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Discrete Optimization,
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Bilevel Optimization

Machine Learning and Optimization

Adaptive menu sizes in P2P platforms



- Multiple agents, multiperiod problem
- Bilevel structure among agents
- Leader learns the agents' utility functions through their preferences
- Leader wants to determine optimal number of options to offer the followers

Price optimization using customer preferences



Two agents, multiperiod problem
The buyer wants to determine the prices that would (a) help learn the market structure and (b) maximize the total revenue

Preference Learning in Multiobjective Optimization



- The weights used to solve MOO are unknown, and are learnt through preferences
- The goal is to determine which choices to offer to the decision maker to accelerate learning process

SVM with nonnegative coefficients



- Underlying structure in the data already known
- Modifying SVM solution algorithm to guarantee faster convergence to a model with all nonnegative weights