



3D vision for autonomous path planning: the sensor system models the vehicle environment in 3D and generates a map.

3D VISION AND MODELING AUTONOMOUS LAND VEHICLES

GENERAL

Sensor systems that capture the environment of a vehicle in 3D enable driver-independent obstacle detection and routing, thus constituting an important element in autonomous driving and assistance systems for vehicles ranging from rail vehicles (trains, trams) to road vehicles (cars, trucks) and vehicles used in the construction and agricultural industries (excavators, tractors etc.).

The overriding goal is to improve safety by supporting the driver while also improving efficiency and reducing operating costs. The technologies available also support the implementation of fully autonomous vehicles.

SEMI-AUTONOMOUS CONVOYING AND SAFE CONTROL OF AUTONOMOUS VEHICLES

AIT is developing technologies for autonomous land vehicles designed to prevent the loss of human life in dangerous environments. The research is carried out under the KIRAS Safety and Security Research Programme (funded by the Federal Ministry of Transport, Innovation and Technology, BMVIT). Potential applications range from safe and reliable navigation of supply and rescue convoys in danger zones to the use of special-purpose vehicles and machines in civil disaster scenarios.

The projects involve a range of technological challenges: a robust yet cost-efficient system of cameras capturing the vehicle environment, the generation of 3D real-time models of the vehicle environment as well as autonomous path and movement planning. The aim is to develop highly innovative solutions for precise navigation in spite of limited GPS availability.

SELF-DRIVING TRACTOR FOR AUTONOMOUS OPERATION

AIT has used its comprehensive expertise in advanced camera technology and intelligent vision systems to develop a modern drive-by-wire tractor. The new development made its debut during the European Land Robot Trial (ELROB 2016), where international research teams showcased their autonomous vehicle concepts. AIT has developed the tractor into a completely autonomous vehicle for use in special off-road scenarios using advances environmental perception technology. The tractor is developed in close collaboration with Austrian partners and receives funding from the Federal Ministry of Transport, Innovation and Technology (BMVIT).

