Jaemoo Choi

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RESEARCH INTEREST

- **Generative AI**, Diffusion Models, Discrete LLM, LLM fine-tuning, Distillation
- **AI for science**, Boltzmann distribution sampling
- **Optimal control,** Optimal Transport, Schrödinger bridge, Optimization

EDUCATION

Georgia Institute of Technology Atlanta, GA
Postdoctoral Associate 09/2024 – present
Advisor: Yongxin Chen

Seoul National University (SNU) Seoul, Korea
Ph.D. *in Mathematical Sciences* 03/2018 – 08/2024
Advisor: Myungjoo Kang

Seoul National University (SNU) Seoul, Korea
B.S. *in Mathematics Education* 03/2014 – 02/2018

PUBLICATIONS

*Equal contribution ⋆Core contributors †Equal advising

Conference Papers

[C1] Proximal Diffusion Neural Samplers
Wei Guo*, **Jaemoo Choi***, Yuchen Zhu, Molei Tao, Yongxin Chen
International Conference on Learning Representations (ICLR), 2026

[C2] Adjoint Schrodinger Bridge Sampler [Oral, 0.3%]
Guan-Horng Liu⋆, **Jaemoo Choi**⋆, Yongxin Chen, Benjamin Kurt Miller, Ricky T. Q. Chen⋆
Advances in Neural Information Processing Systems (NeurIPS), 2025

[C3] Non-equilibrium Annealed Adjoint Sampler
Jaemoo Choi⋆, Yongxin Chen, Molei Tao, Guan-Horng Liu⋆,
Advances in Neural Information Processing Systems (NeurIPS), 2025

[C4] MDNS: Masked Diffusion Neural Sampler via Stochastic Optimal Control
Yuchen Zhu*, Wei Guo*, **Jaemoo Choi**, Guan-Horng Liu, Yongxin Chen†, Molei Tao†
Advances in Neural Information Processing Systems (NeurIPS), 2025

[C5] Overcoming Spurious Solutions in Semi-Dual Neural Optimal Transport: A Smoothing Approach for Learning the Optimal Transport Plan
Jaemoo Choi, Jaewoong Choi†, Dohyun Kwon†
International Conference on Machine Learning (ICML), 2025

[C6] Unsupervised Point Cloud Completion through Unbalanced Optimal Transport
Taekyung Lee, **Jaemoo Choi**, Myungjoo Kang†, Jaewoong Choi†,
International Conference on Machine Learning (ICML), 2025

[C7] Robust Barycenter Estimation using Semi-Unbalanced Neural Optimal Transport
Milena Gazdieva*, **Jaemoo Choi***, Alexander Kolesov, Jaewoong Choi, Petr Mokrov, Alexander Korotin,
International Conference on Learning Representations (ICLR), 2025

[C8] Improving Neural Optimal Transport via Displacement Interpolation
Jaemoo Choi, Yongxin Chen, Jaewoong Choi,
International Conference on Learning Representations (ICLR), 2025

[C9] Scalable Wasserstein Gradient Flow for Generative Modeling through Unbalanced Optimal Transport
Jaemoo Choi*, Jaewoong Choi* and Myungjoo Kang
International Conference on Machine Learning (ICML), 2024

[C10] Analyzing and Improving OT-based Adversarial Networks
Jaemoo Choi*, Jaewoong Choi* and Myungjoo Kang
International Conference on Learning Representations (ICLR), 2024

[C11] Generative Modeling through the Semi-dual Formulation of Unbalanced Optimal Transport
Jaemoo Choi*, Jaewoong Choi* and Myungjoo Kang
Advances in Neural Information Processing Systems (NeurIPS), 2023

[C12] Restoration based Generative Models
Jaemoo Choi*, Yesom Park* and Myungjoo Kang
International Conference on Machine Learning (ICML), 2023

Preprints

[P1] Rethinking the Design Space of Reinforcement Learning for Diffusion Models: On the Importance of Likelihood Estimation Beyond Loss Design
Jaemoo Choi*, Yuchen Zhu*, Wei Guo, Petr Molodyk, Bo Yuan, Jinbin Bai, Yi Xin, Molei Tao, Yongxin Chen
preprint, 2026

[P2] QUATRO: Query-Adaptive Trust Region Policy Optimization for LLM Fine-tuning
Doyeon Lee, Eunyi Lyou, Hyunsoo Cho†, Sookyung Kim†, Joonseok Lee†, **Jaemoo Choi**†
preprint, 2026

[P3] Discrete Adjoint Schrödinger Bridge Sampler
Wei Guo, Yuchen Zhu, Xiaochen Du, Juno Nam, Yongxin Chen, Rafael Gómez-Bombarelli, Guan-Horng Liu, Molei Tao, **Jaemoo Choi**
preprint, 2026

[P4] Generalized Schrödinger Bridge on Graphs
Panagiotis Theodoropoulos, Juno Nam, Evangelos Theodorou†, **Jaemoo Choi**†
preprint, 2026

[P5] Efficient Generative Modeling beyond Memoryless Diffusion via Adjoint Schrödinger Bridge Matching
Jeongwoo Shin, Jaewoong Choi†, Joonseok Lee†, **Jaemoo Choi**†
preprint, 2026

[P6] Enhancing Reasoning for Diffusion LLMs via Distribution Matching Policy Optimization
Yuchen Zhu*, Wei Guo*, **Jaemoo Choi**, Petr Molodyk, Bo Yuan, Molei Tao, Yongxin Chen
preprint, 2025

[P7] MFM-point: Multi-scale Flow Matching for Point Cloud Generation
Petr Molodyk*, **Jaemoo Choi***, David W Romero, Ming-Yu Liu, Yongxin Chen
preprint, 2025

HONORS & AWARDS

Best Reviewer for NeurIPS 2024	2024
Nurturing Next-generation Researchers Postdoctoral Fellowship ($ 45000)	2024
Brain Korea Phase IV Research Scholarship	2024
Brain Korea Phase IV Research Scholarship	2021 – 2022
Lecture & Research Scholarship, SNU	2020 – 2021
Outstanding TA Awards, SNU	2019
Brain Korea 21 Plus Research Scholarship	2018 – 2020
Beakwoon Academic Excellence Scholarship	2018
Academic Excellence Scholarship, SNU	2015 – 2017
Chungkwan Academic Exellence Scholarship, SNU	2014

INVITED TALKS

[T1] Center for AI Natural Sciences, KIAS — 02/2025
Efficient and Scalable Samplers with Optimal Transport Perspective

[T2] Optimal Transport Guest Lecture, Georgia Tech — 03/2025
Unbalanced Optimal Transport and its Application to Estimate Wasserstein Gradient Flow and the Robust Barycenter Distribution

[T3] Level Set Seminar, UCLA — 11/2024
Algorithms for Optimal Transport, the Barycenter Problem, and Their Applications

[T4] FLAIR Seminar, Georgia Tech — 10/2024
Recent Works on Inverse Problem via Diffusion Models

[T5] Stanford Research Institute (SRI) — 07/2024
Various Formulations of Optimal Transport Problems and Its Application to Generative Modeling

[T6] Center for AI Natural Sciences, KIAS — 03/2024
Various Formulations of Optimal Transport Problems and Its Application to Generative Modeling

[T7] Research laboratory performance presentation, University of Seoul — 02/2024
Generative Modeling through the Semi-dual Formulation of Unbalanced Optimal Transport

[T8] Seoul AI Hub Conference, AI Seoul — 02/2024
Analyzing Optimal Transport-based Adversarial Algorithms

[T9] 2024 Winter Workshop on PDE and Applied Mathematics, KAIST — 01/2024
Bridging Two Distributions through Optimal Transport

[T10] Medical Imaging AI Leading Innovation Center, SNU — 12/2023
Generative Modeling through the Semi-dual Formulation of Unbalanced Optimal Transport

[T11] Samsung Electronics Science Project Worshop, Samsung Electronics — 08/2023
Distributional Matching between Wafer Datasets

[T12] Samsung Electronics Science Project Workshop, Samsung Electronics — 03/2023
Feature Extraction from Wafer Map Datasets

TEACHING & ASSISTANCE EXPERIENCE

Optimal Transport, Georgia Tech — Spring 2025

Calculus I, II, SNU,	Spring 2018, Fall 2018, Fall 2019
Engineering Mathematics, SNU,	Spring 2020
Mathematics for Life Sciences I, II, SNU	Fall 2020, Fall 2022, Spring 2023
Mathematical Analysis, SNU,	Fall 2021, Spring 2022
Computer Application for Scientific Computation, SNU	Spring 2021

ACADEMIC SERVICES

NeurIPS reviewer	2024 - present
ICLR, ICML reviewer	2025 - present
CVPR reviewer	2026
Automatica reviewer	2024
TMLR reviewer	2024 - 2025