

DAAD GSSP 2019

Project 5

Microscopic Models of Platoon Composition and Decomposition in Mixed Traffic Environments

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This topic addresses specific requirements that come up through the participation of autonomous vehicles in urban mixed traffic environments. Current research on autonomous platooning has investigated problems and solutions at the strategic and tactical level. However, the influence of operational decision making in platoons on traffic efficiency and safety is not yet clear. This work will investigate operational processes of vehicles joining and leaving platoons, and of the forking and merging of sub-platoons to/from a platoon. Protocols and algorithms for these processes will be developed, studying the importance and impact of different influencing features (e.g. environmental topology; degree of autonomy; human participation; size, speed, degrees of freedom of the vehicles) on traffic efficiency and safety. The approaches will be evaluated using analytic as well as simulation models. The work will build on results on mixed traffic modelling and platooning obtained in previous work of the DFG Research Training Group "SocialCars".

