Saba Ghasemi Naraghi

(405) 894-0186
saba.ghasemi_naraghi@okstate.edu
LinkedIn Profile

Profile

PhD candidate with deep expertise in Linear Programming (LP), Mixed-Integer Linear Programming (MILP), and Convex Optimization. Confident in implementing advanced decomposition techniques such as Bender's Decomposition and Row-Column Generation. Experienced with decentralized optimization using the Alternating Direction Method of Multipliers (ADMM). Proven track record in applying these techniques to complex optimization problems in both academic and industrial contexts.

Education

2022 – Present **Ph.D., Chemical Engineering**, *Oklahoma State University*, Stillwater, OK.
GPA: 3.8/4

2019 – 2021 **M.Sc., Optimization**, *Amirkabir University of Technology*, Tehran, Iran.
GPA: 4.0/4

2018 – 2021 **B.Sc., Industrial Engineering**, *Amirkabir University of Technology*, Tehran, Iran.
GPA: 3.76/4

2015 – 2019 **B.Sc., Applied Mathematics**, *Amirkabir University of Technology*, Tehran, Iran.
GPA: 3.65/4

Relevant PhD Coursework

2024 Integer Programming (A)
2024 Convex Optimization (A)
2023 Network Optimization (A)
2022 Nonlinear Optimization (A)

Technical Skills

Languages C, Python, Julia
Libraries JuMP (Julia), Pyomo, Gurobipy, OR-Tools
Solvers Gurobi, CPLEX, BARON, IPOPT, SCIP, HiGHS
Tools MATLAB, LaTeX, GAMS, Jupyter Notebook, SPSS

Professional Experience

2022 – Present **Graduate Research Assistant**, *Oklahoma State University*, Stillwater, OK.

- Designed optimal microgrid scheduling models for steam cracking processes, identifying an optimal electrification level of 20%, which reduced CO_2-equivalent emissions by 18.8% while maintaining production efficiency.
- Built a differential-algebraic equation (DAE) optimization model in Pyomo for naphtha cracking reactors.
- Proposed supply chain optimization models for risk management using VaR and CVaR, reducing computational time by at least 25%.

2019 – 2021 **Graduate Research Assistant**, *Amirkabir University of Technology*, Tehran, Iran.

- Applied perspective reformulation to mixed-integer nonlinear programs (MINLPs), improving solution times for portfolio optimization problems.
- Evaluated linearization techniques for MINLPs in logistic growth and index tracking applications.

Peer-Reviewed Book Chapters

2025 Ghasemi Naraghi S., Kareck T., Xiao L., Reed R., Ramanan P., Jiang Z. "Decarbonization of Steam Cracking for Clean Olefins Production: Microgrid Planning and Operation." *Optimization of Sustainable Process Systems: Multiscale Models and Uncertainties*. John Wiley & Sons, Inc., 2025.

Peer-Reviewed Conference Proceedings

2025 Ghasemi Naraghi S., Kareck T., Jiang Z. "Multi-objective Optimization of Steam Cracking Microgrid for Clean Olefins Production." *Systems & Control Transactions*.

2025 Ghasemi Naraghi S., Jiang Z. "Joint Optimization of Fair Facility Allocation and Robust Inventory Management for Perishable Consumer Products." *Systems & Control Transactions*.

2023 Ghasemi Naraghi S., Jiang Z., "Stochastic Optimization of Agrochemical Supply Chains," Proceedings of IISE Annual Conference and Expo 2023.

2023 Ghasemi Naraghi S., Jiang Z., "Optimization of Risk-Managed Agrochemical Supply Chains," Computer Aided Chemical Engineering, 52, 3337-3343.

Working Manuscripts

2025 Ghasemi Naraghi S., Reed R., Kareck T., Ramanan P., Jiang Z. "Centralized Operations Planning of Decarbonized Chemical Plants with Renewable-driven Transmission Systems." *IEEE Transactions on Sustainable Energy*.

2025 Reed R., Ghasemi Naraghi S., Kareck T., Ramanan P., Jiang Z. "Decentralized Operations Planning of Decarbonized Chemical Plants with Renewable-driven Transmission Systems." *IEEE Transactions on Sustainable Energy*.

Presentations and Talks

2024 Ghasemi Naraghi S., Jiang Z. "Joint Optimization of Fair Facility Allocation and Robust Inventory Management for Perishable Consumer Products." *2024 AIChE Annual Meeting*, San Diego, CA.

2024 Ghasemi Naraghi S., Kareck T., Jiang Z. "Decarbonization of Steam Cracking for Clean Olefins Production: Optimal Microgrid Scheduling." *2024 INFORMS Annual Meeting*, Seattle, WA.

2024 Reed R., Ramanan P., Ghasemi Naraghi S., Jiang Z. "Decentralized Operations Planning of Decarbonized Chemical Plants with Renewable-driven Transmission Systems." *2024 INFORMS Annual Meeting*, Seattle, WA.

2023 Ghasemi Naraghi S., Jiang Z. "Perspective Reformulation of Stochastic Agrochemical Supply Chain Optimization Problem with Mean-Variance Risk Management." *2023 AIChE Annual Meeting*, Orlando, FL.

2023 Ghasemi Naraghi S., Jiang Z. "Stochastic Bilevel Optimization of Agrochemical Supply Chains with Mean-Variance Risk Management." *2023 AIChE Annual Meeting*, Orlando, FL.

Honors and Awards

2021 Top 5% among M.Sc. students in Optimization.

2019 – 2021 Government tuition-fee scholarship for M.Sc. degree.

2019 Top 5% among B.Sc. students in Applied Mathematics.

Since 2019 Member of Iran's National Elites Foundation.

Volunteer Experience

2022 – 2023 Secretary, Iranian Students Association at Oklahoma State University.

2022 STEM Outreach Volunteer, Oklahoma Science Fair.