Platoon Control Policies based on Vehicle-To-Vehicle Communication in OMNET++

**Motivation**
Platooning, i.e., one vehicle closely following another vehicle, allows to form large convoys, where following vehicles are driven in an automated or semi-automated way. Platooning decreases fuel consumption and CO$_2$ emissions by benefiting from the aerodynamic drag reduction. To increase possible fuel savings, short inter vehicle distances are needed. To allow safe driving at short distances, Vehicle-To-Vehicle (V2V) communication is used: vehicles exchange information about their current position, velocity, and acceleration. Using the gathered data from one or more predecessors, a vehicle can determine whether it has to brake or to accelerate. Further, actions may be planned over certain time horizons, allowing other vehicles to plan and react accordingly.

**Target Group**
Students in ICE, Electrical Engineering, or comparable.

**Thesis Type**
- Master Thesis
- Master Project

**Contact**
Tobias Renzler
tobias.renzler@tugraz.at

**Goals and Tasks**
- Literature research on the topic.
- Implementation of several control policies in C/C++.
- Testing in OMNET++, a simulation environment using V2V communication.
- Comparison and evaluation based on efficiency and computational effort.
- Summarize results in a written report.

**Requirements**
- Interest in automated driving applications
- Knowledge on control theory, wireless networks, and Linux systems
- Enhanced C/C++ programming skills