

GASTVORTRAG

Institut für Produktions- und
Logistikmanagement

On Bilevel Optimization Problems and Interdiction Problems

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Abstract:

Bilevel Optimization Problems (BOPs) are very challenging optimization models arising in many important practical contexts, including pricing mechanisms in the energy sector, airline and telecommunication industry, transportation networks, critical infrastructure defense, and machine learning. In BOPs, two decision makers, usually denoted as the leader and the follower, make decisions in a hierarchical way: first the leader makes a decision, and then the follower optimizes its objective, affected by the decisions of the leader. It is assumed that the leader can anticipate the decisions of the follower, hence the leader optimization task is a nested optimization problem that takes into consideration the follower's response. In this talk, we give an introduction to BOPs and also Interdiction Problems (IPs), which are a special case of BOPs. We present a general purpose branch-and-cut exact solution framework for Mixed-Integer Bilevel Linear Problems and also a specialised branch-and-cut solution framework for IPs. (this is joint work with M. Fischetti, I. Ljubic and M. Monaci)