Jonghyeok Lee

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Research Interests

Statistical learning and sequential analysis, with a focus on conformal prediction, change-point detection, and uncertainty quantification for time-series and high-dimensional data.

Education

Georgia Institute of Technology, Atlanta, GA, USA Aug. 2023 – Present
Ph.D. in Operations Research, in progress
H. Milton Stewart School of Industrial and Systems Engineering
Advisor: Prof. Yao Xie

Seoul National University, Seoul, South Korea Mar. 2016 – Aug. 2023
B.S. in Statistics and Mathematical Sciences
Enrollment period includes two years of military service (Mar. 2018 – Feb. 2020).

Publications

* Equal contribution.

Journal Articles

[J.4] **Multi-rank subspace change-point detection with application in monitoring robotic swarms**
Jonghyeok Lee, Yao Xie, Youngser Park, Jason Hindes, Ira B. Schwartz, and Carey Priebe
Sequential Analysis, advance online publication, pp. 1–37, 2026.

[J.3] **Differentially private multivariate statistics with an application to contingency table analysis**
Minwoo Kim*, Jonghyeok Lee*, Seung Woo Kwak, and Sungkyu Jung
Electronic Journal of Statistics, 19(1), pp. 1507–1569, 2025.

[J.2] **Flow-based distributionally robust optimization**
Chen Xu, Jonghyeok Lee, Xiuyuan Cheng, and Yao Xie
IEEE Journal on Selected Areas in Information Theory, 5, pp. 62–77, 2024.

[J.1] **Forecasting of the COVID-19 pandemic situation of Korea**
Taewan Goo, Catherine Apio, Gyujin Heo, Doeun Lee, Jong Hyeok Lee, Jisun Lim, Kyulhee Han, and Taesung Park
Genomics & Informatics, 19(1), e11, 2021.

Conference Papers

[C.2] **Beyond maximum likelihood: Variational inequality estimation for generalized linear models**
Linglingzhi Zhu, Jonghyeok Lee, and Yao Xie
Conference on Neural Information Processing Systems (NeurIPS), 2026 (accepted).

[C.1] **Kernel-based optimally weighted conformal time-series prediction**
Jonghyeok Lee, Chen Xu, and Yao Xie
International Conference on Learning Representations (ICLR), 2025.

Preprints

[R.2] **Quickest change-point detection in generalized linear models with variational estimation**
Jonghyeok Lee and Yao Xie
arXiv:2610.16616, 2026.

[R.1] **Conformal prediction for time series with deep sequence models**
Junghwan Lee*, Jonghyeok Lee*, and Yao Xie
arXiv:2610.02357, 2026.

Invited Talks

[T.6] **Conformal prediction for time series: From kernel weighting to deep sequence models**
Center for Signal and Information Processing (CSIP) Seminar, Georgia Institute of Technology, *Oct. 2026*

[T.5] **Multi-rank subspace change-point detection with application in monitoring robotic swarms**
Joint Statistical Meetings, *Aug. 2026*

[T.4] **Time-series conformal prediction with optimal weights**
9th International Workshop in Sequential Methodologies (IWSM), *Jun. 2026*

[T.3] **Conformal prediction for time series via kernel-based optimal weighting**
ASA/IMS Spring Research Conference (SRC), *May 2026*

[T.2] **Beyond maximum likelihood: Variational inequality estimation for generalized linear models**
INFORMS Optimization Society Conference, *Mar. 2026*

[T.1] **Statistical estimation via monotone variational inequality for generalized linear models and generalized additive models**
INFORMS Annual Meeting, *Oct. 2025*

Poster Presentations

[P.3] **Kernel-based optimally weighted conformal time-series prediction**
International Conference on Learning Representations (ICLR), *Apr. 2025*

[P.2] **Flow-based distributionally robust optimization**
SIAM Conference on Mathematics of Data Science (MDS), *Oct. 2024*

[P.1] **Flow-based distributionally robust optimization**
NeurIPS Workshop on Mathematics of Modern Machine Learning (M3L), *Dec. 2023*

Awards, Scholarships & Fellowships

KFAS Overseas Ph.D. Scholarship 2023 – Present
Korea Foundation for Advanced Studies

National Science Foundation Travel Grant 2026
9th International Workshop in Sequential Methodologies (IWSM); $500

Student Travel Award 2026
ASA/IMS Spring Research Conference (SRC); $773.52, covering full travel expenses

Stewart Topper Fellowship 2023 – 2024
Georgia Institute of Technology, ISyE; $5,000

Presidential Science Scholarship in Mathematics 2016 – 2022
Korea Student Aid Foundation; full tuition plus KRW 20,000,000 in additional support

Dean's List Spring 2022, Fall 2021, Fall 2020, Spring 2020
College of Natural Sciences, Seoul National University

KFAS Undergraduate Special Scholarship Fall 2020 – Fall 2021
Korea Foundation for Advanced Studies

Bronze Medal, University Students Contest of Mathematics 2018
Korean Mathematical Society

Research Experience

Doctoral Research, Georgia Institute of Technology Aug. 2023 – Present
H. Milton Stewart School of Industrial and Systems Engineering
Advisor: Prof. Yao Xie

- Conduct collaborative research on conformal prediction for dependent time-series data, including kernel-based weighting and deep sequence models.
- Develop and analyze methods for detecting low-rank covariance changes in high-dimensional streaming data, with applications to robotic swarm monitoring.
- Study flow-based distributionally robust optimization and variational inequality estimation for generalized linear models.

Statistical Learning Theory Lab, Seoul National University Fall 2021 – Spring 2023
Department of Statistics Advisor: Prof. Sungkyu Jung

- Developed Gaussian and Laplace mechanisms for releasing differentially private multivariate statistics, with applications to contingency tables.
- Constructed differentially private parametric bootstrap tests for contingency table analysis.

Bioinformatics and Biostatistics Lab, Seoul National University Jan. 2021 – Oct. 2021
Department of Statistics Advisor: Prof. Taesung Park

- Built nonlinear forecasting models for domestic COVID-19 transmission and tuned time-series models using rolling-origin cross-validation.

Teaching Experience

Georgia Institute of Technology Fall 2026, Fall 2024, Summer 2024
Teaching Assistant
ISYE 6740 – Computational Data Analysis
Thank-a-Teacher recognition, Center for Teaching and Learning (Jul. 2024)

Seoul National University Fall 2022
Tutor, Faculty of Liberal Education
Mathematical Statistics 2

Academic Service

Journal Reviewing

IEEE Transactions on Information Theory	2025 – 2026
Journal of the American Statistical Association	2024, 2026
Operations Research	2026
Sequential Analysis	2025
Technometrics	2025
The American Statistician	2026

Conference Reviewing

International Conference on Learning Representations (ICLR)	2025
International Conference on Machine Learning (ICML)	2024
Conference on Neural Information Processing Systems (NeurIPS)	2024 – 2026

Leadership & Service

President 2024 – 2026
Georgia Tech Korean Students Tennis Club

President 2023 – 2025
Seoul National University Alumni Association at Georgia Tech

Republic of Korea Air Force, Air Operations Service Mar. 2018 – Feb. 2020
10th Fighter Wing

Skills

Programming: Python, R, C, MATLAB.
Writing tools: LaTeX, Markdown.
Languages: Korean (native), English (fluent).