

# Jaemoo Choi

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## RESEARCH INTEREST

Generative AI, AI for science, Boltzmann distribution sampling, Diffusion/LLM fine-tuning, Optimal Transport, Schrödinger bridge, Stochastic optimal control

## EDUCATION

**Georgia Institute of Technology**  
Postdoctoral Associate  
Advisor: Yongxin Chen

Atlanta, GA  
09/2024 – present

**Seoul National University (SNU)**  
Ph.D. *in Mathematical Sciences*  
Advisor: Myungjoo Kang

Seoul, Korea  
03/2018 – 08/2024

**Seoul National University (SNU)**  
B.S. *in Mathematics Education*

Seoul, Korea  
03/2014 – 02/2018

## PUBLICATIONS

\*Equal contribution \*Core contributors †Equal advising

### Conference Papers

- [C1] 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
- [C2] Non-equilibrium Annealed Adjoint Sampler  
**Jaemoo Choi\***, Yongxin Chen, Molei Tao, Guan-Horng Liu\*,  
Advances in Neural Information Processing Systems (NeurIPS), 2025
- [C3] MDNS: Masked Diffusion Neural Sampler via Stochastic Optimal Control  
Yuchen Zhu\*, Wei Guo\*, **Jaemoo Choi**, Guan-Horng Liu, Yongxin Chen<sup>†</sup>, Molei Tao<sup>†</sup>  
Advances in Neural Information Processing Systems (NeurIPS), 2025
- [C4] Overcoming Spurious Solutions in Semi-Dual Neural Optimal Transport: A Smoothing Approach for Learning the Optimal Transport Plan  
**Jaemoo Choi**, Jaewoong Choi<sup>†</sup>, Dohyun Kwon<sup>†</sup>  
International Conference on Machine Learning (ICML), 2025
- [C5] Unsupervised Point Cloud Completion through Unbalanced Optimal Transport  
Taekyung Lee, **Jaemoo Choi**, Myungjoo Kang<sup>†</sup>, Jaewoong Choi<sup>†</sup>,  
International Conference on Machine Learning (ICML), 2025
- [C6] 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
- [C7] Improving Neural Optimal Transport via Displacement Interpolation  
**Jaemoo Choi**, Yongxin Chen, Jaewoong Choi,  
International Conference on Learning Representations (ICLR), 2025

- [C8] 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
- [C9] Analyzing and Improving OT-based Adversarial Networks  
**Jaemoo Choi\***, Jaewoong Choi\* and Myungjoo Kang  
 International Conference on Learning Representations (ICLR), 2024
- [C10] 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
- [C11] Restoration based Generative Models  
**Jaemoo Choi\***, Yesom Park\* and Myungjoo Kang  
 International Conference on Machine Learning (ICML), 2023

### Preprints

- [P1] Proximal Diffusion Neural Samplers  
 Wei Guo\*, **Jaemoo Choi\***, Yuchen Zhu, Molei Tao, Yongxin Chen  
 preprint, 2025
- [P2] 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

### HONORS & AWARDS

<b>Best Reviewer for NeurIPS 2024</b>	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
<b>Outstanding TA Awards, SNU</b>	2019
Brain Korea 21 Plus Research Scholarship	2018 – 2020
Beakwoon Academic Excellence Scholarship	2018
Academic Excellence Scholarship, SNU	2015 – 2017
Chungkwan Academic Excellence Scholarship, SNU	2014

### INVITED TALKS

- [T1] Optimal Transport Guest Lecture, Georgia Tech 03/2025  
 Unbalanced Optimal Transport and its Application to Estimate Wasserstein Gradient Flow and the Robust Barycenter Distribution
- [T2] Level Set Seminar, UCLA 11/2024  
 Algorithms for Optimal Transport, the Barycenter Problem, and Their Applications
- [T3] FLAIR Seminar, Georgia Tech 10/2024  
 Recent Works on Inverse Problem via Diffusion Models
- [T4] Stanford Research Institute (SRI) 07/2024  
 Various Formulations of Optimal Transport Problems and Its Application to Generative Modeling

[T5]	Center for AI Natural Sciences, KIAS Various Formulations of Optimal Transport Problems and Its Application to Generative Modeling	03/2024
[T6]	Research laboratory performance presentation, University of Seoul Generative Modeling through the Semi-dual Formulation of Unbalanced Optimal Transport	02/2024
[T7]	Seoul AI Hub Conference, AI Seoul Analyzing Optimal Transport-based Adversarial Algorithms	02/2024
[T8]	2024 Winter Workshop on PDE and Applied Mathematics, KAIST Bridging Two Distributions through Optimal Transport	01/2024
[T9]	Medical Imaging AI Leading Innovation Center, SNU Generative Modeling through the Semi-dual Formulation of Unbalanced Optimal Transport	12/2023
[T10]	Samsung Electronics Science Project Workshop, Samsung Electronics Distributional Matching between Wafer Datasets	08/2023
[T11]	Samsung Electronics Science Project Workshop, Samsung Electronics Feature Extraction from Wafer Map Datasets	03/2023

### 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
Automatica reviewer	2024
TMLR reviewer	2024 - 2025