Rajiv Sambharya

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Education

- **Ph.D., Princeton University** 2019-2024
  Operations Research and Financial Engineering
  Thesis: Learning to Accelerate Optimizers
  Supervision: Bartolomeo Stellato
- **M.Sc. University of California - Berkeley** 2017-2018
  Electrical Engineering and Computer Science
  Supervision: Laurent El Ghaoui
- **B.Sc. University of California - Berkeley** 2013-2017
  Electrical Engineering and Computer Science

Publications

Journal Articles

J1 R. Sambharya, G. Hall, B. Amos, and B. Stellato, "Learning to Warm-Start Fixed-Point Optimization Algorithms," *Journal of Machine Learning Research*, vol. 25, no. 166, pp. 1–46, 2024.

Conference Proceedings

C1 R. Sambharya, G. Hall, B. Amos, and B. Stellato, "End-to-End Learning to Warm-Start for Real-Time Quadratic Optimization," in *Proceedings of The 5th Annual Learning for Dynamics and Control Conference*, ser. Proceedings of Machine Learning Research, vol. 211, PMLR, 2023, pp. 220–234.

Preprints

P1 A. Askari, G. Negiar, R. Sambharya, and L. E. Ghaoui, "Lifted Neural Networks *arxiv e-prints: 1805.01532*," 2018.

P2 R. Sambharya and B. Stellato, "Data-Driven Performance Guarantees for Classical and Learned Optimizers *arxiv e-prints: 2404.13831*," 2024.

Working Papers

W1 R. Sambharya and B. Stellato, *Learning Algorithm Steps for Fast Convex Optimization*.

Honors and Awards

- **Princeton Excellence in Teaching Award**: Top award winner in engineering 2021
- **Princeton McGraw Teaching Fellow**: Led orientation for new teaching assistants 2022-2023
- **Princeton SEAS Travel Grant Award**: (INFORMS) 2023

Talks

Data-Driven Performance Guarantees for Classical and Learned Optimizers

- International Symposium on Mathematical Programming Montreal, Canada July 2024
- INFORMS Optimization Society Rice University, March 2024

- Conference on Information Sciences and Systems — Princeton University, March 2024

Learning to Accelerate Optimizers with Guarantees

- REALM lab — MIT, March 2024
- Computational Robotics Group — Harvard University, March 2024

Learning to Warm-Start Fixed-Point Optimization Algorithms

- Yale Robotics Seminar — Yale University, December 2023
- INFORMS — Phoenix, AZ, October 2023
- MOPTA — Lehigh University, August 2023

End-to-End Learning to Warm-Start for Real-Time Quadratic Optimization

- Learning for Dynamics and Control (Poster) — University of Pennsylvania, June 2023
- NYC Operations day (Poster) — Columbia University, May 2023
- INFORMS — Indianapolis, IN, October 2022

Accelerating Non-Convex Optimization via Learned Sequential Convexifications

- ICCOPT (old version) — Lehigh University, July 2022

Learning for Real-Time Semidefinite Optimization

- INFORMS — Anaheim, CA (hybrid), October 2021

Teaching

- ORF499: Senior Thesis — Spring 2024
- ORF498: Senior Thesis — Fall 2023
- ORF363: Computing and Optimization for the Physical and Social Sciences — Spring 2023
- ORF387: Networks — Fall 2022
- ORF522: Linear and Nonlinear Optimization (Graduate-level) — Fall 2021
- ORF307: Optimization — Spring 2021 (Head TA), 2022
- ORF455: Energy and Commodities Markets — Fall 2020

Mentoring

- **Research group leader**: Led a weekly research group of 11 senior thesis students — 2023-2024

Software

- Learning to Warm-Start Fixed-Point Optimization Algorithms
  https://github.com/stellatogrp/data_driven_optimizer_guarantees
- Learning to Warm-Start Fixed-Point Optimization Algorithms
  https://github.com/stellatogrp/l2ws
- End-to-End Learning to Warm-Start for Real-Time Quadratic Optimization
  https://github.com/stellatogrp/l2ws_qp

Industry Experience

- Machine Learning Engineer at Linc Global — Sunnyvale, CA, July 2018 - July 2019
- Software Engineering Intern at Amazon — Seattle, WA, June 2016 - August 2016

Service

- INFORMS Optimization Society Session Organizer — 2024
- Princeton Optimization Seminar Organizer — 2022-2023

Peer Review

- Learning for Dynamics and Control
- Integer Programming and Combinatorial Optimization

Technical Skills

- **Programming languages**: Python, Matlab, Julia, R, C, Java, SQL, HTML
- **Tools**: Git, LaTeX, Slurm, GPU, JAX, PyTorch, Tensorflow