

Dickmanns ED 2002: **Vision for Ground Vehicles, History and prospects**

Abstract: A review on the last two decades of development of vision for ground vehicles is given. The line of development for road vehicles based on digital microprocessors dates back to the early 80ies. The European EUREKA-project 'Prometheus' brought about a boost in efforts in this field with demonstrations in public traffic in 1994 (Autoroute A1 near Paris). Progress has been and will be governed in the near future by the increase in microprocessor performance by about one order of magnitude every 4 to 5 years. All basic perception and action tasks for driving have been demonstrated to be performable autonomously. First products are being introduced into the market right now. On the research frontier, a first highly integrated dynamic vision system has become operational recently and is discussed as reference for future developments (Expectation-based, Multi-focal, Saccadic (EMS) Vision).

Initially, assistance systems will dominate for accumulating experience while the human operator carries all responsibility. In the long run, phases of fully autonomous driving may become affordable after clarification of the legal implications. The driver will have a choice to make use of these capabilities; manual driving is likely to remain an option for enjoying own skills. However, the autonomous system may intervene in order to prevent clearly dangerous situations.