Intelligent truck platooning: how to make it work

Platooning of trucks is a means to improve efficiency in the road transportation of goods. Truck platooning can lead to fuel savings in the order of 5-10%, but may also yield substantially larger benefits by, fully or partially, obviating drivers. This may be possible in situations where drivers, who engage in platooning activities, can rest while they are not the leading truck. In this paper we argue that forming truck platoons is unlikely to be successful if based on an ‘on-the-fly’ principle. Rather, a system of “platooning-stations” is required for forming platoons off the road. In the paper we propose a simple greedy-algorithm and subsequent local search for achieving locally optimal platoons at such stations. The solution reflects an optimisation of shared mileage among members of each platoon and is solved in discrete time-steps at each station. As a final contribution, we investigate the potential of the proposed algorithm in a real-world case by investigating platoon formation under a variety of circumstances for an artificial platooning station located close the Elb-tunnel. More specifically, we consider the generated route-path of 1500 trucks crossing this location and calculate optimal solutions for a variety of different design criteria’s.

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