

# Linchuan Wei

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**Research interests** *Mixed-integer nonlinear and linear programming* with applications in statistical learning, causal inference and logistics

**Education** **Northwestern University** Evanston, IL  
Ph.D. in Operations Research September 2018 – Present  
- Ph.D. Advisor: Simge Küçükyavuz

**University of Waterloo** Waterloo, Ontario  
B.S. in Honours Combinatorics and Optimization August 2018

**Honors** Terminal Year Fellowship, Northwestern University 2022  
Nemhauser Best Paper Award, Northwestern University 2021  
Dean's Honour List, University of Waterloo 2014-2018

**Publications** **An outer approximation method for solving mixed-integer convex quadratic programs with indicators**  
Linchuan Wei, Simge Küçükyavuz.  
*Preprint, 2023.*

**Consistent second-Order conic integer programming for learning Bayesian networks**  
Simge Küçükyavuz, Ali Shojaie, Hasan Manzour, Linchuan Wei, Hao-Hsiang Wu.  
*Journal of Machine Learning Research, 2023.*

**On the convex hull of convex quadratic optimization problems with indicators**  
Linchuan Wei, Alper Atamtürk, Andrés Gómez, Simge Küçükyavuz.  
*Mathematical Programming, 2023.*

**Ideal formulations for constrained convex optimization problems with indicator variables**  
Linchuan Wei, Andrés Gómez, Simge Küçükyavuz.  
*Mathematical Programming, 192(1-2), 57-88, 2022.*

**On the convexification of constrained quadratic optimization problems with indicator variables**  
Linchuan Wei, Andrés Gómez, Simge Küçükyavuz.  
*International Conference on Integer Programming and Combinatorial Optimization, IPCO 2020, Lecture Notes in Computer Science(), vol 12125. Springer, Cham.*

## **Robust principal component analysis using facial reduction**

Shiqian Ma, Fei Wang, Linchuan Wei, Henry Wolkowicz.

*Optimization and Engineering*, 21, 1195–1219, 2020.

### Teaching

**Teaching assistant** IEMS 313: Foundations of Optimization, Fall 2022 - Northwestern University

**Grader** IEMS 450-1: Mathematical Optimization I, Fall 2021 - Northwestern University

**Guest lecturer and grader** IEMS 457: Integer Programming, Winter 2021, Spring 2023 - Northwestern University

### Talks

#### **On the convex hull of convex quadratic optimization problems with indicators**

Mixed-integer Programming Workshop May, 2023

INFORMS Annual Meeting October, 2022

International Conference on Continuous Optimization July, 2022

#### **Ideal formulations for constrained convex optimization problems with indicator variables**

Mixed-integer Programming Workshop May, 2021

INFORMS Annual Meeting November, 2020

#### **On the convexification of constrained quadratic optimization problems with indicator variables**

Conference on Integer Programming and Combinatorial Optimization June, 2020

### Service

Referee: Mathematical Programming (2021-2023)

Co-founder: Integer programming and combinatorial optimization reading group (2019-2021)

### References

Prof. Simge Küçükyavuz

David A. and Karen Richards Sachs Professor of Industrial Engineering and Management Sciences

Northwestern University

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Prof. Andrés Gómez

Assistant Professor of Industrial and Systems Engineering

University of Southern California

Email: gomezand@usc.edu

Prof. Alper Atamtürk

Professor and Department Chair

Department of Industrial Engineering and Operations Research

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Prof. Jorge Nocedal

Walter P. Murphy Professor of Industrial Engineering and Management Sciences

Northwestern University

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