TECHNISCHE UNIVERSITÄT DRESDEN

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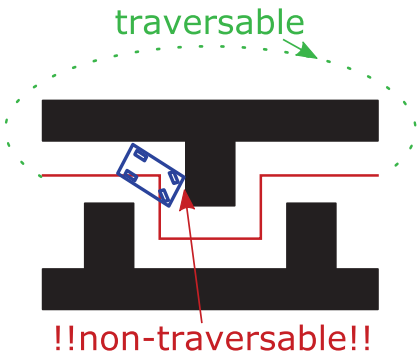
Evaluation of grid based path planning algorithms regarding nonholonomic constraints

Path planning is a typical task, that has to be done by a mobile, robotic system. Determined paths have to be close to optimal and shall be traversable. In some cases a moving robot can not follow a planned path due to nonholonomic constraints.
An algorithm, that considers nonholonomic constraints during the planning phase, is designed in this thesis. Concepts of well known path planning algorithms like A^* or D^* are considered and there applicability for a nonholonomic path planner is discussed.
The environment is represented by a grid and due to new sensor information it might change in some regions. The proposed path of the algorithm should be optimal all the time.
To evaluate the potential of the new algorithm for the implementation on mobile platforms it is compared to some existing, nonholonomic path planners. Under special consideration are the runtime and memory usage of the algorithms as well as the ability to replan after an update of parts of the map.



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