#  Multi-Traffic Scene Perception Based on Supervised Learning

**Abstract:**

 Traffic accidents are particularly serious at a rainy day, night without street lamp, overcast, rainy night, foggy day and many other low visibility conditions. Present vision driver assistance systems are designed to perform under good-natured weather conditions. Classification is a methodology to identify the type of optical characteristics for vision enhancement algorithms to make them more efficient. To improve machine vision in bad weather situations, a multi-class weather classification method is presented based on multiple weather features and supervised learning. Firstly, underlying visual features are extracted from multi-traffic scene images, and then the feature was expressed as an eight-dimensions feature matrix. Secondly, five supervised learning algorithms are used to train classifiers. The analysis shows that extracted features can accurately describe the image semantics and the classifiers have high recognition accuracy rate and adaptive ability. The proposed method provides the basis for further enhancing the detection of anterior vehicle detection during nighttime illumination changes, as well as enhancing the driver's field of vision in a foggy day.