

Choice set generation for large-scale cycling networks - Matteo Felder

This work presents a sensitivity analysis of the Breadth First Search on Link Elimination (BFS-LE) algorithm in the context of choice set generation for the modelling of cyclists' route choice. Compared to motorised traffic, modelling cyclists typically requires much more complex networks due to the unrestricted nature of how they can move through urban space. In comparison to other methods, the literature indicates that the BFS-LE algorithm performs exceptionally well in terms of computational cost hence making it particularly well suited for applications on large-scale cycling networks. As cycling is becoming an increasingly relevant mode due to the urgent need to decarbonize urban transport, there is a need for up-to-date bicycle route choice models, specifically for designing cycling infrastructure.

This study is part of a wider effort of making the BFS-LE algorithm more accessible to a larger community by integrating it into the MATSim framework and in developing a state-of-the-art route choice model for cyclists. Additionally, we present findings useful to modellers aiming to fine-tune the BFS-LE algorithm to their use-case.

This is joint work with Adrian Meister and Kay W. Axhausen.