

Route Planning in Transportation—When the Metric Matters

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Abstract

Nowadays, route planning systems belong to the most frequently used information systems at all. The algorithmic core problem of such systems is the classical shortest paths problem that can be solved by Dijkstra's algorithm in almost linear time. However, Dijkstra's algorithm still takes a few seconds in continental-sized graphs, which is too slow for practical scenarios. Algorithms for route planning in transportation networks have recently undergone a rapid development, leading to methods that are up to several million times faster than Dijkstra's algorithm. The metric considered is typically driving time, but could be also something else like distance, costs, number of left turns or energy consumption. This talk provides a condensed survey of recent advances in algorithms for route planning in transportation networks. In particular, we will discuss scenarios where the metric matters, including customizable route planning which supports, e.g., real-time traffic updates.

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