Saba Ghasemi Naraghi

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LinkedIn Profile

Education

2022-Present **PhD, Oklahoma State University**, *Chemical Engineering,* GPA: 3.6/4.

2019-2021 **M.Sc, Amirkabir University of Technology**, *Optimization,* GPA: 4/4.

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

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

Work Experience

2022-Present **Graduate Research Assistant**, Oklahoma State University, Stillwater, USA.

- Hybrid robust stochastic programming for the global supply chain of agrochemicals.
- Decentralized microgrid optimal scheduling for chemical plants.
- Scenario-based multi-objective stochastic mixed-integer nonlinear convex and non-convex programming formulations for the global supply chain of agrochemicals.
- Agrochemical supply chain risk management: Variance, VaR (Value-at-Risk) and CVaR (Conditional Value-at-Risk) were applied to model demand uncertainties.

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

- Perspective function and perspective cuts were implemented to several MINLPs with quadratic, exponential, and absolute value objective functions, with applications in portfolio selection, index tracking, and logistic growth of bacteria. compared with classic linearization methods such as McCormick relaxation, perspective reformulation gave a tighter approximation. The reformulated model solved significantly faster.

2020-2021 **Portfolio and Financial Analyst**, Nikan Abresan Arya, Tehran, Iran.

- Formulated real-world stock portfolio selection problems as a mixed-integer quadratic program to minimize investment risks. Monte Carlo simulation was used to approximate the probability distribution of different scenarios. Under most portfolio sizes and scenarios, the perspective cuts technique led to tighter approximation and faster convergence compared to other linearization techniques.

2019-2020 **Operations Research Analyst**, Iran's National Elites Foundation, Tehran, Iran.

- Mathematical Modelling & Simulation: Proposed a bi-level multi-objective mixed-integer programming model to optimize the production plan and manufacturing process of ultrasonic filters for water purification.

Selected Projects

2020-2021 **Choices of Socially Responsible Investment Indices in Portfolio Optimization**, Amirkabir University of Technology.

- The portfolio selection behaviour subject to social responsibility and its impact on the risk and profitability of portfolios consisting of ethical and immoral investment opportunities were examined.
- The models were solved using real data taken from selected stocks from the Tehran Stock Exchange. Based on moral and personality characteristics (e.g., risk aversion and investor goals) a unique customized portfolio can be obtained for each real and legal person.

May 2020 **Operating Room Scheduling Problem Under Uncertainty**, Amirkabir University of Technology.

- A bi-level multi-objective stochastic model was developed to optimize scheduling hospital operating rooms. The real schedule data from a hospital were used to solve the model for weekly scheduling.

Publications

2023 Ghasemi Naraghi S, Jiang Z. Stochastic optimization of agrochemical supply chains with mean-variance risk management. (Under preparation).

2023 Ghasemi Naraghi S, Jiang Z. Stochastic optimization of agrochemical supply chains with risk management. Computer Aided Chemical Engineering.2023;52:3337-3343.

Conferences

2023 AIChE Annual Meeting, Orlando, FL (accepted for both oral and poster presentation).

2023 IISE Annual Conference & Expo, New Orleans, LA (accepted for oral presentation).

2023 33rd European Symposium on Computer-Aided Process Engineering, Athen-Greece (accepted for oral presentation).

Technical Skills

Language C, Python, Julia

Tools VSCode, GAMS, MATLAB, Spyder, Jupyter Notebook, Gurobi, SPSS, LaTeX, Microsoft Office

Honors & Rewards

2021 Top 5% students among M.Sc students of optimization

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

2019 Top 5% students among B.Sc students of applied mathematics

Since 2019 Member of Iran's National Elites Foundation

Since 2017 Member of Amirkabir University of Technology Honors and Olympiads Foundation

Volunteer Experience

2022-2023 Secretory of Iranian Students Association at Oklahoma State University

References

Dr. Zheyu Jiang, Oklahoma State University.
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Dr. Jindal Shah, Oklahoma State University.
Phone: (405) 744-2295| Email: jindal.shah@okstate.edu