

## Bag of Words Representation Based on Fusing Two Color Local Descriptors and Building Multiple Dictionaries

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**Abstract :** We propose an extension to the famous method called Bag of words (BOW) which proved a successful role in the field of image categorization. Practically, this method based on representing image with visual words. In this work, firstly, we extract features from images using Spatial Pyramid Representation (SPR) and two dissimilar color descriptors which are opponent-SIFT and transformed-color-SIFT. Secondly, we fuse color local features by joining the two histograms coming from these descriptors. Thirdly, after collecting of all features, we generate multi-dictionaries coming from n random feature subsets that obtained by dividing all features into n random groups. Then, by using these dictionaries separately each image can be represented by n histograms which are lately concatenated horizontally and form the final histogram, that allows to combine Multiple Dictionaries (MDBoW). In the final step, in order to classify image we have applied Support Vector Machine (SVM) on the generated histograms. Experimentally, we have used two dissimilar image datasets in order to test our proposition: Caltech 256 and PASCAL VOC 2007.

**Keywords :** bag of words (BOW), color descriptors, multi-dictionaries, MDBoW

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