Finding k-Dissimilar Paths with Minimum Collective Length

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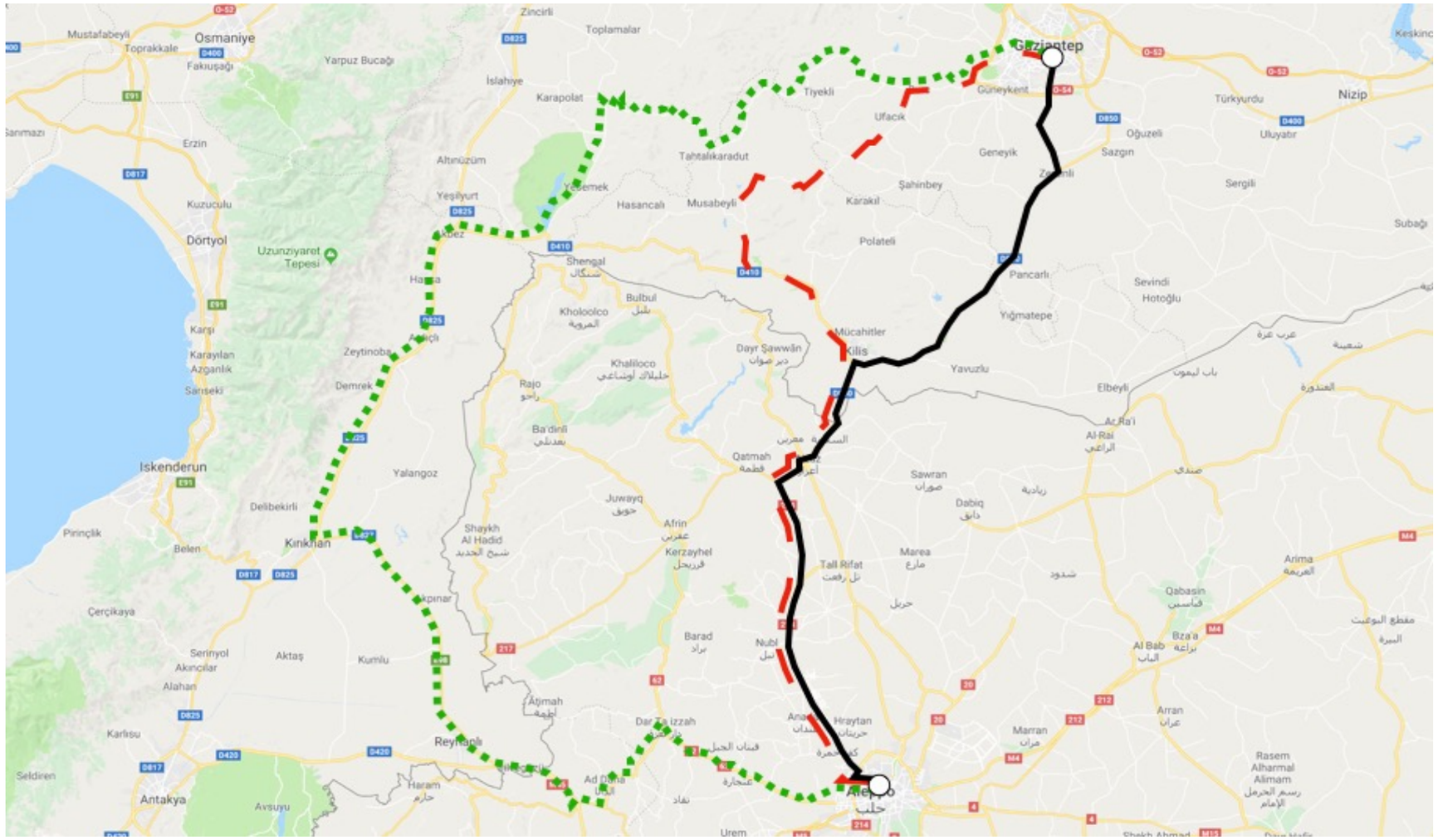
Example - Humanitarian aid transport

- Use multiple vehicles that follow different routes
  - Routes must be dissimilar to each other
  - Their collective length must be as little as possible



Problem & Solutions

- kDPwML [Liu et al. 2017]
- Search space
  1. all paths from s to t
  2. **simple single-via paths (SSVP)**
- Path examination strategy
  A. examine all subsets of k paths
  B. examine paths in length order in a greedy fashion

Algorithms	
kSP-DML (exact)	1A
FindKDSP [Liu et al. 2017]	1B
SVP-DML	2A
SVP-D+	2B

Examining only P_{SSVP} → Faster algorithms
Small trade-off in quality