An Improved Bag-of-Features Approach for Object Recognition from Natural Images

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Abstract

This paper proposes a novel approach for adding spatial information with local appearance features for improved classification accuracy using the Bag-of-Features approach. Spatial information can describe the probability of finding local appearance features within a sub-region of an image. Speeded-Up Robust Features (SURF), describing the appearance of small regions within an image, are extracted from sets of images used for training and testing. Extracted local image features are extended using quantized xy-coordinates that serve as spatial features. The classification is done using a Support Vector Machine (SVM) and comparisons with previous approaches have been drawn. It is observed that the proposed approach produces a significant increase in classification accuracy.

References


Index Terms

Computer Science

Image Processing

Keywords

Bag-of-Features, SURF, Spatial Visual Vocabulary.