

Jisun Park

Postdoctoral Research Associate
Princeton University

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Appointments

Princeton University Postdoctoral Research Associate, Dept. of Operations Research and Financial Engineering – Advisor: Prof. Bartolomeo Stellato (stellato.io) – Data-driven algorithm analysis and design; acceleration of general-purpose first-order solvers.	Princeton, NJ Sep 2024 – Present
Alibaba DAMO Academy Research Intern (Host: Dr. Wotao Yin, wotaoyin.mathopt.com) – Optimization approach for biostatistics application.	Summer 2023

Education

Seoul National University (SNU) Ph.D. in Mathematical Sciences – Advisor: Prof. Ernest K. Ryu (ernestryu.com) – Thesis: <i>Understanding the Optimization Algorithms via Fixed-point Iterations and Their Applications</i> .	Seoul, Korea Mar 2019 – Aug 2024
Seoul National University (SNU) B.Sc. in Mathematics Education, Minor in Computer Science and Engineering – Teacher's Certificate for Secondary Regular Teacher of Mathematics.	Seoul, Korea Mar 2014 – Feb 2019
University of British Columbia Study Abroad	Vancouver, Canada Fall 2017

Research Interests

- **Optimization Theory and Algorithm Design:** Continuous and Convex Optimization, Monotone Operator Theory, Fixed-Point Iteration, Operator Splitting Methods, Accelerated First-Order Methods, Complexity Lower Bounds.
- **Algorithm Analysis and Performance Certification:** Computer-assisted Analysis (Performance Estimation Problem), Exact Verification via Mixed-Integer Programming, Beyond-Worst-Case and Probabilistic Guarantees.
- **Data-Driven Optimization and Decision-Making:** Distributionally Robust Optimization, Data-driven Algorithm Design, Learning-to-Optimize (L2O), LLM-assisted Algorithm Design, Decision-Making under Uncertainty.

Honors & Fellowships

- 2024 Sejong Science Fellowship (Overseas Training Track)
National Research Foundation of Korea Sep 2024
- 2023 Future Gauss Lectures
Gauss Labs Feb 2023
- Google Travel Grant
Google Jul 2022
- Brain Korea 21 Four, Plus
National Research Foundation of Korea Spring 2019 – Spring 2022, Spring 2023
- Best Teaching Assistant Awards
Seoul National University Spring 2019
- Academic Performance Scholarship
Seoul National University; Chunjae Education Corporation and Cheonggwon Scholarship Foundation 2014 – 2018

Publications

Journal articles

- [J3] V. Ranjan, **J. Park**, S. Gualandi, A. Lodi, and B. Stellato, “Exact verification of first-order methods via mixed-integer linear programming,” *SIAM Journal on Optimization*, 2026, To appear.
- [J2] J. Paeng, **J. Park**, and E. K. Ryu, “Coordinate-update algorithms can efficiently detect infeasible optimization problems,” *Journal of Mathematical Analysis and Applications*, 2025.
- [J1] C. Park, **J. Park**, and E. K. Ryu, “Factor- $\sqrt{2}$ acceleration of accelerated gradient methods,” *Applied Mathematics and Optimization*, 2023.

Conference proceedings

- [C4] O. Press et al., “AlgoTune: Can language models speed up general-purpose numerical programs?” In *Neural Information Processing Systems (NeurIPS)*, 2025.
- [C3] J. J. Suh, **J. Park**, and E. K. Ryu, “Continuous-time analysis of anchor acceleration,” in *Neural Information Processing Systems (NeurIPS)*, 2023.
- [C2] **J. Park** and E. K. Ryu, “Accelerated infeasibility detection of constrained optimization and fixed-point iterations,” in *International Conference on Machine Learning (ICML)*, 2023.
- [C1] **J. Park** and E. K. Ryu, “Exact optimal accelerated complexity for fixed-point iterations,” in *International Conference on Machine Learning (ICML)*, 2022.
🏆 Long presentation: Top 118/5630 = 2% of submitted papers

Preprints

- [P2] V. Ranjan, **J. Park**, and B. Stellato, “Learning distributionally robust first-order methods for convex optimization,” *arXiv Preprint*, 2026. arXiv: 2605.06585.
- [P1] **J. Park**, V. Ranjan, and B. Stellato, “Data-driven analysis of first-order methods via distributionally robust optimization,” *arXiv Preprint*, 2025. arXiv: 2511.17834.

Papers in progress

- **GPU Acceleration for OSQP**
Accelerating the general-purpose first-order solver OSQP with GPUs.
- **FOMTools: Algorithm Verification Toolbox**
A toolbox for exact verification of first-order methods on parametric quadratic optimization problems.

Mentoring Experience

Princeton University

Co-advised with Prof. B. Stellato

- **Liubomir Maxim Baicev** (Princeton ORFE, 2025 – Present)
 - Leading project on accelerating the general-purpose first-order solver OSQP with GPUs.
- **Daniel Deza** (Princeton ORFE, Graduate Student, 2026 – Present)
- **Vinit Ranjan** (Princeton ORFE, Graduate Student, 2024 – 2026 → **Postdoctoral researcher at MIT**)
 - Co-led projects on exact MILP verification and data-driven distributionally robust analysis and design of first-order methods.

Seoul National University

Co-advised with Prof. E. K. Ryu

- **Jinhee Paeng** (SNU Math, 2024 – 2025 → **Stanford ICME Ph.D.**)
 - Led project on coordinate-update inconsistent fixed-point iterations.
- **Chanwoo Park** (SNU Math, 2023 – 2024 → **MIT EECS Ph.D.**)
 - Led project on convergence analysis of accelerated momentum methods.

Talks

- **Designing First-Order Methods with Provable Guarantees via a Data-Driven Approach**
 - [2026 INFORMS Annual Meeting](#), San Francisco, CA Nov 2026
 - Session: Data-Driven Optimization and Decision Calibration, Nov 1, 11:00AM–12:15PM, South 206
- **Data-Driven Analysis of First-Order Methods via Distributionally Robust Optimization**
 - [SIAM OP26](#), Edinburgh, UK
 - [MOPTA 2026](#), *Lehigh University*, Bethlehem, PA Aug 2026
 - [2026 INFORMS Optimization Society Conference](#), Atlanta, GA
 - [2025 KAIST ISE Winter Symposium](#), *KAIST*, Daejeon, South Korea
 - [EUROPT 2025](#), *University of Southampton*, Southampton, UK
- **Invited Session: Computer-aided Design and Verification for First-Order Optimization Algorithms**
 - [2025 INFORMS Annual Meeting](#), Atlanta, GA
- **Data-driven Performance Estimation of First-Order Methods**
 - [ICCOPT 2025](#), Los Angeles, CA
- **Beyond the Worst-case Analysis of Optimization Algorithms**
 - [Korea Institute for Advanced Study \(KIAS\)](#), South Korea Dec 2024
- **East Asia Core Doctoral Forum in Mathematics 2024**
 - East Asia Core Doctoral Forum, *Fudan University*, Shanghai, China Jan 2024
- **BK21 Four Rookies Pitch**
 - *Seoul National University*, Seoul, South Korea Oct 2023
- **Minisymposium: Principled and Computer-assisted Approaches for the Analysis and Design of Optimization Algorithms**
 - [SIAM Conference on Optimization \(OP23\)](#), Seattle, WA May 2023
- **2023 Future Gauss Lectures**
 - *Gauss Labs*, Seoul, South Korea Feb 2023
- **Session: Interplay between Optimization Statistics and Learning**
 - [2022 INFORMS Annual Meeting](#), Indianapolis, IN
- **SNU Summer AI School**
 - *Seoul National University*, Seoul, South Korea 2022
- **KWMS International Conference**
 - [Korean Women in Mathematical Sciences \(KWMS\)](#), Seoul, South Korea 2022

Teaching Experience

Princeton University

Substitute Instructor

- Linear and Nonlinear Optimization, ORF522 (Fall 2025).
- Optimization, ORF307 (Spring 2026).

Princeton, NJ
Sep 2025 – Apr 2026

Seoul National University

Teaching Assistant

- Mathematical and Numerical Optimization (Fall 2020, Fall 2021, Fall 2022).
- Mathematical Foundations of Deep Neural Networks (Spring 2024).
- Mathematical Modeling and Simulation (Spring 2020).
- Introduction to Scientific Computing (Spring 2023).
- Introduction to Mathematical Analysis (Spring 2021).
- Linear Algebra (Fall 2023).
- Calculus for Humanities and Social Sciences 2 (Fall 2020).
- Calculus 1, 2 (Spring 2019 – Spring 2021, Spring 2022).

Seoul, Korea
Mar 2019 – Aug 2024

Service

Journal and conference reviews

- **Journals:** Mathematical Programming; SIAM Journal on Scientific Computing; IEEE Transactions on Image Processing (TIP); INFORMS Journal on Optimization.
- **Conferences:** International Conference on Machine Learning (ICML); Neural Information Processing Systems (NeurIPS); IEEE Conference on Decision and Control (CDC).

Invited session and seminar organization

- Session chair, invited session “*Computer-aided design and verification for first-order optimization algorithms*,” 2025 INFORMS Annual Meeting.
- Program committee, [ScaleOpt](#), NeurIPS 2025.

Technical Skills

- Python, Julia, MATLAB, C/C++, $\LaTeX$.

Languages

- Korean (native); English (fluent).