

IVT – Assignments

Head: Prof. Dr. Kay Axhausen

Topic: Redesigning intersections for an E-Bike City

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Registration: www.ivt.ethz.ch/en/studies/downloads/assignments.html#registration

To envision future directions for transport policy, researchers from multiple groups at D-BAUG are currently designing an “E-Bike City” - a future vision for Zurich and other cities that allocates as much road space as possible to sustainable modes such as cycling and public transit.

Currently, there are robust approaches for designing streets but no work has been done so far to understand the future organization of intersections. The process to rebuild cities into E-Bike cities is implemented in an open-source software SNMan (<https://github.com/lukasballo/snman>). In your work, you will extend this process to rebuild intersections and visualize the resulting network on a large-scale map.

The tasks are (depending on final format/group size):

- Literature review on reallocating road space and modelling intersections in the resulting networks
- Developing a process for adding intersections to the street centerline network
- Performing descriptive analyses of the resulting networks (distribution of the intersection types, average shortest paths, total allocation of road space to different modes, etc.)
- Generating large-scale maps showing the resulting network for Zurich, Aarau, and Basel
- Contributing the process to the open-source software SNMan

Recommended lectures and skills:

- Experience with Python: GeoPandas and Networkx

Credits: 8-24 ECTS, the exact scope will be adjusted to reflect the credits