JINSEONG PARK

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SUMMARY

Affiliation	Final-year Ph.D. student at Statistical Learning and Computational Finance (SLCF) Lab, Industrial Engineering, Seoul National University, Republic of Korea
Research Topics	Reliable AI (data privacy and security); Robust AI for Time Series

FIELD OF INTEREST

Reliable AI

- Improve the generalization of privacy-preserving optimization to mitigate privacy-utility trade-offs.
- Utilize synthetic data with generative AI models for privacy-preserving applications.
- Investigate defense methods against various attacks to address privacy and safety issues in AI models.

Robust AI for Time Series

- Design robust and explainable time series models to address inconsistencies in AI forecasting.
- Employ forecasting models in real-world domains, such as finance, manufacturing, and healthcare.

EDUCATION

Mar 2022 - present	Seoul National University **Ph.D. Candidate** in Industrial Engineering　(Supervisor: Jaewook Lee) - Cumulative Major GPA: 3.94/4.30
Mar 2020 - Feb 2022	Seoul National University Master of Science (MS) degree in Industrial Engineering - Thesis: Differentially private multi-class classification using kernel supports and equilibrium points　(Supervisor: Jaewook Lee) - Cumulative Major GPA: 4.19/4.30
Mar 2019 - Aug 2019	Technische Universität Graz in Austria (Student exchange programme) Bachelor's programme in Mechanical Engineering
Mar 2016 - Feb 2020	Pohang University of Science and Technology (POSTECH) Bachelor of Science (BS) degree in Industrial and Management Engineering - Graduated with Honors: Summa Cum Laude (rank: 1/22) - Cumulative GPA: 3.91/4.30, Major GPA: 4.03/4.30

PUBLICATIONS

† indicates equal contribution.

JOURNALS

[5] **Jinseong Park**, Hyungjin Ko, Jaewook Lee, "Modeling Asset Price Process: An Approach for Imaging Price Chart with Generative Diffusion Models". In: *Accepted in Computational Economics (under proofs), prior version is available at SSRN 4491342* (2024).

[4] **Jinseong Park**, Hoki Kim, Yujin Choi, Woojin Lee, Jaewook Lee, "Fast sharpness-aware training for periodic time series classification and forecasting". In: *Applied Soft Computing* (2023), p. 110467.

[3] Hoki Kim, **Jinseong Park**, Jaewook Lee, "Generating Transferable Adversarial Examples for Speech Classification". In: *Pattern Recognition* 137 (2023), p. 109286.

[2] **Jinseong Park**, Yujin Choi, Junyoung Byun, Jaewook Lee, Saerom Park, "Efficient differentially private kernel support vector classifier for multi-class classification". In: *Information Sciences* 619 (2023), pp. 889–907.

[1] Yujin Choi, **Jinseong Park**, Jaewook Lee, Hoki Kim, "Exploring Diverse Feature Extractions for Adversarial Audio Detection". In: *IEEE Access* 11 (2023), pp. 2351–2360.

CONFERENCES

[6] **Jinseong Park**[†], Yujin[†] Choi, Jaewook Lee, "In-distribution Public Data Synthesis with Diffusion Models for Differentially Private Image Classification". In: *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition* (2024).

[5] Yujin Choi[†], **Jinseong Park**[†], Hoki Kim, Jaewook Lee, Saerom Park, "Fair Sampling in Diffusion Models through Switching Mechanism". In: *Proceedings of the AAAI Conference on Artificial Intelligence* (2024).

[4] Hoki Kim, **Jinseong Park**, Yujin Choi, Jaewook Lee, "Fantastic Robustness Measures: The Secrets of Robust Generalization". In: *Advances in Neural Information Processing Systems* (2023).

[3] **Jinseong Park**, Hoki Kim, Yujin Choi, Jaewook Lee, "Differentially Private Sharpness-Aware Training". In: *International Conference on Machine Learning* (2023).

[2] Sungyoon Lee, **Jinseong Park**, Jaewook Lee, "Implicit Jacobian regularization weighted with impurity of probability output". In: *International Conference on Machine Learning* (2023).

[1] Sungyoon Lee, Woojin Lee, **Jinseong Park**, Jaewook Lee, "Towards Better Understanding of Training Certifiably Robust Models against Adversarial Examples". In: *Advances in Neural Information Processing Systems* 34 (2021), pp. 953–964.

WORKSHOPS

[2] Seungju Lee, **Jinseong Park**, Jaewook Lee, "Enhancing non-linear asset volatility forecasting models with investor sentiment and explainable AI". In: *Korea Computer Congress (KCC) 2023, XAI workshop, Best paper awards (2/37)* (2023).

[1] **Jinseong Park**, Jaewook Lee, "Wine Recommendation System using BERT". In: *Spring Conference of Korean Institute of Industrial Engineers (KIIE)* (2021).

PREPRINTS

[4] **Jinseong Park**[†], Seungyun Lee[†], Woojin Jeong, Yujin Choi, Jaewook Lee, "TimeBridge: Prior-Driven Time Series Generation with Diffusion Bridge". In: *Under review in NeurIPS 2024* (2024).

[3] Hoki Kim, **Jinseong Park**, Yujin Choi, Jaewook Lee, "Stability Analysis of Sharpness-Aware Minimization". In: *arXiv preprint arXiv:2301.06308* (2023).

[2] Hoki Kim, **Jinseong Park**, Yujin Choi, Woojin Lee, Jaewook Lee, "Exploring the Effect of Multi-step Ascent in Sharpness-Aware Minimization". In: *arXiv preprint arXiv:2302.10181* (2023).

[1] Additional Private Under-review papers.

Research/Working Experiences

Industrial Data Engineering & Analytics (IDEA) Lab, Pohang, Korea Sep 2019 - Dec 2019

- Research Intern, hosted by Prof. Hyunbo Cho at POSTECH

SK Telecom, Seoul, Korea Jun 2018 - Aug 2018

- R&D Digital Transformation Team Intern
- Developed services for R&D Digital Transformation of internal data clusters

LNG industry research project with POSCO Energy, Pohang, Korea 2018

- Researcher, with Prof. Ribin Seo at POSTECH
- Organized LNG value chains and strategic implications of POSCO Energy

Teaching Experiences

Lecturer at Soongsil University, Seoul, Korea 2024

- Time series for financial data (fall semester)

Teaching Assistant (TA) for Prof. Jaewook Lee, SNU 2020 - 2023

- Undergraduate courses: Statistics for Industrial Engineering (Spring 2020, Spring 2022, and Spring 2023), Mathematical Methods for Industrial and Management Engineering (Fall 2020)
- Graduate courses: Data Mining Technology (Fall 2022), Advanced Topics in Statistical Learning (Spring 2023)

Teaching Assistant (TA) for Education Programs, SNU 2020 - 2023

- Instructor for Big data analysis with Python and deep learning with PyTorch in Woori Bank (2022)
- Instructor for AI practice course in Korea Institute of Startup & Entrepreneurship Development (KISED) (2022)
- TA for Machine Learning and Deep Learning for Prof. Jaewook Lee in SNU Big-Data FinTech course (2021 and 2023)
- TA for Python programming for Prof. Namhyung Kim in SNU Big-Data FinTech course (2022)
- TA for Optimization and Linear Algebra for Prof. Jaewook Lee in Samsung Data Scientist for Device Solution (2020-2022) and Industrial Bank of Korea (2020 and 2021)

Valuable Experiences

Projects

- SNU-COSMAX Technology Incubation Center; COSMAX (Seoul, Korea)   Dec 2023 - Aug 2024

Invited Talks

- Deep learning with differential privacy; Desilo (Seoul, Korea)   Jul 2024

External Courses

- Algorithmic Fairness course in Graduate Summer School (LA, US)

  Institute for Pure & Applied Mathematics (IPAM) at UCLA;

  Organized by Cynthia Dwork, Guy Rothblum, and Noa Dagan   Jul 2022

Academic Reviewers

- Journal: Pattern recognition
- Conference: CVPR 2024, NeurIPS 2024

Scholarship

2022 - 2023	Teaching Assistance scholarship, Seoul National University, Full tuition for all semesters.
2021 Fall	Scholarship for Academic Excellence, Seoul National University, Merit-based, 30% of tuition for a semester.
2019 Spring	Scholarship for Exchange Students, POSTECH.
2018 Fall, 2019 Fall	Mentor Scholarship for IME Information System Tech, C++ programming, POSTECH.
2018 - 2019	National Scholarship for Science and Engineering, Republic of Korea, Merit-based, full tuition for all semesters.
2016 - 2017	Scholarship for Academic Excellence, POSTECH, Merit-based, full tuition for all semesters.

Skills

Programming	Python (PyTorch for AI), C++, C, LaTeX	
Leadership	Manager of Association of POSTECH Grown Companies (APGC)-Lab, POSTECH Start-up Incubator	(2018-2019)
	Member and Honorary Member of POSTECH Broadcasting System (PBS)	(2016-2018)
Language	Korean (Native), English (Advanced)	