

The use of move evaluations (deltas) from previous iterations in local search

The goal of the task is to improve the time efficiency of the steepest local search with the use move evaluations (deltas) from previous iterations (list of improving moves) using the neighborhood, which turned out to be the best in assignment 3. Both inter-route and intra-route moves should be included in the list. In the case of inter-route moves of the exchange of two edges, you should carefully read the description of the lectures on the traveling salesman problem, in particular:

- Consider 3 situations (when we browse moves from LM):
 - Removed edges (defining the saved move) no longer exist in the current solution (at least one of them)
 - -> remove the move from LM
 - Removed edges occur in the current solution in a different relative direction from the saved one – not applicable now but the move can be applied in the future
 - -> leave the move in LM but do not apply it browse LM further
 - Removed edges appear in the current solution in the same relative direction (also both reversed)
 - -> perform (apply) the move and remove from LM
- When evaluating new moves we need to consider also moves with inverted edges. This includes also the initial solution for which we need to evaluate all currently applicable moves and moves with relatively inverted edges.

This mechanism should be used separately from candidate moves. Optionally, you can try to implement them both together.

As starting solutions use random solutions.

As baseline report also results of the steepest local search with random starting solutions without these mechanisms.

Computational experiment: Run each of the methods 200 times.

Reporting results: Use tables as in the previous assignment.

The outline of the report as previously.