Master Thesis Proposal

Solving Train Dispatching Problems via Benders Decomposition

Dispatching trains is a challenging task, especially in case of disruptions. The decision whether a train should wait for a delayed feeder train or not must be taken by a dispatcher. Train dispatchers can obtain support by optimization models. These models need to deliver a fast solution of good quality. To yield optimal solutions it can be necessary to use decomposition approaches.

The objective of the thesis is to

- give an overview of the underlying literature for decomposition techniques and train dispatching,
- explain one of these methods called “Benders decomposition” in detail,
- illustrate how it was used in Lamorgese et al. (2016),
- create a small example and
- identify opportunities for further applications in other models.

Recommended Basic Literature