

Cooperative traffic light control - considering cyclists with the aid of V2I

Abstract for a technical presentation

Keywords: cooperative traffic light control, bicycle, SUMO, V2I, connected driving, bicycle GLOSA-function

Maik Halbach, Kim Jannik Eggers

In recent years the percentage of cyclists in urban road traffic has constantly been growing all over the world. Therefore increasing the importance to consider cyclists in traffic control, especially at signalized intersections. Current traffic light controls (TLC) are often mainly constructed to optimize green periods for motorized traffic, considering cyclists only insufficiently at most. Because of this, we have developed a cooperative traffic light control (CTLC), which can consider cyclists as well as motorized traffic equally, by using the future-oriented technology V2I. Cyclists are equipped with a V2I capable Mobile Devices to enable their detection when approaching the intersection thereby request their required phase. Furthermore, the green period for cyclists can be adjusted by their expected arrival times at intersections. The Modul for considering cyclists from CTLC, which has the potential to be integrated in any kind of TLC, was first integrated in an existing TLC. Thus, the TLC is able to consider cyclists as well as other common road users. The CTLC Mobile Devices of the cyclist additionally provides a GLOSA-function, which informs the cyclists about the signal time of their required signal group during the approach, and provides an estimated speed recommendation accordingly. The main purpose of the CTLC is to reduce waiting times and stop numbers for cyclists. With the additional aim to minimize and prevent negative effects on the remaining traffic. For evaluation a python code of the CTLC was connected to an SUMO-network of an actual intersection in Braunschweig via TraCI. First simulations expose positive effects for cyclists, reducing waiting times as well as the amount of required stops while conserving or marginally enhancing the remaining traffic flow.