EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN

Mathematisch-Naturwissenschaftliche Fakultät
Fachbereich Informatik
Kognitive Systeme (Prof. A. Zell)

Masterarbeit

Path planning for following a moving goal at high speeds

The goal of this thesis is to develop a path planning algorithm for a mobile robot driving outdoors at high speeds (3 m/s) and following a moving goal. The algorithm should be very fast at re-planning, since both the robot and the goal are moving at higher speeds. It should also be able to deal with static and dynamic obstacles.

Both kinematic and dynamic constraints should be considered (a full dynamic model of the robot will be given). Based on the live sensor data, traversability of the surrounding terrain should also be considered and integrated in the constraints. Sensors used for this purpose will most probably be a 3D laser scanner and a stereo camera system. The mobile robot used in the experiments will be a Robotnik Summit XL.

An already implemented A* planning algorithm with kinematic constraints will be at the disposal, to serve as a starting point. An already implemented high-speed collision avoidance algorithm could also be integrated in this work.

The output of the new algorithm could be a set of possible paths, or a weighted area around a path. The algorithm should be compared to the state of the art algorithms, such as e.g. the dynamic window approach.

Communication with the supervisor is in German or English.

Kontakt

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