Texture classification and discrimination for region-based image retrieval

ABSTRACT

In RBIR, texture features are crucial in determining the class a region belongs to since they can overcome the limitations of color and shape features. Two robust approaches to model texture features are Gabor and curvelet features. Although both features are close to human visual perception, sufficient information needs to be extracted from their sub-bands for effective texture classification. Moreover, shape irregularity can be a problem since Gabor and curvelet transforms can only be applied on the regular shapes. In this paper, we propose an approach that uses both the Gabor wavelet and the curvelet transforms on the transferred regular shapes of the image regions. We also apply a fitting method to encode the sub-bands' information in the polynomial coefficients to create a texture feature vector with the maximum power of discrimination. Experiments on texture classification task with Image CLEF and Outex databases demonstrate the effectiveness of the proposed approach.