Bachelor Thesis

Developing a software interface for autonomous rail vehicle operation

Summary:
The Robot Operating System (ROS) is an open-source framework for the development of robotics applications. It is a common foundation for developing prototype autonomous driving software in road vehicles. The Train Real Time Data Protocol (TRDP) is a specialized communication protocol for safety-critical real-time data transfer in rail vehicles. Most higher-level components of a modern train are controlled via TRDP. Future advances in autonomous rail vehicles are therefore likely to require an interface between ROS and TRDP. The goal of this thesis is to investigate the commonalities and differences between the two communication methods and propose the design for an interconnect.

Possible content:

- Description of key elements of ROS and TRDP
- Literature research on existing solutions
- Comparison of paradigms and restrictions
- Juxtaposition of data types and message formats
- Proposition of interconnect architecture
- Documentation

Requirements:

- (Advanced) C/C++ skills required
- ROS experience highly recommended

Other notes:

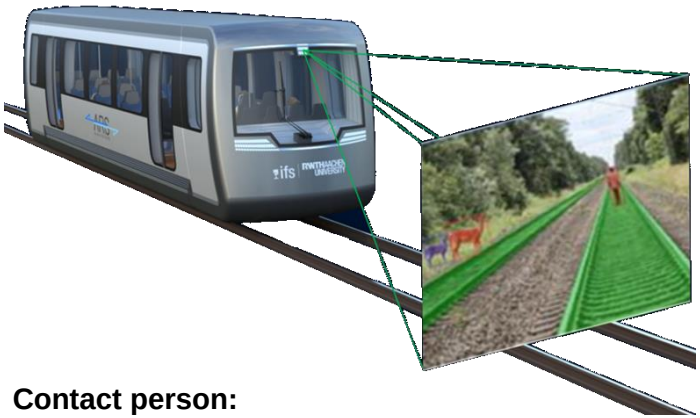
- Content and scope can be coordinated
- An independent and methodical approach to work is desirable

https://www.neobotix-roboter.de/fileadmin/images/produkte/Software/ROS/Logo-ROS_2-Main.jpg

ROS 2

TCNOpen

https://www.tcnopen.eu/2018/img/logo.png



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