Invited Talk Abstract

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A Comparison of Convex Relaxations of Optimization Problems with Hard Cardinality Constraints

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Date	July 28, 2026
Time	16:30–17:00
Session	Session 5
Venue	S102, Lecture Hall, Gong-Guan Campus, NTNU

Abstract

Sparsity plays a vital role in a wide range of applications, such as machine learning, data science, image processing, portfolio management, and sparse regression, due to the interpretability, robustness, and ease of implementation of sparse solutions. As such, optimization problems with cardinality constraints arise in a plethora of applications such as interpretable machine learning, portfolio optimization, and principal component analysis.

In this talk, we consider alternative formulations of the NP-hard class of optimization problems with hard cardinality constraints. We introduce various polyhedral and convex conic relaxations of such formulations. We compare the resulting convex relaxations in terms of their strength and computational cost.

This is joint work with Merve Bodur and Buket Ozen.