Sha Chen

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EDUCATION

Northwestern University, Evanston, IL, USA
Ph.D. Student in Industrial Engineering and Management Sciences, GPA: 3.71/4.00

Tsinghua University, Beijing, China — July 2017
M.S. in Control Science and Engineering, GPA: 89.35/100

South China University of Technology, Guangzhou, China — June 2014
B.E. in Automation, GPA: 3.94/4.00

SELECTED COURSEWORK (Graduate- Level)

Stochastic Simulation, Stochastic Processes, Applied Probability, Stochastic Calculus, Applied Statistics, Real Analysis, Measure Theory, Integer Programming, Linear Programming, Nonlinear Programming, Convex Optimization, Dynamic Programming, Reinforcement Learning

PROJECTS

1. *An Analysis of Housing Prices* [Link] Dec 2024 – Jan 2025. Selected features with backward stepwise algorithm and applied linear, lasso and ridge regression models to predict prices
2. *Matching riders in ride-sharing networks* [Link] Jan 2024. Formulated the optimal matching problem as a minimum weight matching problem and solved it with Blossom algorithm that saved total travel distance by 55%

RESEARCH EXPERIENCE

Pricing in Ridesharing Platforms with Fluid Analysis — Jan. 2022 - Present

- Developed an algorithm to solve equilibrium rates of drivers and customers when drivers are strategic in repositioning
- Analyzed properties of optimal prices with real analysis skills
- Simulated and tested pricing policies in stochastic ride-sharing networks in Python

Admission and Routing Control of Multiple Queues with Multiple Types of Customers — June 2019 - July 2023

- Solved dynamic optimal admission and routing policy in a parallel queueing system serving multiple types of customers
- Analyzed structure of optimal policy with real analysis skills
- Developed computationally efficient and simples-structured heuristics that achieved average loss in profit <=0.33%
- Implemented and evaluated performances of policies in Python

Dynamic Pricing Control for Open Queueing Networks — Dec. 2015 - Dec. 2017

- Proposed an iterative algorithm to solve optimal dynamic prices and service rates in queueing networks
- Solved total expected sojourn time of customers in the network given state of network upon arrival with Markov one-step transition

PUBLICATIONS

1. "Admission and Routing Control of Multiple Queues with Multiple Types of Customers." [pdf] IISE Transactions. 2023. pp. 1-15. Sha Chen, Izak Duenyas, and Seyed Iravani. (featured in ISE magazine, presented at the INFORMS Meeting)
2. "Dynamic Pricing Control for Open Queueing Networks." [pdf] IEEE Transactions on Automatic Control. 2018. Vol. 63, No. 10, pp. 3290-3300. Li Xia, and Sha Chen. (presented at the 12TH QTNA 2017 Conference)

PROGRAMMING SKILLS

Programming: Python, R, MATLAB, Gurobi, C++, AMPL, NumPy, Scikit-learn, TensorFlow