Bachelor or Master Thesis

Implementation and Comparison of Local Path Planning Algorithms for Smooth Steering

Description

Planning a path that can be driven by a car-like robot and considers the dynamics of the robot itself is a non-trivial task. Therefore local path planners, that connect pairs of given start and end poses in free space work considering only kinematic constraints. As a consequence, the output path cannot be driven accurately by the robot. Approaches exist to mitigate this problem, such as the approximation of the ramps in acceleration due to the inertia of the robot (both linear and rotational accelerations). Common approaches include Clothoid and Bézier curves. The goal of this work is to implement those solutions and compare their performance.

Previous Knowledge Required

C++, ROS

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