Ricky Zhengzhong You

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Research Interests

- Algorithm design for large-scale integer and combinatorial optimization; branch-price-and-cut; decomposition and extended formulations.
- Learning-augmented and ML-driven optimization: decision-focused learning, reinforcement learning for combinatorial decision-making, OR/ML interfaces.
- Large language models for healthcare and operations: integrating clinical and operational data, routing and scheduling, and decision support under resource and fairness constraints.

Publications & Working Papers

Journal Articles

- *Two-Stage Learning to Branch in Branch-Price-And-Cut Algorithms for Solving Vehicle Routing Problems Exactly*.
  Zhengzhong You, Yu Yang, Xinshang Wang, Wotao Yin.
  Operations Research. DOI: 10.1287/opre.2023.0615.
- *RouteOpt: An Open-Source Modular Exact Solver for Vehicle Routing Problems*.
  Zhengzhong You, Yu Yang.
  INFORMS Journal on Computing. DOI: 10.1287/ijoc.2025.1415.

Selected Working Papers

- *L-DDOIs: Learning-Based Deep Dual-Optimal Inequalities for Stabilizing Column Generation*.
  Zhengzhong You, Haoran Liu, Bo Tang.
- *Integrated Home-and-Clinic Healthcare Routing with Multi-Service Providers and Time Windows*.
  Tan Yu, **Zhengzhong You**, You Shang, Sijie Li.
- *Fairness in Capacitated Vehicle Routing Problem*.
  Dong Han, **Zhengzhong You**, Yu Yang.

Current Projects

- *Draft-and-Audit Reinforcement Learning for Optimization Modeling*.
  Zeping Min, Weihang Xu, **Zhengzhong You**, Wotao Yin, Xinshang Wang.
- *Log-Driven Semantic Tuning for Sample-Efficient and Generalizable Mixed Integer Programming*.
  Zhengzhong You, Zeping Min, Wotao Yin, Xinshang Wang.

Research & Experience

Visiting Scholar, Department of Statistics, University of Kentucky 2026

- Conducting research on online learning and branch-and-bound algorithms.

Selected Participant, MIT-UF-NEU Joint Summer Research Camp 2026

- Mentored by Baichuan Mo in the MIT JTL-Transit Lab summer program on a large-scale inventory placement problem under demand uncertainty.

Research Intern, DAMO Academy (Alibaba Group, Bellevue, WA, USA) 2025

- Integrated large language models into the solver parameter-tuning process and achieved substantial average performance gains across benchmark instances relative to default parameters; black-box baselines frequently failed to outperform the default configuration.

Lead Developer, RouteOpt (20k+ LOC, C++) 2021–Present

- Designed and implemented RouteOpt, an open-source modular exact solver for CVRP/CVRPTW based on branch-price-and-cut with learning-augmented branching, modular solver components, and reproducible experiment scripts.
- Published detailed documentation and achieved state-of-the-art results, nearly doubling VRPSolver speed while proving optimality for four previously open instances (one requiring $\sim$1.5 years of single-core time).

Education

University of Florida 2021–2025
M.S. in Operations Research, Industrial & Systems Engineering, GPA: 3.95/4.00

Nankai University 2017–2021
B.S. in Chemistry, GPA: 3.67/4.00

Conference & Workshop Presentations

- *2026 INFORMS Transportation Science and Logistics Conference* (MIT Sloan School of Management, Cambridge, MA):
  L-DDOIs: Learning-Based Deep Dual-Optimal Inequalities for Stabilizing Column Generation. Scheduled for presentation July 26–29, 2026 at the triennial conference of the INFORMS Transportation Science and Logistics Society.
- *Fall 2025 UK AI/ML Symposium and Nontechnical Workshop* (invited talk):
  Two-Stage Learning to Branch in Branch-Price-and-Cut Algorithms for Solving Vehicle Routing Problems Exactly.
- *INFORMS Optimization Society Conference*:
  Accelerating Dynamic Programming via Dual Selection for Column-Generation Frameworks (2024).
- *INFORMS Annual Meeting*:
  L-DDOIs: Learning-Based Deep Dual-Optimal Inequalities for Stabilizing Column Generation (2025);
  RouteOpt: A Scalable Advanced Optimization Tool for VRPs (2024);
  Two-Stage Learning to Branch in Branch-Price-and-Cut for Exact VRP (2023);
  Learning to Branch with Column Generation (2022).

Awards & Honors

Graduate

- The Harold D. Haldeman, Jr. Graduate Fellowship, University of Florida (2024).
- INFORMS Optimization Society Conference Travel Support (2024).

Undergraduate

- Academic Excellence Scholarship, Nankai University (2020).
- Innovation and Entrepreneurship Scholarship, Nankai University (2019).
- First Prize, Tianjin Theoretical Chemistry Competition (2019).
- First Prize, Tianjin Mathematics Competition (2018).

Teaching & Mentoring

Instructor (sole)
ESI 3327C Matrix & Numerical Methods in Systems Engineering, University of Florida (Fall 2024; 52 undergraduates). Topics: Linear Algebra, Numerical Methods, Introductory Optimization.

Outreach Mentoring (UF Student Science Training Program)
Ken Cheng (now B.S. CS, Columbia University); Shrey Gupta (now B.A. Math, University of Oxford).

Professional Service

- Journal referee: *Transportation Research Part B*, *IISE Transactions*, *Computers & Operations Research*, *OR Spectrum*. ORCID: 0009-0007-3480-5578.

Selected Relevant Courses

- **ISE PhD level (GPA: 4.00)**: Discrete Optimization; Linear Programming and Network Optimization; Stochastic Modeling & Analysis; Advanced Topics in Continuous Optimization.
- **Math PhD level (GPA: 4.00)**: Analysis I; Numerical Linear Algebra; Numerical Analysis; Numerical Optimization.
- **CS PhD level (GPA: 4.00)**: Machine Learning.

Skills

- **Methods**: Branch-price-and-cut; Column generation; Dual stabilization; Cutting planes; Learning-augmented optimization; Stochastic and robust optimization.
- **Programming**: C++; Python (PyTorch, RL libraries); MATLAB; Shell; Git; Linux.
- **Software/Artifacts**: RouteOpt (lead developer); Gurobi; CPLEX; SCIP; Reproducible experiment pipelines.