

## EDUCATION

**Operations Research Center, MIT**

Cambridge, MA

*Ph.D. in Operations Research, GPA: 5.0/5.0.*

2021 - 2026 (*expected*)

- Advisor: Prof. Patrick Jaillet.
- Research areas: convex/online/distributed optimization, sequential decision making.

**Columbia University**

New York, NY

*B.S. in Applied Math, minor in Computer Science, GPA: 4.07/4.33.*

2017 - 2021

- Honors: Dean's List 17'-19' & 20 Fall, *Summa Cum Laude*.

## RESEARCH INTERESTS

I design efficient algorithms for convex optimization and sequential decision making problems. I aim to (i) address efficiency concerns not only in terms of classical measures such as oracle complexity, but also in resources like communication and memory, and (ii) tackle challenges arising in complex environments, including correlated noise and heterogeneous costs. To this end, I leverage problem-specific structures in novel ways and apply tools from convex optimization/analysis and probability. My algorithms find applications in areas such as control, revenue management, distributed optimization, and distributionally robust optimization.

## PREPRINTS AND WORKING PAPERS

- **Junhui Zhang**, Patrick Jaillet. Multi-Timescale Gradient Sliding for Distributed Optimization. *Under review*, 2025. Available at arXiv:2506.15387.  
 – Extended abstract accepted by the *39th Neural Information Processing Systems (NeurIPS) workshop OPT 2025: "Statistics Meets Optimization"*, 2025.
- **Junhui Zhang**, Patrick Jaillet. Efficient Online Mirror Descent Stochastic Approximation for Multi-Stage Stochastic Programming. *Under review*, 2025. Available at arXiv:2506.15392.
- **Junhui Zhang**, Patrick Jaillet. Secretary Problems with Random Number of Candidates: How Prior Distributional Information Helps. *Under review*, 2025. Available at arXiv:2310.07884.

## PUBLICATIONS

- Moïse Blanchard, **Junhui Zhang**, Patrick Jaillet. Quadratic memory is necessary for optimal query complexity in convex optimization: Center-of-mass is pareto-optimal. *Mathematics of Operations Research*, 2024.  
 – Previous version accepted by the *36th Annual Conference on Learning Theory (COLT)*, 2023.
- Moïse Blanchard, **Junhui Zhang**, Patrick Jaillet. Memory-Constrained Algorithms for Convex Optimization via Recursive Cutting-Planes. *37th Neural Information Processing Systems (NeurIPS)*, 2023.
- Henry Lam, **Junhui Zhang**. Distributionally constrained black-box stochastic gradient estimation and optimization. *Operations Research*, 2024.  
 – Short version accepted by *Winter Simulation Conference (WSC)*, 2020.
- **Junhui Zhang**, Jingkai Yan, John Wright. Square root principal component pursuit: tuning-free noisy robust matrix recovery. *35th Neural Information Processing Systems (NeurIPS)*, 2021.
- Elizabeth A Gibson, **Junhui Zhang**, Jingkai Yan, Lawrence Chillrud, Jaime Benaïves, Yanelli Nunez, Julie B Herbstman, Jeff Goldsmith, John Wright, Marianthi-Anna Kioumourtoglou. Principal Component Pursuit for Pattern Identification in Environmental Mixtures. *Environmental Health Perspectives*, 2022.

TEACHING EXPERIENCES	<ul style="list-style-type: none"> <li>• <b>MIT, Cambridge, MA</b> <ul style="list-style-type: none"> <li>– TA for 6.7700 <i>Fundamentals of Probability</i> (PhD; 50 students) Fall 2025</li> <li>– TA for 6.3700 <i>Introduction to Probability</i> (Undergrad; 70 students) Spring 2024</li> </ul> </li> <li>• <b>Columbia University, New York, NY</b> <ul style="list-style-type: none"> <li>– TA for MATH 3028 <i>Partial Differential Equation</i> (Undergrad; 30 students) Spring 2020</li> <li>– TA for MATH 4061 <i>Modern Analysis I</i> (Undergrad; 60 students) Fall 2019</li> </ul> </li> </ul>
PRESENTATIONS	<ul style="list-style-type: none"> <li>• Multi-Timescale Gradient Sliding for Distributed Optimization. <ul style="list-style-type: none"> <li>– INFORMS Annual Meeting, Atlanta, GA. 10/2025.</li> <li>– Cornell Young Researchers Workshop, Ithaca, NY. 10/2025.</li> </ul> </li> <li>• Efficient Online Mirror Descent Stochastic Approximation for Multi-Stage Stochastic Programming. <ul style="list-style-type: none"> <li>– INFORMS Applied Probability Society Conference, Atlanta, GA. 6/2025.</li> </ul> </li> <li>• Secretary Problems with Random Number of Candidates: How Prior Distributional Information Helps. <ul style="list-style-type: none"> <li>– INFORMS Annual Meeting, Phoenix, AZ. 10/2023.</li> </ul> </li> <li>• Distributionally constrained black-box stochastic gradient estimation and optimization. <ul style="list-style-type: none"> <li>– International Conference on Continuous Optimization (ICCOPT), Bethlehem, PA. 07/2022.</li> <li>– INFORMS Annual Meeting, virtual. 10/2021.</li> <li>– Winter Simulation Conference, virtual. 12/2020.</li> </ul> </li> </ul>
AWARDS AND HONORS	<ul style="list-style-type: none"> <li>• <b>INFORMS Undergraduate Operations Research Prize finalist.</b> 2021 <ul style="list-style-type: none"> <li>– For the work <i>Distributionally constrained black-box stochastic gradient estimation and optimization</i>.</li> </ul> </li> <li>• <b>Applied Math Faculty Award</b>, Applied Physics &amp; Applied Mathematics Dept., Columbia University. 2021</li> </ul>
ACADEMIC SERVICES	<b>Reviewers for:</b> AISTATS (2025), ALT (2024, 2025), NeurIPS (2024, 2025), ICLR (2025)