

<b>Head:</b>	Dr. Anastasios Kouvelas / Dr. Michail Makridis
<b>Topic:</b>	<b>Microscopic traffic simulation of perimeter control strategies for the city center of Zurich</b>
<b>Assistant:</b>	Ying-Chuan Ni
<b>Registration:</b>	<a href="http://www.ivt.ethz.ch/en/studies/downloads/assignments.html#registration">www.ivt.ethz.ch/en/studies/downloads/assignments.html#registration</a>

In the research field, perimeter control has been modeled with network fundamental diagram (NFD)-based approaches. However, in practice, local authorities may have different setups for perimeter control which are not based on the NFDs. For instance, in Zurich, only certain road links are considered for the activation of perimeter control. In addition, how can perimeter control actually work at the microscopic-level using the traffic signals is not clear.

The project is about realistically simulating the perimeter control strategy at the microscopic level for the city of Zurich with SUMO, an open-source microsimulation tool, and assessing the effectiveness of the strategy on network traffic performance by looking at several indicators.

The tasks may include (depending on the final format, to be discussed):

- Building the network in SUMO
- Designing the signal control logic for perimeter control
- Implementing the perimeter control strategies by controlling SUMO with Python
- Analyzing the network traffic performance
- Comparing the difference between NFD-based approaches and microsimulation

<b>Links:</b>	<a href="https://www.eclipse.org/sumo/">https://www.eclipse.org/sumo/</a>
<b>Additional remarks:</b>	Please contact the assistant at least two months before the start date if interested.
<b>Minimum credits:</b>	20/24 ECTS
<b>Recommended lectures:</b>	Road Transport Systems (Verkehr 3), Transport Systems, Traffic Engineering
<b>Additional information:</b>	Good understanding of traffic microsimulation is important. Python programming skill is required.