Automated Vehicle Identification System based on Discrete Curvelet Transform for Visual Surveillance and Traffic Monitoring System

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Abstract

For identification of vehicles, Classifier is designed. Designing of vehicle classifier using the discrete Curvelet transform via wrapping is proposed in this paper. To increase the efficiency of classifier, 3 class structures designed with respect to the ratio of length and width of the vehicle or person on the road. Each Image is preprocessed with Unsharp filtering which provides edge details. Each sharpen Image is converted into binary image by applying global threshold using otsu's method. Binary images are decomposed using fast discrete Curvelet transform. The Curvelet coefficients from low frequency and high frequency component at different scale and orientations are obtained. The frequency coefficients used to create the feature vector matrix for all images. The Eigen value of the feature matrix is used for dimensionality reduction. The Experiments carried out on different types of vehicle images. The results of the classifier show the efficiency to handle the real time dataset.

References

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Index Terms

Computer Science

Image Processing

Keywords

Discrete Curvelet Transform, Vehicle Classifier, Euclidean Distance, Principal Component Analysis

Feature Extraction; Neural Network