

Bo Shao

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Research Interests

Methodological Areas: Data-Driven Modeling and Analysis, Operations Research, System Analytics and Optimization.

Application Areas: Production and Operations Systems, Logistics Networks, Supply Chain Management.

Education

North Carolina State University <i>Doctor of Philosophy in Industrial Engineering</i> <ul style="list-style-type: none"> ◦ GPA: 4.0/4.0 	<i>Aug. 2025 – Present</i>
University of Wisconsin - Madison <i>Master of Science in Industrial Engineering: Systems Engineering and Analytics</i> <ul style="list-style-type: none"> ◦ GPA: 3.8/4.0 ◦ Coursework: Applied Temporal Data Analytics, Machine Learning, Production Systems Control, OR-Probabilistic Modeling, Supply Chain Modeling, Decision Making in Health Care, Stochastic Processes, Linear Programming. 	<i>Sep. 2023 – May 2025</i>
Fuzhou University <i>Bachelor of Engineering in Logistics Engineering</i> <ul style="list-style-type: none"> ◦ GPA: 3.53/4.0 (Top 10%). ◦ Coursework: Statistics, System Simulation, Operations Research, Traffic Engineering, Supply Chain Management. 	<i>Sep. 2017 – Jun. 2021</i>

Publications

- Xiaoli Su, **Bo Shao**, Chenghu Yang & Xin Ma. A Data-Driven Distributionally Robust Optimization Approach for Risk-Averse Newsvendor Problem with Demand Censoring. *Annals of Operations Research*. (Under review).
- **Bo Shao**, Xiaoli Su, Xin Li & Xingxuan Zhuo. (2025). Mixed-Frequency Data-Driven Forecasting Port Throughput: A Novel Attention-DeepAR-MIDAS Model. *International Journal of Shipping and Transport Logistics*, 20(3), 338-358. [DOI:10.1504/IJSTL.2025.147408](https://doi.org/10.1504/IJSTL.2025.147408)  [PDF]
- Xiaoli Su, Lijun Zeng, **Bo Shao** & Binlong Lin. (2025). Data-Driven Optimization for Production Planning with Multiple Demand Features. *Kybernetes*, 54(1), 110-133. [DOI:10.1108/K-04-2023-0690](https://doi.org/10.1108/K-04-2023-0690)  [PDF]
- Xin Li, Yongshi Hu, Xiaoli Su & **Bo Shao**. (2023). A Data-Driven Newsvendor Problem with Shifting Demand: A Deep Autoregressive Model with Attention Mechanism. *Journal of Engineering Science & Technology Review*, 16(3), 74-83. [DOI:10.25103/jestr.163.10](https://doi.org/10.25103/jestr.163.10)  [PDF]
- Jianping Zheng & **Bo Shao**. (2022). Throughput Properties and Clustering Analysis of Coastal Ports in China: An Analysis Method by Time Series Complex Network. *DYNA*, 97(4), 398-405. [DOI:10.6036/10537](https://doi.org/10.6036/10537)  [PDF]

Project & Research Experience

Data-Driven Modeling and Optimization for Production and Operations Systems <i>Advisors: Prof. Chenghu Yang (Fuzhou, CN) and Prof. Xin Ma (Melbourne, AU).</i> <ul style="list-style-type: none"> ◦ Conducted an extensive literature review on the data-driven newsvendor problem, the production planning problem, demand forecasting with machine learning, and the high-dimensional mixed-frequency approach. ◦ Conducted numerical experiments to evaluate the performance of the proposed models, analyzing the impact of demand granularity, demand censoring, and varying levels of risk aversion on order decisions under different conditions. ◦ Collected and cleaned data for the empirical study and validated the practical effectiveness of the data-driven newsvendor model integrated with the Attention-DeepAR method.  ◦ Participated in a data-driven optimization model development, applying the mixed data sampling (MIDAS) technique to address a production problem with multiple features.  	<i>Jun. 2023 – Present</i>
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- **Outcome:** Published two academic papers in peer-reviewed journals, with another paper currently under review.

Reshoring U.S. Manufacturing: Analysis of Risks and Capabilities

Jan. 2024 – May 2025

Advisor: Prof. David Ding.

Madison, US

- Conducted a literature review on the U.S. manufacturing supply chain reshoring, focusing on economic, manufacturing, and policy factors, and developed a research framework to analyze these dimensions.
- Authored a research report synthesizing findings from both academic and industry sources, and delivered an oral presentation at the 2024 MBAA International Conference in Chicago, IL, engaging with experts from different fields.
- **Outcome:** Bo Shao, David Ding & Yanhui Huang. (2024). *The challenges for the U.S. manufacturing to reshore supply chain*. In 2024 MBAA International Conference, Chicago, IL, United States, April 11, 2024. ↗

Data-Driven Analysis and Forecasting for Port Throughput

Jul. 2021 – May 2023

Advisors: Prof. Chenghu Yang and Prof. Xingxuan Zhuo.

Fuzhou, CN

- Conducted a literature review on time series forecasting and port economics studies to support the development of the forecasting model.
- Collected and constructed a shipping dataset consisting of six mixed-frequency variables spanning 180 months.
- Participated in Attention-DeepAR-MIDAS model development and conducted numerical experiments to assess performance in handling multiple mixed-frequency features. ↗
- Conducted time series network analysis of China's 25 largest coastal ports, focusing on hierarchical structures and clustering features of port networks, and applied GIS to visualize their topological characteristics. ↗
- **Outcome:** Published two academic papers in peer-reviewed journals.

Working & Teaching Experience

Logistics Research Center of Fuzhou University

Jul. 2021 – Aug. 2023

Research Assistant (Full-Time)

Fuzhou, CN

- Conducted research on logistics and supply chain management, focusing on data analysis and optimization.
- Collaborated on academic papers and contributed to grant proposals.

Operations Research

Sep. 2022 – May 2023

Teaching Assistant, Department of Logistics, Fuzhou University

Fuzhou, CN

- Undertook teaching assistant workload, including holding office hours for students, and grading homework and quizzes.

Honors & Awards

- 2025 Edward P. Fitts Graduate Fellowship, NC State ISE Aug. 2025
- 2021 Summa Cum Laude Graduate of Fuzhou University (Top 5%) Jun. 2021
- 2021 Sci-Tech Innovation Individual Scholarship (Top 3%) Apr. 2021
- 2020 First Prize Scholarship in Major (Top 5%) Oct. 2020
- 2020 SUNSHINE Individual Scholarship (Top 3%) Apr. 2020
- 2019 Third Prize Scholarship in Major (Top 15%) Oct. 2019
- Second Prize in the National Contest On Logistics Design (NCOLD) Apr. 2019
- Second Prize in the 2018 Global Management Challenge (GMC), China Competition Jan. 2019

Skills & Certificates

Programming Languages: C++, Python, R, SQL.

Software and Tools: ArcGIS, GeoDa, Tableau, Origin, LaTeX, AutoCAD, Arena, Stata, SPSS, MATLAB, Mathematica.

Certificates: Lean Six Sigma Green Belt (AIGPE, 2024); Chinese Certified Professional Logistician (CPL).

Hobbies and Activities: Hiking, Running, Biking, Cooking, Baking.