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Keypoint-based scene-text detection and character classification using color and gradient features

Sriman, Bowornrat

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Propositions

1. If it is difficult to extract characters from a plain document image, then the application of this operator to a scene image in an uncontrolled environment will not be easier (Chapter 1).
2. Keypoint-descriptor vectors and keypoint locations of SIFT are useful for both character-shape recognition and for scene-text detection in Thai script (Chapter 2, Fig 2.10).
3. Applying autocorrelation function to a color space is robust to the lighting condition (Chapter 4 Fig. 4.2, Fig. 4.4).
4. Color is useful for the distinction between homogeneous and inhomogeneous image regions, thereby supporting object detection and classification (Chapter 4).
5. A Gaussian blur with small sigma is sufficient to homogenize patchy object areas for the general text-chunk localization in scene images. (Chapter 5, Fig. 5.12).
6. Heterogeneous features achieve higher classification performance than homogeneous features and are applicable to a variety of object classification tasks (Chapter 3 and 4).
7. The advantage of explicit feature methods and k-means clustering is that the computational load and imbalance between target and background patterns can be optimized in detail (Chapter 4).