
A Binocular Vision System for Automated Vehicle

Personnel

M.J. Kais (M. Parent and I. Masaki)

Sponsorship

INRIA and Intelligent Transportation Research Center

In many urban environments, the usage of the private automobile has led to severe problems with respect of pollution, noise, safety and general degradation of the quality of life. Alternative solutions to the private automobile with the same flexibility now appear with a new concept of mobility: the automobile is part of the public transportation system and is used as a complement to mass transit and non-motorisedmotorized transportation.

A new form of vehicle-sharing is now appearing with a new type of vehicle: the automated vehicle. These vehicles have automated driving capabilities on an existing road infrastructure where they just need a right of way, such as a dedicated bus-lane. Of course, with the existing technologies, the speed of these vehicles is limited at around 30 km/h but this is quite sufficient in many urban environments and the technology, as well as the infrastructures (with dedicated high speed sections) will certainly evolve. Some of these vehicles can also allow for traditional manual driving in order to run among normal traffic. In these cases, the vehicles are called dual-mode and their automated capabilities allow them to be put in platoons, for example in order to collect them.

We are currently working on binocular vision, which is an interesting technology since it is possible to get a map of the distance between each object in the image and the vision system. Moreover this technology allows us to perform a segmentation of the objects belonging to the plane of the road (lane marker, contact points between the obstacles and the road) and the obstacles (car, pedestrian, crash barrier ...). This system is being developed to perform three key functions for an automated vehicle: lane marker detection, obstacle detection and the detection and location of specific target on the front of the vehicles to provide platooning capability.
