Abstract

In the recent research era analyzing and classifying images into meaningful categories using low-level visual features and high-level semantic features is a challenging and important problem. This paper focuses on the classification of COREL dataset images into its specific category using Weighted Feature Support Vector Machines (WFSVM) and the results are
compared with Support Vector Machine (SVM) for validation. In WFSVM, the kernel function is precomputed by assigning more weight to relevant features using the principle of maximizing deviations. Initially, any two classes of COREL dataset is divided into training and test set and segmented using Fuzzy C Means clustering. Then from each segment of the image, color and texture features are extracted. The extracted features of the training dataset are used to construct the weighted features and precomputed linear kernel for training the WFSVM and its model file is created. Using this model file the features of test samples are classified into its specific category. Overall accuracy of classification using WFSVM is 99%, and the number of support vectors created is 6 whereas the accuracy of traditional SVM is 97% and the number of support vectors created is 12, justifies the performance of the proposed method with the existing methods.

Reference

- Tianxia Gong, Shimiao Li and Chew Lim Tan, “A Semantic Similarity Language Model to Improve Automatic Image Annotation”, in Tools with Artificial Intelligence (ICTAI), 2010 22nd
- COREL database http://corel.digitalriver.com/
- LibSVM www.csie.ntu.edu.tw/~cjlin/libsvm/.

**Index Terms**

Computer Science  
Pattern Analysis

**Key words**

Texture features  
Color features  
Kernel Function Support

Vector Machine  
Weighted Feature Support Vector Machine