Abstract

An efficient shape-based recognition system of U. S. speed limit road signs is presented in this paper. The proposed system accomplishes speed sign detection and recognition processes using three main stages, namely, geometrical-based detection of rectangular road signs, shape-based segmentation and feature extraction, and pattern classification using a K-nearest neighbor classifier (KNN). Twenty shape descriptors are computed for the most discriminative numerals of each detected sign. The proposed system is invariant to scale, rotation, and partial occlusion. The proposed system has been tested in different conditions, including sunny, cloudy, and rainy weather, and the experimental results on 195 speed signs reveals the efficiency of the proposed shape pattern segmentation and feature extraction methods.

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Index Terms

Computer Science  Pattern Recognition

Keywords

Speed Sign Recognition  Morphology-based Features  Feature Extraction
Classification.