Matthew Brun

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EDUCATION

Massachusetts Institute of Technology, Cambridge, MA (expected 2027)
Operations Research Center
Ph.D. in Operations Research
Advisor: Dr. Andy Sun

Rice University, Houston, TX 2022
B.A. in Operations Research
Summa Cum Laude, Distinction in Research and Creative Work

EXPERIENCE

Lawrence Livermore National Lab, Livermore, CA
Power Systems Intern, Cyber & Critical Infrastructure Summer Institute May 2024 - August 2024

ORTEC, Houston, TX
Optimization Consultant Intern, Data Science & Consulting May 2022 - August 2022

Chevron, Houston, TX
Data Science Intern, Commodity Supply Chain Management May 2021 - August 2021
Data Science Intern, Chevron Pipeline & Power May 2020 - August 2020

PUBLICATIONS

Refereed journal articles:

2024 On the Strength of Lagrangian Duality for Multiobjective Integer Programming. *Mathematical Programming*.
M. Brun, T. Perini, S. Sinha, and A. J. Schaefer.

2023 Leveraging mid-infrared spectroscopic imaging and deep learning for tissue subtype classification in ovarian cancer. *Analyst.*
C.C. Gajjela, **M. Brun**, R. Mankar, S. Corvigno, N. Kennedy, Y. Zhong, J. Liu, A.K. Sood, D. Mayerich, S. Berisha, and R. Reddy.

Submitted manuscripts:

2025 Alternating Methods for Large-Scale AC Optimal Power Flow with Unit Commitment.
M. Brun, T. Lee, D. Lauinger, X. Chen, X.A. Sun.

2024 BattOpt: Optimal Facility Planning for Electric Vehicle Battery Recycling.
M. Brun, X.A. Sun.

In preparation:

2025 Designing Optimal Wildfires for Adversarial Power Grid Outages
M. Brun, X.A. Sun, J.P. Watson
*Authors sorted alphabetically

PRESENTATIONS

Alternating Methods for Large-Scale AC Optimal Power Flow with Unit Commitment.
INFORMS Computing Society Conference, 2025.
INFORMS Annual Meeting, 2024.
M. Brun, X. Chen, D. Lauinger, T. Lee, X.A. Sun.
*Authors sorted alphabetically

BattOpt: Optimal Facility Planning for Electric Vehicle Battery Recycling.
International Symposium on Math Programming, 2024
INFORMS Annual Meeting, 2023
M. Brun, X. A. Sun

On the Strength of Lagrangian Duality for Multiobjective Integer Programming.
INFORMS Annual Meeting, 2022.
M. Brun, T. Perini, S. Sinha, and A. J. Schaefer.

TEACHING EXPERIENCE

Presenter, Computing in Optimization and Statistics (MIT: 15.S60), Winter 2025
Lecture on Convex and Large Scale Optimization, 22 students.

Teaching Assistant, Optimization of Energy Systems (MIT: 15.S09), Fall 2024
Weekly recitation, 12 students. Overall Rating: 7.0 / 7.0

Teaching Assistant, Introduction to Engineering Computation (Rice: CAAM 210)
Weekly recitation, 16 students. Taught for 6 semesters, Fall 2019 - Spring 2022.

HONORS & AWARDS

2023 ARPA-E Grid Optimization Competition, 2nd Place, *with T. Lee, D. Lauinger, X. Chen, and X. A. Sun*

2022 INFORMS Undergraduate Operations Research Prize, *On the Strength of Lagrangian Duality for Multiobjective Integer Programming*

2022 Phi Beta Kappa

2022 Michael Ross Franko Award, Exemplary Student in Computational and Applied Math, Rice University

2019 Best in Program, Poster, *Analysis of Ovarian Tissue Histopathology using Infrared Spectroscopic Imagery*, IBB Summer Undergraduate Research Symposium

2018 National Merit Scholar

PROFESSIONAL SERVICE

Operations Research Center Student Seminar Coordinator, 2023 - 2024

Peer Reviewer for

European Journal of Operations Research
IEEE Transactions on Automation Science and Engineering
IEEE Transactions on Control of Network Systems