

Institut für Diskrete Mathematik

Seminar für Kombinatorik und Optimierung:

25.5.2021, 9:00 (on time)

online meeting via BigBlueButton

Graph Pruning and its Application in Automatic Location Graph Construction

BERHARD GEIGER AND CHRISTOPH SCHWEIMER

(Know-Center Graz)

Abstract:

Given a graph with weighted edges, a common task is to find shortest paths between vertices, i.e., paths with minimal weight. To facilitate such tasks, we consider the problem of edge pruning: For any two vertices, the shortest paths of the pruned graph have the same lengths as the shortest paths of the original graph. In the first part of the talk, we briefly review existing approaches to graph pruning and show that the computational complexity of the pruning task reduces if the original graph satisfies certain conditions. The second part of the talk is concerned with a concrete application of graph pruning, namely with the construction of location graphs from map data. We show that our approach to location graph construction ensures that the conditions for low computational complexity are met and illustrate the performance of our algorithm at the hand of several examples. Our work has practical relevance in areas such as logistics optimisation and agent-based movement simulations.

After the talk there will be time for talk related questions and afterwards for an informal chat.

Meeting link (BigBlueButton)

<https://cloud.tugraz.at/index.php/apps/bbb/b/SCdx29d4j8riLLk2>

Meeting password (required): J6qofSS5

Eranda Dragoti-Çela and Bettina Klinz