

Bachelor's Thesis / Master's Thesis

Implementation and Evaluation of a ReconROS-based Obstacle Avoidance Architecture

ReconROS allows for easy integration of reconfigurable hardware into (existing) ROS-based robotics applications. Due to hardware acceleration, ReconROS enables faster and more energy efficient execution of computationally expensive tasks. One of these tasks in the area of mobile robotics is the recognition and avoidance of obstacles in the planned path. In a previous project, a first version of an obstacle avoidance algorithm based on ReconROS was designed and simulated.

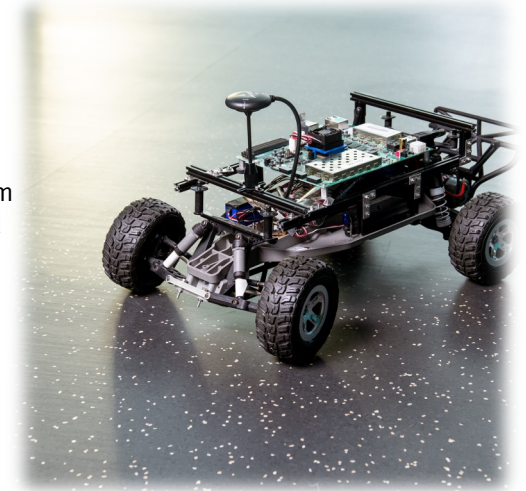
The goal of this project is the implementation of the existing approach on real hardware. The hardware platform is a model car, which comprises a state-of-the-art system-on-chip FPGA and sensors and actors for moving and environmental recognition.

Type of project

- Implement and evaluate a hardware-accelerated ROS application and deploy it on a model car
- Evaluate the result with respect to performance, resource requirements and energy efficiency

Prerequisites

- C / C++ knowledge; experience with high-level synthesis (HLS) is a plus



Supervisor

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