

## Curriculum Vitae

### Education

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Carnegie Mellon University, Tepper School of Business, Pittsburgh, PA

- Ph.D. Algorithms, Combinatorics, and Optimization 2025
- M.S. Algorithms, Combinatorics, and Optimization 2022

Johns Hopkins University, Whiting School of Engineering, Baltimore, MD

- B.S. Applied Mathematics and Statistics 2017

### Research and Teaching Interests

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*Methodologies:* Integer Programming, Dynamic Programming, Decision Diagrams

*Applications:* Vehicle Routing Problems, Network Design Problems, Warehouse Operations

### Publications

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#### Submitted Works

- A. Karahalios and W.-J. van Hoeve. Column Elimination: An Iterative Approach to Solving Integer Programs. *Major Revision at Operations Research*, 2024.

#### Published Works

- A. Karahalios, S. Tayur, A. Tenneti, A. Pashapour, FS Salman, B Yıldız. A Quantum Inspired Bi-level Optimization Algorithm for the First Responder Network Design Problem. *INFORMS Journal on Computing*, 2024.
- A. Karahalios and W.-J. van Hoeve. Column Elimination for Capacitated Vehicle Routing Problems. In *Proceedings of CPAIOR*, 1 volume 13884 of LNCS, pp. 35–51. Springer, 2023.
- M. J. H. Heule, A. Karahalios, and W.-J. van Hoeve. From Cliques to Colorings and Back Again. In *Proceedings of CP*, 2 LIPIcs 235, pp. 26:1–26:10, 2022.
- A. Karahalios and W.-J. van Hoeve. Variable Ordering for Decision Diagrams: A Portfolio Approach. *Constraints* 27:116-133, 2022.

#### Working Papers

- G. Cornuéjols, A. Karahalios, and V. Patil. Computing a Nonnegative Dyadic Solution to a System of Linear Equations.
- M. Jun Ota, A. Karahalios, Ricardo Fukasawa, and Willem-Jan van Hoeve. Combining Column-Elimination with Column-Generation.
- A. Karahalios and W.-J. van Hoeve. Primal Heuristics for Column Elimination.
- A. Karahalios and W.-J. van Hoeve. Cutting Planes for Column Elimination.

### Work Experience

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**OptiLogic** Ann Arbor, Michigan 2025-current  
MIP Engineer - Solving network optimization problems

**Amazon** Seattle, Washington 2024  
Research Scientist Intern - Solving human-robot picking problems in fulfillment centers

**Upwork** Pittsburgh, Pennsylvania 2020-2025  
Freelancer - Consulting for companies such as LogixHealth, Freeline, Sunlife Insurance

**Marshall Wace Asset Management** New York City, New York 2017-2020  
Quantitative Software Developer - Optimizing order routing and custodian management

## Teaching

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### Carnegie Mellon University

- Instructor 70-460 Mathematical Models for Consulting (Undergrad) Rating: 4.78/5, Fall 2022
- TA 46-888 Optimization for Prescriptive Analytics (Online MSBA) Summer 2022, 2023
- TA 45-751 Optimization (MBA) Spring 2022
- TA Math Bootcamp (MBA) Summer 2021

### Johns Hopkins University

- TA 550.171 Discrete Mathematics (Undergrad) Fall 2015, Spring 2016, Fall 2016
- TA 550.420 Intro to Probability (Undergrad) Spring 2017

## Mentoring

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Joe Wang (Math Undergrad) - Relaxations for the Travelling Tournament Problem 2023

## Skills

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*Software:* C, C++, C#, Python, Julia, MATLAB, R

*Optimization Software:* Gurobi, CPLEX, XPRESS, Hexaly, Mosek, PuLP, VRPSolver, CODD, CaDiCaL, DIDP, CP-SAT Solver

## Honors & Awards

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TSL Best Student Paper Award Finalist	2025
Gerald L. Thompson Doctoral Dissertation Award in Management Science	2025
CPAIOR Best Student Paper	2023
IPCO Best Poster Honorable Mention	2023
NSF Graduate Research Fellowship	2022
CMU Tepper Egon Balas Fellowship	2020
JHU Applied Mathematics and Statistics Achievement Award	2017
JHU Professor Joel Dean Award for Excellence in Teaching (TA)	2016, 2017
JHU Mathematical Modeling Prize	2016, 2017
Sigma Chi International Balfour Award Finalist	2017

## Service

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### Academic Conferences and Article Reviews

- Session Chair (INFORMS Annual Meeting) 2022, 2023, 2024
- Conference Chair, Sponsorship Chair (YinzOR) 2022, 2023, 2024
- Reviewer for Operations Research (2024), INFORMS Journal on Computing (2023, 2024, 2025), Discrete Optimization (2024), Transportation Science (2025), International Transactions in OR (2024), Constraint Programming (2022, 2024), CPAIOR (2021)

### CMU INFORMS Student Chapter

- President, Vice-President 2021, 2022
- Podcast Host (Optimizing You) 2022-2024

### Marshall Wace Charity Committee

- MW Charity Committee Member 2019-2020
- All Stars Project Youth Leadership Board 2019-2020

## Interests

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Tea — Triathlons — Farming — Piano — Trail Running