

THE UNIVERSITY



OF HONG KONG

Department of Mathematics

Qualifying Research Seminar

A Novel Neural Framework for Solving Mixed-Integer Programming

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Rm 210, Run Run Shaw Building, HKU

Abstract

Industrial applications like resource allocation and service scheduling require solving Mixed-Integer Programming (MIP) problems with thousands of variables in milliseconds. Current exact solvers cannot meet these real-time requirements due to combinatorial explosion and exponential complexity.

We propose an end-to-end unsupervised learning framework that combines neural predictors for discrete decisions with differentiable optimization for continuous variables. Our approach aims at millisecond-scale inference while maintaining solution quality, enabling practical deployment in time-critical industrial systems.

All are welcome