Master Thesis

Topic: Nonlinear path tracking based on model-predictive control in mobile robots

DESCRIPTION:

In this master thesis, a benchmark mobile robot is used to develop a nonlinear model predictive controller for path tracking purposes (see link below for the robot we use for this purposes). The controller design is based on nonlinear model predictive control (NMPC). For this purpose, the used model is selected based on state-of-the-art in the literature. The NMPC is supposed to consider the coupled lateral and longitudinal dynamics of the system.

The designed controller will be evaluated in real-time tests in order to assess the tracking performance. For this purpose, the desired path is generated by the navigation stack for Turtlebot (see link below).

The implementation of the method is intended to be in C++. The robot is realized on ROS 1.0 platform.

REQUIREMENTS: Independent working style, some familiarity with C++, and ROS, interest in robotics.

ROBOT: rub.de/mas/forschung/forschungsgebiete

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Mechanik
adaptiver
Systeme

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