# Amin Aghalari

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Bentonville, AR 72713 Authorized to work in the US (Do Not Require sponsorship)

## PhD | Data Scientist | Operation Research Scientist

Data Scientist with 5+ Years in Applied AI, Optimization & Scalable ML Solutions. Expert in designing and deploying end-to-end machine learning and optimization systems that drive impact across supply chain, logistics, and operations. Proven ability to solve complex business challenges with data-driven strategies. Known for delivering high-value solutions in cross-functional, fast-paced environments - and for translating technical depth into actionable insights for business leaders.

## Core Competencies

- Operation Research, Optimization, Mixed-integer Programming, Stochastic Programming,
- Statistical Modeling, Machine Learning, Deep Learning, Predictive Modeling
- Decomposition and Heuristic methods, Parallel computing
- Python, R, C#
- Copilot, Wibey
- Gurrobi, Cplex, Pyomo
- DBeaver, PostgreSQL, Google Cloud
- Scikit-Learn, TensorFlow, Keras, h3pandas
- Streamlit, Folium, Tableau

## Education

**Ph.D.** in **Industrial & Systems Engineering** September 2018 - May 2022
Mississippi State University, Starkville, MS, USA

**M.Sc.** in **Industrial & Systems Engineering** September 2015 - January 2018
Sharif University of Technology, Tehran, Iran

**B.Sc.** in **Industrial Engineering** September 2010 - September 2015
Sharif University of Technology, Tehran, Iran

## Professional Experience

**Walmart**, Dallas, TX, USA

**Staff Data Scientist** (April 2025 – Present)

- Walmart ecommerce middle-mile network optimization
  - Developed a MIP model for optimizing SKU placement across Walmart next-gen and conventional FCs
  - Coordinated in developing a multi-commodity fixed-charge network flow model for designing 2tier storage facilities
- Sam's Club New Asset Strategy (Projected $20-25B in GMV lift by FY30)
  - Developed machine learning models to predict market penetration and potential GMV lift in H3 level
  - Designed mathematical model and heuristics to identify optimal site placements across the U.S., maximizing potential GMV lift in Sams's business
  - Built an interactive Streamlit dashboard enhanced with generative AI capabilities to present results to real estate and finance stakeholders

**Senior Data Scientist** (January 2022 – April 2025)

- Walmart ecommerce middle-mile network optimization
  - Coordinated in designing a multi-commodity network flow model to optimize Walmart's middle-mile e-commerce network (improving 1/2-day delivery rate by 7-10% in FY26, driving $250M GMV lift)
  - Developed an XGBoost model leveraging spatial features to predict inefficient paths in filtering them from middle-mile model solution space (reducing model run time by 30%)

- Walmart ecommerce last-mile network optimization
  - Developed a multi-channel location-routing model to design parcel station delivery network (Projected $450M in transportation cost savings by FY30)
  - Developed a mixed-fleet optimization model to determine the optimal vehicle mix in parcel stations (Projected $26M in transportation cost savings by FY26)
  - Designed a set covering model to identify optimal clusters of Walmart stores, maximizing available-to-sell (ATS) inventory for delivery from store channel (Projected ~20%+ improvement in ATS by FY30)
  - Developed a geospatial regression-based framework using H3 indexing for rapid cost estimation in vehicle routing problems (Solving Walmart-scale VRPs in seconds, within ~5% error margin)
  - Built Streamlit applications to simulate catchment, demand, and fleet mix impacts on Walmart's parcel station network design

### **Mississippi State University**, Starkville, MS, USA
**Graduate Research Assistant** (September 2018 – December 2021)

- Developed mathematical models and solutions for diverse applications, including electric vehicle location-routing, biofuel supply chain network design, drone logistics network design
- Implemented hybrid decomposition and heuristic optimization algorithms to solve large-scale stochastic programming models using Gurobi
- Built machine learning models (Logistic Regression, Naïve Bayes, Random Forest) to detect cattle heat stress, achieving 85–90% accuracy
- Designed an inverse reinforcement learning framework to model civilian and attacker interactions during active shooter incidents
- Created deep learning ensembles in Keras to predict molecular functions of hypothetical proteins

### **Iranian Modern Technology and Management Company**, Tehran, Iran
**Project Control Specialist** (March 2017 – May 2018)

- Assisting in establishing the project's Work Breakdown Structure (WBS)
- Analyzing and forecasting time and cost impact on projects in R to support operational improvements
- Assisting the Project Manager in developing project schedules and presentations about the project schedules, resources, and project performance

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## Honors and Awards

- Recognized as a **Top 10% Data Scientist** in CENTROID Organization, Walmart, USA, 2025
- **Made a Difference (MAD) Award**, Walmart, USA 2024
- **ISE Outstanding Ph.D. Student and Best Student Paper Awards**, Mississippi State University, USA, 2021
- **President of INFORMS Student Chapter** at Mississippi State University, January 2021-January 2022

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## Selected Publications (citation: 355+)

- **Aghalari**, **A**., Salamah, D., Kabli, M., & Marufuzzaman, M. (2023). A two-stage stochastic location–routing problem for electric vehicles fast charging. **Computers & Operations Research**, 158, 106286.
- **Aghalari**, **A**., Nur, F., & Marufuzzaman, M. (2021). Solving a stochastic inland waterway port management problem using a parallelized hybrid decomposition algorithm. **Omega**, 102, 102316.
- Becker, C. A., **Aghalari**, **A**., Marufuzzaman, M., & Stone, A. E. (2021). Predicting dairy cattle heat stress using machine learning techniques. **Journal of dairy science**, 104(1), 501-524.
- **Aghalari**, A., Morshedlou, N., Marufuzzaman, M., & Carruth, D. (2021). Inverse reinforcement learning to assess safety of a workplace under an active shooter incident. **IISE Transactions**, 53(12), 1337-1350.

- Nandimandalam, H., **Aghalari, A.**, Gude, V.G. and Marufuzzaman, M., 2022. Multi-objective optimization model for regional renewable biomass supported electricity generation in rural regions. **Energy Conversion and Management**, *266*, p.115833.

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## Certifications

- **Build a Machine Learning Web App with Streamlit and Python**, Coursera, January 2024
- **Deep Learning Specialization** by DeepLearning.AI, Coursera, March 2021
- **Databases and SQL for Data Science**, Coursera, October 2020
- **Machine Learning by Stanford University**, Coursera, August 2020