

Jinhua Lyu

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EDUCATION

University of Texas, Austin, Texas

M.S. Operations Research and Industrial Engineering, 4.0/4.0

Fall 2022 - May 2024

Nankai University, Tianjin, China

B.S. Operations Research and Industrial Engineering, 3.93/4.0

Fall 2018 - Spring 2022

AWARDS

Engineering Fellowship, University of Texas at Austin

Fall 2022 - Spring 2023

- The only fellowship recipient among those admitted to this major in the fall of 2022

National Scholarship, Nankai University

Fall 2018 - Spring 2019

- The top 1% of students receive national scholarship

Yinfeng-Yitian-Emerson Scholarship, Nankai University

Fall 2019 - Spring 2021

Innovation Scholarship, Nankai University

Fall 2019 - Spring 2021

Meritorious Winner in the Interdisciplinary Contest in Modeling, COMAP

Spring 2021

PEER-REVIEWED PUBLICATIONS

Lyu, J., Bard, J. (2024). Weekly Crew Scheduling for Freight Rail Engineers: A Network Approach. In Review.

Lu, L., **Lyu, J.**, Leibowicz, B. D., Moglen, R. L., and Zhang, N. (2023). Designing electric vehicle charging infrastructure to enable disaster evacuation. In Review.

RESEARCH EXPERIENCE

University of Texas at Austin, Austin, TX

Fall 2023 - Present

Research assistant for Dr. Jonathan Bard

Python, CPLEX

- Designed a robust weekly schedule for railway freight train engineers with multiple home bases (we are the first to address the three-city problem).
- Transformed the problem into a multi-commodity network flow problem, constructing an Integer Linear Programming (ILP) model, and using CPLEX solver to find optimal solutions
- Conducted sensitivity analysis and construct the Pareto-optimal curve that depicts the relationship between the required number of engineers and number of covered trips
- The robustness of the schedules derived from our network model are validated with Monte Carlo simulation in which trip times are sampled from given distributions.

University of Texas at Austin, Austin, TX

Fall 2022 - Summer 2023

Research assistant for Dr. Benjamin Leibowicz

Python, Gurobi, QGIS

- Contributed to the development of a two-stage stochastic model aimed at enhancing network resilience of electricity vehicle charging infrastructure in the face of uncertain disasters
- Conducted a wild fire case study: built an extensive evacuation network using Python, visualized different wildfire scenarios by using Flammap and QGIS for comprehensive analysis
- Utilized the Gurobi solver to solve the formulated model, achieving optimal solutions
- Conducted sensitivity analysis, identifying critical factors (parameters) that affect the optimal system performance

Nankai University, Tianjin, China

Fall 2021 - Spring 2022

Research assistant for Dr. Su Zhang

Python

- Aimed at enhancing Markowitz's mean-variance portfolio model by incorporating constraints based on the investor sentiment analysis from text data from investors' comments on stocks.
- Employed Python web crawler technology to collect a vast amount of text data from Eastmoney.com, one of the largest platforms in the Chinese stock market

- Leveraged natural language processing techniques, including word segmentation and a specialized finance sentiment dictionary, to measure and analyze the sentiment
- Identified another factor, sentiment, and added it as a constraint to Markowitz's portfolio model to achieve an efficient frontier.

Nankai University, Tianjin, China

Spring 2021

ICM competition supervised by Dr. Gang Hu

Python

- Constructed mathematical models and found optimal solutions for a food system
- Utilized Python to process and visualize data previously generated by the model and carried out a sensitivity analysis
- Ranked in the top 7% of all 26000 participating teams

RELEVANT COURSES

Linear Programming (A)

Math Statistics for Application (A)

Integer Programming (A)

Operations Research (90%)

Applied Stochastic Process (A)

Ordinary Differential Equations (97%)

Network Optimization (A)

Advanced Algebra (91%)

Applied Probability (A)

Statistics (97%)

Convex Optimization (A)

TEACHING ASSISTANT

Discrete Mathematics, University of Texas at Austin

Fall 2023

- Proctor the exam, hold office hour, did grading for senior undergraduates

Multivariable Calculus, University of Texas at Austin

Fall 2023

- Led discussion sections, prepared questions and solutions.
- Hold office hour, did grading for senior undergraduates

Engineering Statistics, University of Texas at Austin

Fall 2022- Spring 2023

- Led recitation sessions, prepared questions and solutions.
- Hold office hour, did grading for senior undergraduates

VOLUNTEER

- Children's Village Education Support Program

Fall 2018- Spring 2019

- Nankai University History Explanation Program

Fall 2018- Spring 2020

- Volunteer for the Centennial Anniversary of Nankai University

Fall 2019

- Shandong Province Education Support and Research Program

Summer 2019