based on the intensities of detected text stroke edge pixels. The proposed method is simple, robust, and involves minimum parameter tuning. It has been tested on three public datasets that are used in the recent document image binarization contest (DIBCO) 2009 & 2011 and handwritten-DIBCO 2010.

References

Index Terms

Computer Science  
Image Processing

Keywords

Adaptive image contrast, document analysis, document image processing, degraded image, image binarization, pixel classification, Contrast Image, Canny Edge Detector, Local threshold Segmentation.