

MYEONGJIN SHIN

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EDUCATION

Korea Advanced Institute of Science and Technology (KAIST)

B.S. in Computing Science; double major in Mathematical Sciences; GPA: 4.0/4.3

Daejeon, Korea

Mar. 2021 – Aug. 2027

- KAIST enrollment period includes a two-year academic leave for mandatory military service in the Republic of Korea.

Gyeonggi Science High School for the Gifted

Computer Science

Suwon, Korea

Mar. 2018 – Feb. 2021

RESEARCH AND WORK EXPERIENCE

Caltech SURF Program

Undergraduate Research Fellow; advisor: Prof. Yu Tong, Prof. John Preskill

California, Caltech

May. 2026 – Present

- Research on practical Hamiltonian learning with static single qubit fields.

KAIST Physics Quantum Information Theory Group

Undergraduate Research Assistant; advisor: Prof. Changhun Oh

Daejeon, Korea

Dec. 2025 – Present

- Research on Hamiltonian learning, bosonic and fermionic systems.

Research Institute of Mathematics, Seoul National University

Undergraduate Research Assistant; advisor: Dr. Kabgyun Jeong

Seoul, Korea

Feb. 2022 – Present

- Research on quantum entropies, variational quantum algorithms, quantum property testing, quantum singular value transformation.

KRAFTON

Research Internship

Seoul, Korea

Jul. 2023 – Aug. 2023

- Researched AI optimization methods and image processing.

PUBLICATIONS

* Equal contribution. ^($\alpha-\beta$) Alphabetical order, following theoretical computer science convention. [†] First author.

PREPRINTS

[8] **Heisenberg-limited Hamiltonian learning without short-time control**

Myeongjin Shin[†], Junseo Lee, Changhun Oh. arXiv:2604.27838 (2026).

[7] **Near optimal quantum algorithm for estimating Shannon entropy**

Myeongjin Shin[†], Kabgyun Jeong. arXiv:2509.07452 (2026);

CONFERENCES

[6] **Certifying and learning local quantum Hamiltonians**

Andreas Bluhm, Matthias C. Caro, Francisco Escudero Gutiérrez, Junseo Lee, Aadil Oufkir, Cambyse Rouzé, Myeongjin Shin^($\alpha-\beta$).

TQC contributed talk (2026).

Note: This work subsumes a previous note, *Optimal certification of constant local Hamiltonians*, arXiv:2512.09778.

JOURNAL ARTICLES

[5] **Bounding quantum uncommon information with quantum neural estimators**

Donghwa Ji, Junseo Lee, Myeongjin Shin, IlKwon Sohn, Kabgyun Jeong. *Quantum Science and Technology* **11**(1), 015001 (2025).

[4] **Mutual information maximizing quantum generative adversarial networks**

Mingyu Lee, Myeongjin Shin, Junseo Lee, Kabgyun Jeong. *Scientific Reports* **15**(1), 32835 (2025).

[3] **Resource-efficient algorithm for estimating the trace of quantum state powers**

Myeongjin Shin^{*}, Junseo Lee^{*}, Seungwoo Lee, Kabgyun Jeong. *Quantum* **9**, 1832 (2025).

[2] **Disentangling quantum neural networks for unified estimation of quantum entropies and distance measures**

Myeongjin Shin^{*}, Seungwoo Lee^{*}, Junseo Lee^{*}, Mingyu Lee, Donghwa Ji, Hyeonjun Yeo, Kabgyun Jeong. *Physical Review A* **110**(6),

062418 (2024).

[1] **Estimating quantum mutual information through a quantum neural network**

Myeongjin Shin[†], Junseo Lee, Kabgyun Jeong. *Quantum Information Processing* **23**(2), 1–16 (2024).

RESEARCH TALKS

Heisenberg-limited Hamiltonian learning without short-time control [Invited] KAIST Physics QIT Lab Seminar	<i>May. 2026</i>
Certifying and learning local quantum Hamiltonians [Contributed] Theory of Quantum Computation, Communication and Cryptography Conference (TQC 2026)	<i>Sep. 2026</i>
Optimal certification of constant local Hamiltonians [Invited] University of Edinburgh Quantum Software Lab [Invited] KAIST Physics QIT Lab Seminar	<i>Mar. 2026</i> <i>Dec. 2025</i>
Near optimal quantum algorithm for estimating Shannon entropy [Invited] Team QST Summer Workshop	<i>Aug. 2025</i>
Resource-efficient algorithm for estimating the trace of quantum state powers [Contributed] Annual Meeting of Korean Mathematical Society [Poster] Annual Conference on Quantum Information Processing (QIP 2025)	<i>Oct. 2024</i> <i>Feb. 2025</i>
Disentanglement provides a unified estimation for quantum entropies and distance measures [Contributed] Korean Physical Society Spring Meeting [Poster] Annual Conference on Quantum Information Processing (QIP 2024)	<i>Apr. 2024</i> <i>Jan. 2024</i>
Mutual information maximizing quantum generative adversarial networks [Invited] North Carolina State University Triangle Quantum Computing Seminar [Poster] Annual Conference on Quantum Information Processing (QIP 2024)	<i>Nov. 2023</i> <i>Jan. 2024</i>
Estimating quantum mutual information through a quantum neural network [Invited] National Institute of Science Education and Research Bhubaneswar, India [Poster] Asian Quantum Information Science Conference (AQIS 2023) [Poster] Conference on the Theory of Quantum Computation (TQC 2023)	<i>Aug. 2023</i> <i>Aug. 2023</i> <i>Jul. 2023</i>

RESEARCH INTERESTS

- Quantum Learning Theory
- Quantum Property Testing
- Quantum Entropies and Distance Measures
- Hamiltonian and Lindbladian Learning
- Quantum Algorithms; QSVT and DQI
- Quantum Error Correction

TEACHING EXPERIENCE

Quantum Algorithms Lectured on quantum decoded interferometry (DQI).	<i>Winter 2025</i>
Quantum Sensing and Hamiltonian Learning Study Group Organized a study group on quantum computational sensing and Hamiltonian learning with real-time evolution.	<i>Fall 2025</i>
Quantum Learning and Complexity Theory Lectured on random unitaries, classical shadows, quantum property testing, QSVT, and QAE.	<i>Summer 2025</i>

SELECTED HONORS AND AWARDS

KAIST Presidential Fellowship (KPF)	Mar. 2021 – Present
KRAFTON AI Fellowship	Jul. 2023 – Aug. 2023
2024 Quantum Hackathon Korea – 1st place; Ministry of Science and ICT Prize	Jun. 2024
WorldQuant Brain Research Consultant	Sep. 2023
2023 Quantum Hackathon Korea – 3rd place; IonQ Special Prize	Jun. 2023
QHack Certificate of Achievement (Advanced)	Feb. 2023
Xanadu QHack Coding Challenges	Feb. 2023
Best Paper Award, Gyeonggi Science High School	Feb. 2021

PROFESSIONAL ACTIVITIES

Journal Reviewer
Quantum Information Processing; Quantum Machine Intelligence; npj Quantum Information

SKILLS AND QUALIFICATIONS

Programming C/C++, Python; Qiskit, Pennylane, PyTorch, TensorFlow, Java, JavaScript, Rust, React, Processing
Problem Solving Codeforces rating 1894 (Expert), max rating 1962 (Candidate Master): [godthinkun](#)
Languages Korean (native); English (fluent, TOEFL iBT 108); German and Spanish (basic)

Last updated: May, 2026