SORAYA EZAZIPOUR

Stillwater, OK 74075

📞 405-762-6771 ✉ sezazip@okstate.edu in linkedin.com/in/soraya-ezazipour-6630b732 🎓 soraya ezazipour

SUMMARY

I am a Ph.D. candidate in Industrial Engineering with a strong background in operations research, statistics, and data science. I have used techniques such as linear, integer, and network programming to build and solve complex models that help make better decisions in logistics and operations. I am skilled in scalable algorithm design for large-scale and multi-objective optimization. I also work with simulation, machine learning, and predictive analytics to solve real-world problems. I am comfortable coding in Python, C++, using SQL, and working with optimization tools like Gurobi and CPLEX. I enjoy turning technical results into clear insights that support smarter and more efficient choices.

EDUCATION

- **Ph.D. in Industrial Engineering & Management**, Oklahoma State University (GPA: 4.0)

- **Ph.D. in Applied Mathematics**, Iran University of Science and Technology, Iran (GPA: 3.8)

- **M.Sc. in Applied Mathematics**, Tarbiat Modares University, Iran (GPA: 3.6)

- **B.Sc. in Applied Mathematics**, Yazd University, Iran (GPA: 3.2)

TECHNICAL SKILLS

- **Programming Languages:** C++, Python

- **Tools:** Gurobi, CPLEX, Matlab, SQL, Excel, Simio, scikit-learn, TensorFlow, NumPy, NetworkX, Pandas.

- **Expertise:** Operations research, Large-scale optimization, MIP, Network optimization, Multi-objective optimization, Machine learning, Deep learning, Data analysis, Model development, evaluation, and deployment, Simulation, Graph analytics, advanced algorithms (column generation, Benders decomposition), Supply chain design, Advanced production and inventory Control, discrete systems simulation.

- **Certifications:** Supply Chain Design (Coupa, 2024), Machine Learning with Python (IBM, 2024)

RESEARCH EXPERIENCE

Graduate Research Assistant *Oklahoma State University, Stillwater, OK. 2021 – Present*

- Develop optimization models for political redistricting, balancing compactness and population equality.
- Analyzed the impact of the Census Bureau's differential privacy technique on redistricting.
- Solved large-scale network optimization problems using Python and Gurobi.
- Applied techniques like multi-objective optimization to balance competing objectives, epsilon-constraint method to generate a Pareto optimal solutions, column generation and Benders decomposition to break problems into smaller, symmetry-breaking constraints to cut down on duplicate solutions, flow-based constraints, warm starts and lazy constraints to speed things up and heuristics.

Graduate Research Assistant *Iran University of Science and Technology, Iran. 2015 – 2019*

- Designed algorithms using artificial neural networks for bilevel optimization and MPEC problems.
- Conducted numerical experiments with C++ and Matlab to validate optimization approaches.

Other Projects *Oklahoma State University, Stillwater, OK*

- Enhanced a deep neural network model for breast cancer diagnosis.
- Optimized facility locations under uncertain conditions.
- Designed a conveyorized production line using Simio and ExpertFit.

Professional Experience

Instructor – Oklahoma State University *Stillwater, OK 2023 – Present*
Taught *Introductory Engineering Computer Programming* and *Operations Research* using advanced methods.

Lecturer – Kharazmi University of Applied Sciences *Iran 2020 – 2021*
Taught *Applied Database with SQL, Discrete Mathematics*, and *Engineering Probability and Statistics*.

Management Representative - Ziamath Institute *Iran 2010 – 2014*
Improved customer service through report analysis and employee training, increasing satisfaction and productivity.

Leadership and Collaboration

- **IEM GPSGA Representative** Oklahoma State University *OK, 2024-2025*
- **Judge, State Science and Engineering Fair** Oklahoma State University *OK, 2024*
- **Session Organizer** INFORMS Annual Meeting *Indianapolis, IN, 2022, Phoenix, AZ, 2023, Seattle, WA, 2024*
- **Vice President** INFORMS Student Chapter, Oklahoma State University *OK, 2024*
- **Editorial Board Member** Frontiers in Applied Mathematics and Statistics
- **Reviewer** International Journal of Modeling, Simulation, and Scientific Computing, etc.

Awards and Honors

- **Awarded for Graduate Poster Presentation,** IEM research symposium, Oklahoma State University *2024*
- **Alpha Pi Mu Honor Society,** Oklahoma State University *2023*
- **Nominated to join Tau Beta Pi Honor Society,** Oklahoma State University *2023*
- **Doctoral Fellowship** Iran University of Science and Technology *2018*
- **First Place of PhD National Entrance Exam in applied Mathematics,** Iran *2013*
- **National Graduate Scholarship** Tarbiat Modares University *2009*

Publications

- Pietro Belotti, Austin Buchanan, Soraya Ezazipour, "Political Districting to Optimize the Polsby-Popper Compactness Score with Application to Voting Rights." *Operations Research, 2025.*

- Austin Buchanan, Soraya Ezazipour, and Maral Shahmizad, "A widespread belief about county splits in political districting plans is wrong." *Election Law Journal: Rules, Politics, and Policy*, 2024.

- Soraya Ezazipour, Pietro Belotti, Austin Buchanan, and Jose L. Walteros, "Finding Pareto-optimal districting plans." *in preparation for submission to INFORMS Journal on Optimization in July, 2025.*

- Soraya Ezazipour and Austin Buchanan, "What is the 'real' population of my district? The worst-case effects of Census TopDown." *In preparation*, 2025.

- Soraya Ezazipour and Ahmad Golbabai, "A globally convergent neurodynamics optimization model for mathematical programming with equilibrium constraints." *Kybernetika*, 56.3 (2020): 383–409.

- Ahmad Golbabai and Soraya Ezazipour, "A projection-based recurrent neural network and its application in solving convex quadratic bilevel optimization problems." *Neural Computing and Applications*, 32 (2020): 3887–3900.

- Ahmad Golbabai and Soraya Ezazipour, "A high-performance nonlinear dynamic scheme for the solution of equilibrium-constrained optimization problems." *Expert Systems with Applications*, 82 (2017): 291–300.