

Special Issue on Car Navigation & Vehicle Systems

Call for Papers

Automated interpretation and navigation in traffic scenes has long been in the center of interest for having great impact on the safety and comfort of the driver. Thanks to the recent proliferation of GPS enabled equipment, which are fitted to about half of all new passenger vehicles, such visual perception based solutions became even more essential. In addition to route guidance and traffic information, advanced navigation systems also provide enhanced driver assistance to maintain a safe speed, keep a safe distance, drive within the lane, avoid overtaking in critical situations, safely pass intersections, avoid collisions with vulnerable road users, and as a last resort, reduce the severity of an accident if it still occurs. Yet, automatic detection and recognition of such objects and events comes with many challenges. Complex backgrounds, low visibility weather conditions, cast shadows, strong headlights, direct sunlight during dusk and dawn, uneven street illumination, occlusion caused by other vehicles, great variation of traffic pictograms are just some of the issues that make these tasks difficult. On top of these, constantly streaming video data is required to be processed in real-time with often limited hardware resources while achieving high accuracy requirements

The objective of this special issue is to provide a comprehensive overview of theoretical and practical aspects as well as collate and disseminate the state-of-the-science research results on vision based solutions for car navigation systems. In this context, high quality contributions are solicited on, but not restricted to, the following topics:

- Multi-modal and multi-camera data acquisition and fusion for car navigation
- Segmentation of traffic scenes
- Vehicle camera motion estimation and calibration
- Traffic sign, lane, pedestrian, point-of-interest detection
- Detection of traffic agents like pedestrians and cars
- Detection of street objects including traffic signs, stop lights, polls, etc
- Detection of lane and street markings, and OCR for signs
- Dynamic models and tracking
- Multi-class and context-dependent classifiers
- Traffic event recognition, driver status detection, collision warning
- Real-time and memory-constrained methods
- City modeling for navigation, visualization and rendering of virtual traffic scenes
- Automatic parking, automatic navigation and vision based path planning
- Vehicle-to-vehicle communication for visual information propagation
- Content retrieval in traffic databases
- Distributed processing and online approaches

Important Dates:

Manuscript submission:	August 31, 2010
Final manuscripts due:	December 31, 2010
Publication date:	April, 2011

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