TU Clausthal

Bachelor-, Master- und Doktorandenseminar
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Evaluating a heuristic for alternative routes in road networks

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The aim of this thesis is to evaluate a heuristic which produces reasonable alternative paths in a road network. In many different optimization problems for instance in transportation, it is desired to get the best *k* solutions instead of only a single best one. A daily example is to plan routes online or to use a route guidance system. For planning road trips it is desirable to not only get the fastest or the shortest route but reasonable alternative paths. In other cases the *k* shortest paths are requested. In this thesis an existing heuristic is explained which constructs reasonable alternative paths in a road network. For this task several constraints are given. This thesis compares the heuristic with an exact but slower algorithm which was designed to get the *k* shortest paths. Most of those *k* shortest paths are not viable because they share a large number of roads with the shortest path. Therefore, the exact approach was adjusted to find the optimal *k* alternative paths. The heuristic is compared against that adjusted version of the exact approach to check the reasonability of that heuristic. It computes meaningful results and is much faster than the exact approach. Small graphs are constructed where one of both algorithm fails or is extremly slow. They are also tested on a real world road network.

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