

Yiran Zhu

Edinburgh, United Kingdom

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Personal Profile

Dedicated and results-driven PhD candidate in Mathematics - Operations Research at the University of Edinburgh, with a strong background in computational sciences and programming. With experience as a research scientist intern, I am passionate about leveraging my expertise in machine learning, optimization, and data analysis to drive innovation in the technology and research sectors.

Education

University of Edinburgh

Edinburgh, UK

PhD. in Mathematics - Operations Research

Sept. 2020 - Sept. 2024

- Topic: Hierarchy and valid inequalities of mixed integer programming
- Supervisors: Akshay Gupta and Miguel Anjos

Georgia Institute of Technology

Atlanta, US

MSc. in Computational Sciences & Engineering

Sept. 2016 - Jan. 2018

- Emphasis on machine learning, parallel computing, and optimisation.

Zhejiang University

Hangzhou, China

BSc. in Mathematics & Applied Mathematics (Honor)

Sept. 2012 - Jun. 2016

- Emphasis on computational mathematics with a minor in Finance

Experience

Edinburgh Airport Ltd.

Edinburgh, UK

Optimisation Engineer (Intern)

Apr. 2024 - Present

- Designing and developing staff scheduling optimisation models for security team managements.
- Developing front-end UI for stakeholders to validate and manipulate the scheduling.
- **Skills:** Python, Web Front-End Development, Project Management, Teamwork, Mathematical Modelling.

Tesco Stores Ltd.

London, UK

Data Science (PhD intern)

Aug. 2023 - Nov. 2023

- Developing heuristic and exact methods for warehouse strategic level VRP (Vehicle Routing Problem) routing, aiming to optimise logistic network organisation and minimise the total costs of operating and transporting.
- Collaborated with a cross-functional team to ensure the seamless integration of routing solutions into Tesco's supply chain infrastructure.
- **Skills:** Python, Git, Project Management, Teamwork, Mathematical Modelling.

Huawei Tech. R&D (UK) Ltd.

Edinburgh, UK

Research Scientist (intern)

Aug. 2022 - Nov. 2022

- Developed an incremental optimisation framework for unsupervised indoor positioning using WiFi signal data and heuristic algorithms. Improved position re-optimization by analyzing graph density, and tailoring statistical kernel functions. This work was integrated into the production.
- Conducted side research projects on pose graph optimization, image filtering for positioning map separation, and map matching.
- **Skills:** Python (pytorch), Git, Data Analysis, Project Management, Literature Review, Teamwork, Presentation

Best Inc.

Hangzhou, China

Operations Research Scientist

Mar. 2020 - Aug. 2020

- Developed an aggregated GBDT and NLR model to forecast future orders for warehouses. Successfully implemented the model across more than 40 warehouses in China, resulting in a significant reduction in stockouts and improved inventory management.
- Collaborated with a cross-functional team on a SMART retail replenishment project. Led the preparation of structured SQL tables using Spark SQL from 20+ raw datasets and analyzed data to identify core system inefficiencies. Contributed to the development of a new inventory management system that improved store inventory turnover ratio by 15%.
- **Skills:** Python, Spark SQL, Data Analysis, Machine Learning, Leadership, Teamwork, Communication, Multitasking

Skills

Programming Python, OR Solver(CPLEX, Gurobi, Xpress), AMPL, SQL, Solidity

Miscellaneous Linux, Shell (Bash/Zsh), AWS, 微信, Microsoft Office, Git, Machine Learning.

Soft Skills Time Management, Teamwork, Leadership, Problem-solving, Engaging Presentation, Multitasking.

Qualifications Chartered Financial Analyst (passed Level 1), Associate Fellow of Higher Education Academy

Achievements

2023	Global 3rd place (1st place in UK) , Worldquant IQC 2023	Global
2023	Travel Scholarship , Laura Wisewell Fund	UK
2023	Travel Award , PCC 2023, MIP 2023, IPCO 2023	Global
2022	Honourable Mention , Huawei UK Challenge 2022	UK
2022	Travel Award , Colloquium in Comb. 2022, PSSDM 2022	Global
2021	Winner , MOPTA 2021 - Global Optimisation Competition	Global
2021	Travel Award , SIAM	US
2020	PhD. Studentship , University of Edinburgh	UK

Languages

Arabic	Beginner
English	Professional proficiency
Mandarin	Native proficiency

Publications

Integer programming for the envy-free equilibrium pricing problem

Akshay Gupte, Yiran Zhu

Working paper (2023). 2023

Stochastic programming for an integrated assignment, routing, and scheduling problem

Syu-Ning Johnn, Andrés Miniguano-Trujillo, Yiran Zhu, Akshay Gupte, Jörg Kalcsics

Optimization online preprint (2023). 2023

Large independent sets in Markov random graphs

Akshay Gupte, Yiran Zhu

arXiv preprint arXiv:2207.04514 (2022). 2022

Academic Activities

CONFERENCE TALKS

Apr. 2021	GSCC 2021 , On the stability number of graphs with Markov property	Online
Jul. 2021	SIAM OP21 , Approximate Nonlinear Optimization Through Monomial Orders	Online
Jul. 2021	SIAM DM21 , On the stability number of graphs with Markov property	Online
Aug. 2021	MOPTA 2021 , MOPTA Competition Finalist Presentation	Online
Sept. 2021	ATMOS 2021 , Solving the H-SARA problem with Uncertainties	Online
Oct. 2021	INFORMS 2021 , On the stability number of graphs with Markov property	Online
Jun. 2022	SSC 2022 , Large Independent Set in Markov Random Graph	Online
Feb. 2023	OptimizED wORLD Seminar , Integer Programming on envy-free equilibrium pricing problem	Edinburgh, UK
Apr. 2023	PCC 2023 , Large Independent Set in Markov Random Graph	Birmingham, UK
Jun. 2023	SIAM OP23 , Approximate Nonlinear Optimization Through Monomial Orders	Seattle, US

POSTER PRESENTING

May 2021	MIP 2021 , On the stability number of graphs with Markov property	Online
May 2021	IPCO 2021 , Lexicographic Approximation of Mixed Integer Programming	Online
May 2023	HiSS SIAM-IMA 2021 , Integer Programming on Generalised Envy-free Pricing Problem	Edinburgh, UK
May 2023	MIP 2023 , Integer Programming on Generalised Envy-free Pricing Problem	Los Angeles, US
Jun. 2023	IPCO 2023 , Integer Programming on Generalised Envy-free Pricing Problem	Madison, US

MISCELLANEOUS

Reviewer	Theoretical Computer Science
Session Chair	Contributed Session I (SIAM DM21)
Memberships	The OR Society, SIAM, INFORMS, IMA

References available upon request.