

JAEHOON HAHM

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Email: jh141@illinois.edu **GitHub:** github.com/jaehoon-hahm **Homepage:** jaehoon-hahm.github.io

RESEARCH INTEREST Diffusion & Flow & Energy-based Models, ML + Quantum Many-body Physics, Geometric Deep Learning, Neural Quantum States.

WORK EXPERIENCE **Meta Reality Labs**
Research Scientist Intern 2026.05 – 2026.11
- Supervisor: Jogendra N. Kundu
- Research: Generative Modeling, Self-Supervised Learning

EDUCATION **University of Illinois Urbana-Champaign (UIUC)**
Ph.D. Physics 2024.08 – 2028.12 (Expected)
Advisor: Bryan K. Clark
Research: ML + Quantum Many-body Physics, Neural Quantum States

Graduate School of Data Science, Seoul National University (SNU)
M.S. Data Science 2022.03 – 2024.02
- Thesis: *Isometric Representation Learning for Disentangled Latent Space of Diffusion Models*
- Advisor: Joonseok Lee

Seoul National University (SNU)
B.S. Physics, minor in Mathematics 2016.03 – 2022.02
- Thesis: *Improvement in Variational Quantum Algorithms by Measurement Simplification*
- Advisor: Young June Park
- Mandatory Military Service: Republic of Korea Army, 2019.07 – 2021.02

Seoul Science High School
Graduated with Distinction 2013.03 – 2016.02
- 1 year early admission to a high school for science gifted students

PUBLICATIONS **[P3] TILT: Test-Time Reward Alignment via Distribution Tilting for Compositional Generation**
Debottam Dutta*, [Jaehoon Hahm](#)*, Jianchong Chen, Romit Roy Choudhury[†]
Under Review at ICML 2026, SPIGM Workshop

[P2] Optimal Crystal Flow for Fast and Reliable Crystal Generation
Seunghoon Yi, Youngwoo Cho, [Jaehoon Hahm](#), Jeongwoo Shin, Soo Kyung Kim, Jaegul Choo, Joonseok Lee, Hongkee Yoon[†]
Under Review at NeurIPS 2026

[P1] Geometric Flow Matching for Learning Quantum Many-Body States with Classical Shadows
[Jaehoon Hahm](#), Bryan Clark[†]
Under Review at PRX Quantum

[C4] Equivariant Latent Alignment via Flow Matching under Group Symmetries

Sunghyun Kim*, [Jaehoon Hahm](#)*, Jeongwoo Shin, Joonseok Lee[†]
International Conference on Machine Learning (ICML) 2026

[C3] SummDiff: Generative Modeling of Video Summarization with Diffusion

Kwanseok Kim*, [Jaehoon Hahm](#)*, Sumin Kim, Jinhwan Sul, Byunghak Kim, Joonseok Lee[†]
International Conference on Computer Vision (ICCV) 2025, Highlight (263/11,239 = 2.3%)

[C2] Generative Modeling of Quantum Distribution with Functional Flow Matching

[Jaehoon Hahm](#)*, Tak Hur*, Joonseok Lee, Daniel K. Park[†]
Quantum Techniques in Machine Learning (QTML) 2024

[C1] Isometric Representation Learning for Disentangled Latent Space of Diffusion Models

[Jaehoon Hahm](#)*, Junho Lee*, Sunghyun Kim, Joonseok Lee[†]
International Conference on Machine Learning (ICML) 2024

[W1] Improvement in Variational Quantum Algorithms by Measurement Simplification

[Jaehoon Hahm](#), Hayeon Kim, Young June Park
arXiv:2312.06176

MISC. EXPERIENCE

Graduate Research Assistant

2024.03 – 2024.08

Advisor: Daniel K. Park

Stat. & DS, Yonsei Univ.

- Worked on Generative Modeling of Quantum Distribution with Functional Flow Matching

Undergraduate Research Assistant

2018.07 – 2019.04, 2021.02 – 2021.12

Advisor: Young June Park, funded with *Samsung Beyond Limit* project ECE, SNU

- Worked on Measurement Simplification pre-processing method that accelerates variational quantum circuit computation and measurement.

- Worked on Quantum KNN using IBM Qiskit quantum computers.

Undergraduate Research Assistant

2021.02 – 2021.12

Advisor: Taehyun Kim

CSE, SNU

- Worked on measuring gate fidelities using randomized benchmarking protocol, by self-developed control framework based on IBM Qiskit.

Undergraduate Research Assistant

2021.07 – 2021.12

Advisor: Hyunyong Choi

Physics, SNU

- Worked on diamond NV center control experiments including Rabi oscillation, spin echo, and dynamical decoupling.

Sergeant, Republic of Korea Army

2019.07 – 2021.02

Chemical, Biological, Radiological, and Nuclear Reconnaissance, 5th Infantry Division

- Discharged as sergeant, after 19 months of mandatory military service at Yeoncheon, one of the front borderlines of Korea.

PATENT

Korea Patent

SummDiff: Generative Modeling of Video Summarization with Diffusion

2025

TEACHING EXPERIENCE	TA, UIUC	
	PHYS212: University Physics, Electricity & Magnetism	2025
	PHYS435: Electromagnetic Fields I	2024
	TA, SNU	
	M2480.001100: Principles & Applications of Data Science	2023
LANGUAGES	Programming: Python, C, C++, Java, MATLAB, Mathematica Deep Learning: PyTorch, JAX, TensorFlow, NumPy Quantum: IBM Qiskit, Google Cirq, PennyLane, TensorFlow Quantum Natural Languages: English (Professional), Korean (Native)	
REFERENCES	Bryan K. Clark	2024.08 - Current
	Ph.D. Advisor (UIUC)	bkclark@illinois.edu
	Ge Liu	2025.06 - Current
	Collaborator (UIUC)	geliu@illinois.edu
	Joonseok Lee	2022.03 - 2024.08
	M.S. Advisor (SNU)	joonsek@snu.edu