JAEMOO CHOI

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Department of Aerospace Engineering, Georgia Institute of Technology

EDUCATION

Georgia Institute of Technology **Atlanta, GA, USA**

- Postdoc in Aerospace Engineering *September 2024 – August 2026*
- Advisor: Dr. Yongxin Chen
- Co-advised by Dr. Joonseok Lee (SNU) *September 2025 – August 2026*

Seoul National University (SNU) **Seoul, Korea**

- Ph.D in Mathematical Sciences *March 2018 – August 2024*
- Supervisor: Dr. Myungjoo Kang

Seoul National University (SNU) **Seoul, Korea**

- B.S. in Mathematics Education *March 2014 – February 2018*

RESEARCH INTERESTS

Deep Learning

- Generative Modeling, Sampling, Fine-tuning, Image-to-image Translation, Inverse Problems, Domain Adaptation
- Optimal Transport, Optimal Control, Sampling for Deep Learning Applications
- Diffusion Models, Flow Models

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, SNU *2018*
- Academic Excellence Scholarship, SNU *2015 – 2017*
- Chungkwan Academic Exellence Scholarship, SNU *2014*

ACADEMIC SERVICE

- NeurIPS, ICLR, ICML reviewer *2024 -2025*
- Automatica reviewer *2024*
- TMLR reviewer *2025*

PAPERS

Published and Accepted papers

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

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

- 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

- 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

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

- 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

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

- 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

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

- 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

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

Under Review and Preprints

- MFM-point: Multi-scale Flow Matching for Point Cloud Generation
  Petr Molodyk*, Jaemoo Choi*, David W. Romero, Ming-Yu Liu, Yongxin Chen, preprint, 2025
- Scalable Simulation-free Entropic Unbalanced Optimal Transport
  Jaemoo Choi, Jaewoong Choi, preprint, 2024

* co-first / core author † co-correspondence

EXPERIENCE

Talks and Seminars

- Optimal Transport Guest Lecture, Georgia Tech *March 25, 2025*
  - "Unbalanced" Optimal Transport and its Application to Estimate Wasserstein Gradient Flow and the Robust Barycenter Distribution
- Seminar, Level Set Seminar, UCLA *November 7, 2024*
  - Algorithms for Optimal Transport, the Barycenter Problem, and Their Applications
- Seminar, FLAIR Seminar, Georgia Tech *October 18, 2024*
  - Recent Works on Inverse Problem via Diffusion Models
- Seminar, Stanford Research Institute (SRI) *July 27, 2024*
  - Various Formulations of Optimal Transport Problems and Its Application to Generative Modeling
- Seminar, Center for AI Natural Sciences, KIAS *March 13, 2024*
  - Various Formulations of Optimal Transport Problems and Its Application to Generative Modeling
- Invited Talk, Research laboratory performance presentation, University of Seoul *February 23, 2024*
  - Generative Modeling through the Semi-dual Formulation of Unbalanced Optimal Transport
- Poster, Seoul AI Hub Conference (AI Seoul 2024), Seoul *February 1, 2024*
  - Analyzing Optimal Transport-based Adversarial Algorithms
- Workshop, 2024 Winter Workshop on PDE and Applied Mathematics, KAIST *January 23, 2024*
  - Bridging Two Distributions through Optimal Transport
- Workshop, Medical Imaging AI Leading Innovation Center, SNU *December 22, 2023*
  - Generative Modeling through the Semi-dual Formulation of Unbalanced Optimal Transport
- Workshop, Samsung Electronics Science Project Worshop, Samsung Electronics *August 30, 2023*
  - Distributional Matching between Wafer Datasets
- Workshop, Samsung Electronics Science Project Workshop, Samsung Electronics *March 24, 2023*
  - Feature Extraction from Wafer Map Datasets

Teaching Assistance Experience

- Optimal Transport, Georgia Institute of Technology, Spring 2025.
- Calculus I, II, Seoul National University, (Spring 2018, Fall 2018, Fall 2019)
- Engineering Mathematics, Seoul National University, (Spring 2020)
- Mathematics for Life Sciences I, II, Seoul National University, (Fall 2020, Fall 2022, Spring 2023)
- Mathematical Analysis, Seoul National University, (Fall 2021, Spring 2022)
- Computer Application for Scientific Computation, Seoul National University, (Spring 2021)

Projects

- Patient-Centric Medical Visual Question and Answering (Med-VQA) System using Foundational Visual Language

Models, September 2024 -

- Advancing Scalability, Efficiency, and Stability in Algorithms for Distribution Transport Problems (NRF), September 2024 – August 2025
  - Project Investigator
- Cancer diagnosis through Surface-enhanced Raman Spectroscopy (Emocog), January 2023 – March 2024
- Automatic Real-world Video Enhancement: Denoising (4by4), September 2022 – June 2023
  - Project manager
- Yield Estimation using Photo Maps (Samsung Electronics), September 2022 – August 2023
- Time Series Data Interpolation using Automatic Feature Extraction of Senor Data (Samsung Electronics), March 2021 – December 2021
- Automatic Feature Extraction of Senor Data (Samsung Electronics), March 2020 – December 2020

CERTIFICATES

- Secondary School Teacher (Grade II) Certificate *February 2018*