Universität Stuttgart

INSTITUT FÜR
KOMMUNIKATIONSNETZE
UND RECHNERSYSTEME
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Bachelor thesis No. 1016

Extension of a Network Simulator for decentralized railway control

Methods
Simulation
Object orientied programming

Topics
Communication networks

Background

At rail traffic control, security-related and purely dispositive components have to be differentiated. With the current control approach the latter are planned centrally. Even the smallest disturbances to the trains and rail lines therefore lead to extensive and time-consuming re-planning of the operational process.

A completely different approach to scheduling in rail transport are distributed coordination procedures through direct coordination between the individual trains. These have to be supported by suitable communication mechanisms.

Your Task

In this thesis, the coupling of a previously implemented network simulator with the railway operation simulator of the Institute for Railways and Transportation Systems (IEV) shall be designed to be more universal and flexible. For this purpose, the messages between the two simulators shall specified and processed on the basis of XML.

For the simulation of the radio communication then an existing model of "device-to-device" communication via LTE side channels has to be extended and adapted to the rail vehicle scenario. Different scenarios and parameter values ??then have to be simulated.

Knowledge and skills acquired

You will gain insights into future vehicle communication processes and practical experience in discrete-time simulation of communication networks in an object-oriented simulation framework.

Requirements

Kommunikationsnetze I
Programming Experience in Java

Contact

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