Abstract

A density based multi-feature combination approach to classify vehicles using support vector machine (SVM) classifier is proposed in this paper. Features like Haar, Gradient, RGB and Pyramidal histogram of oriented gradients are extracted from vehicle images and a kernel density approximation is performed. The results are compared with another set of multi-feature combination and effects of using kernel density estimators and various kernels like Gaussian, Polynomial and Histogram intersection in SVM are also studied. It is found that the above mentioned feature combination produces good results in comparison and effects of scaling, orientation and shadowing were properly compensated. A sample set of 9360 images were used with half of them used for training the classifier and the other half for testing. The vehicles were clustered into four categories, namely 2-wheeler, 3- wheeler, light motor vehicle (LMV) and heavy motor vehicles (HMV) and an accuracy greater than 90% has been observed.

References

Vehicle Classification using Density based Multi-feature Approach in Support Vector Machine Classifier

2006.

**Index Terms**

Computer Science  
Image Processing

**Keywords**