



Aalto-yliopisto  
Perustieteiden  
korkeakoulu

# Optimal hand-over locations for two- echelon vehicle routing (topic presentation)

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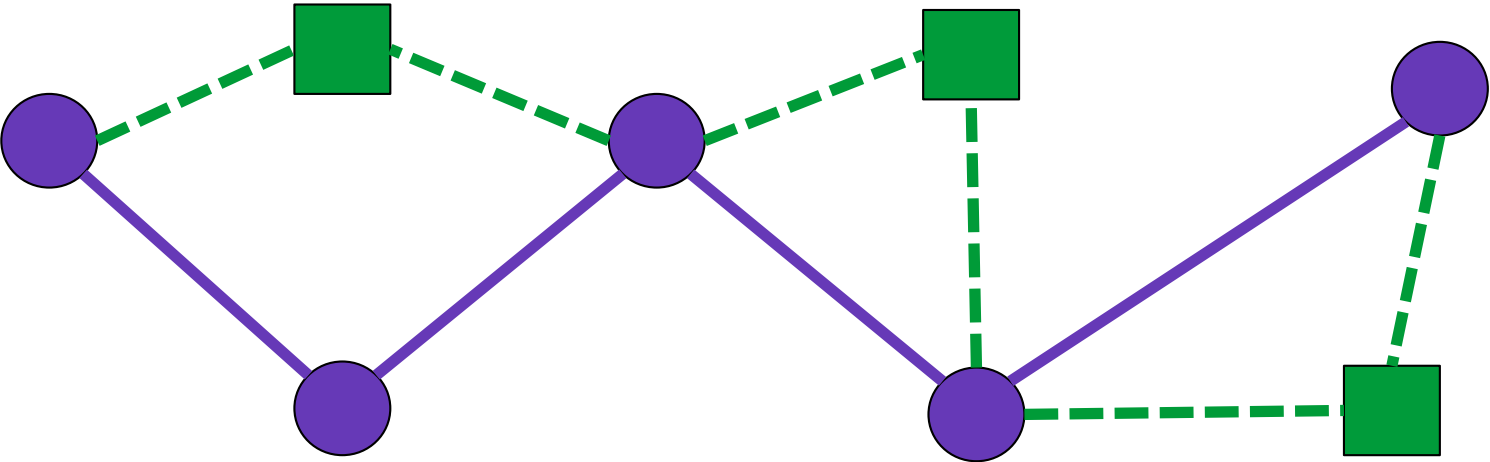
Advisor: *Philine Schiewe*

Työn saa tallentaa ja julkistaa Aalto-yliopiston avoimilla verkkosivuilla. Muilta osin kaikki oikeudet pidätetään.

# Background

- Public transport routes and vehicles already exist in densely habited areas
    - They go near drop-off locations for packages
  - Public transport vehicles often have extra space that could be used
  - Volume of package deliveries has grown
- Could use public transport to help deliver packages with the help of possibly automated smaller vehicles

# Model

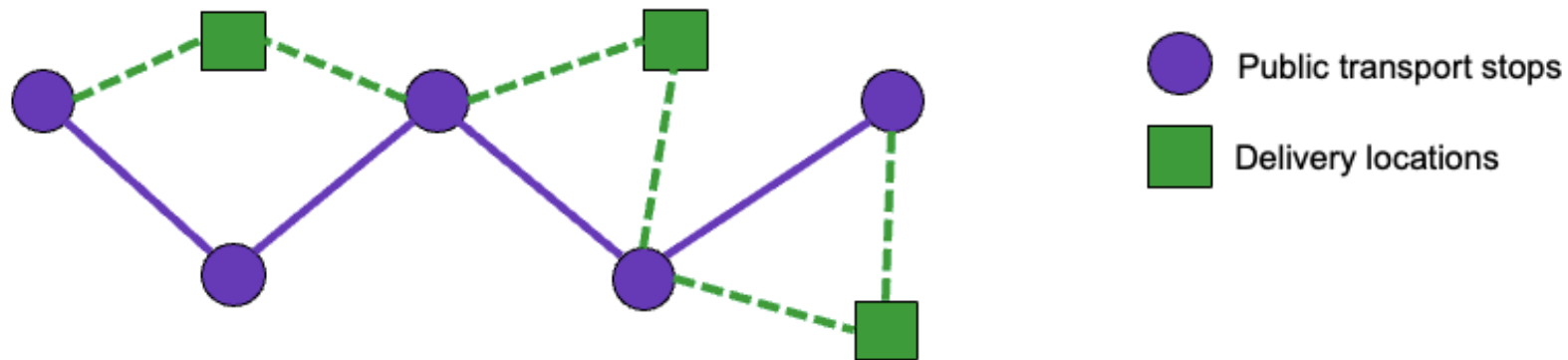


Public transport stops

Delivery locations

# Objectives

- Find out where to have hand-overs from PT-vehicle to second-echelon vehicle
- Minimize the wait time for people using public transport while still taking each package to drop off



# Limitations

- All packages have same demand and must be delivered
- Only one second-echelon vehicle
- Second-echelon vehicle has capacity of one
- Both vehicles need to be at hand-over locations at the same time

# Materials

- Schiewe, P., Stinzendörfer, M. (2024). The combined second-echelon vehicle routing problem – Integrating last-mile deliveries into public transport
- Sluijk, N., Florio, A.M., Kinable, J., Dellaert, N., Van Woensel, T. (2023). Two-echelon vehicle routing problems: A literature review, *European journal of Operational Research*, 304(3), 865-886

# Schedule

- Getting familiar with topic 12/2024 – 01/2025
- Topic presentation 02/2025
- Finish model 02/2025 – 03/2025
- Write thesis 03/2025 – 05/2025
- Second presentation 05/2025