

## Real-Time Multi-Vehicle Tracking Application at Intersections Based on Feature Selection in Combination with Color Attribution

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**Abstract :** In multi-vehicle tracking, based on feature selection, the tracking system efficiently tracks vehicles in a video with minimal error in combination with color attribution, which focuses on presenting a simple and fast, yet accurate and robust solution to the problem such as inaccurately and untimely responses of statistics-based adaptive traffic control system in the intersection scenario. In this study, a real-time tracking system is proposed for multi-vehicle tracking in the intersection scene. Considering the complexity and application feasibility of the algorithm, in the object detection step, the detection result provided by virtual loops were post-processed and then used as the input for the tracker. For the tracker, lightweight methods were designed to extract and select features and incorporate them into the adaptive color tracking (ACT) framework. And the approbatory online feature selection algorithms are integrated on the mature ACT system with good compatibility. The proposed feature selection methods and multi-vehicle tracking method are evaluated on KITTI datasets and show efficient vehicle tracking performance when compared to the other state-of-the-art approaches in the same category. And the system performs excellently on the video sequences recorded at the intersection. Furthermore, the presented vehicle tracking system is suitable for surveillance applications.

**Keywords :** real-time, multi-vehicle tracking, feature selection, color attribution

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