



## VIDEO-BASED VEHICLE DETECTION AND CLASSIFICATION IN CHALLENGING SCENARIOS

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*Abstract- In intelligent transportation system, research on vehicle detection and classification has high theory significance and application value. According to the traditional methods of vehicle detection which can't be well applied in challenging scenario, this paper proposes a novel Bayesian fusion algorithm based on Gaussian mixture model. We extract the features of vehicle from images, including shape features, texture features, and the gradient direction histogram features after dimension reduction. In vehicle classification part, we adopt fuzzy support vector machine, and design a novel vehicle classifier based on nested one-vs-one algorithm. Finally, experimental tests show excellent results of our methods in both vehicle detection and classification.*

**Index terms:** Vehicle detection, Gaussian mixture, Bayesian fusion, fuzzy SVM, vehicle classification

