Bachelor-/Master-Thesis

Development of automatic chain coupler detection based on lidar sensor data

Quelle: Zwiehoff GmbH

Current situation

Shunting (Part of rail freight traffic) on industrial spurs (e.g. steel mill, paper mill, rail workshops etc.) offers high potential for increasing efficiency through automation Currently, the IFS is researching the automation of these industrial spurs with road/rail shunting vehicles.

One task here is to reliably detect couplings on freight wagons, distinguish them from other obstacles and couple and uncouple them independently.

The aim of this work is to develop an automatic detection system for coupling hooks based on lidar sensors already installed and simulative preliminary runs and to integrate it into an existing ROS network. Optionally, the coupling detection can be extended with a driving command so that the vehicle can couple independently.

Your tasks

- Literature research on standards for freight wagon fronts
- Familiarization with sensor control and preliminary work
- Evaluation with regard to specific characteristics
- Implementation of automated data processing
- Carrying out test drives
- Documentation and discussion of the results

Your profile

- Study program mechanical engineering, rail vehicle engineering, CES or similar
- Interest in rail vehicle technology
- Programming skills advantageous
- High motivation and reliable way of working

The subject area can be adapted in consultation. If you are interested, please contact us by e-mail with a brief introduction.

Head of Institute

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About us

The Institute for Rail Vehicles and Transport Systems (IFS) at RWTH Aachen University specialises in research and teaching on rail vehicles and their components. It deals with issues in the areas of lightweight construction and structural integrity, driving dynamics and vibration comfort, wheel/rail interaction, assisted and driverless driving and condition monitoring. The IFS carries out studies, computer-aided simulations and practical tests on the above-mentioned topics. To carry out the practical tests, the IFS has its own track system with a connection to the public Deutsche Bahn network.