

Candidate Sets for Alternative Routes

Motivation

PAST: shortest paths

- “race” in algorithm engineering
- sub-microsecond query times, preprocessing in seconds

PRESENT: complex tasks

- time-dependent / stochastic
- dynamic / multi-modal settings
- **alternative routes**



Candidate Sets for Alternative Routes

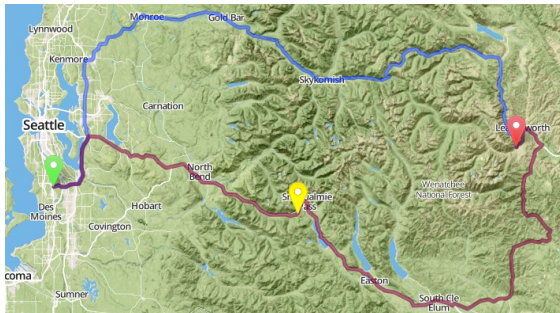
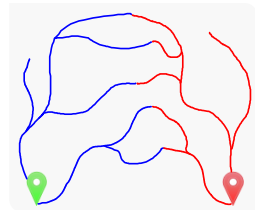
Related Work

Alternative Routes in Road Networks

[Abraham et al. 10]

- concat two shortest paths at **via nodes**
- intuitive quality parameters

↪ discovering *via nodes* is expensive



Candidate Sets for Alternative Routes

Findings

ASSUMPTION:

- few shortest paths between regions
- ▶ small number of good alternatives
- ▶ covered by few via nodes

- ↔ precompute *via nodes*
- ↔ test for reasonable alternatives

RESULTS:

- **query time:** 100 μ s
(one order of magnitude faster)
- **online setting**
(learn via nodes on the fly)
- **alternative graphs**

