

Myeongjin Shin

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EDUCATION

Korea Advanced Institute of Science and Technology

BS in Computing Science, Double major in Mathematical Sciences (4.1/4.3)

Daejeon, Korea

Mar. 2021 – Aug. 2027

Gyeonggi Science High School For The Gifted

Computer Science

Suwon, Korea

Mar. 2018 – Feb. 2021

RESEARCH & WORK EXPERIENCE

Research Institute of Mathematics, Seoul National University.

Undergraduate research assistant (advisor: [Dr. Kabgyun Jeong](#))

Seoul, Korea

Feb. 2022 – Present

- Keyword: Quantum entropies, Variational quantum algorithms, Quantum property testing, Quantum singular value transformation, Hamiltonian certification

KAIST Physics Quantum Information Theory Group.

Undergraduate research assistant (advisor: [Prof. Changhun Oh](#))

Daejeon, Korea

Dec. 2025 – Present

- Keyword: Hamiltonian learning, Decoded quantum interferometry

KRAFTON

Internship

Seoul, Korea

Jul. 2023 – Aug. 2023

- Researched AI optimization methods and image processing

PUBLICATIONS

$(\alpha-\beta)$ Alphabetical order (theoretical computer science convention).

Preprints

Junseo Lee, **Myeongjin Shin** ^{$(\alpha-\beta)$} , “[Optimal certification of constant-local Hamiltonians](#)”, arxiv: 2512.09778 (2025, TQC talk submitted)

Myeongjin Shin, Kabgyun Jeong, “[Near optimal quantum algorithm for estimating Shannon entropy](#)”, arxiv: 2509.07452 (2025, npj Quantum Information submitted)

Journal Articles

Donghwa Ji, Junseo Lee, **Myeongjin Shin**, IlKwon Sohn, Kabgyun Jeong, “[Bounding quantum uncommon information with quantum neural estimators](#)”, Quantum Science and Technology 11 (1), 015001 (2025)

Mingyu Lee, **Myeongjin Shin**, Junseo Lee, Kabgyun Jeong, “[Mutual information maximizing quantum generative adversarial networks](#)”, Scientific Reports 15 (1), 32835 (2025)

Myeongjin Shin, Junseo Lee, Seungwoo Lee, Kabgyun Jeong, “[Resource-efficient algorithm for estimating the trace of quantum state powers](#)”, Quantum 9, 1832 (2025)

Myeongjin Shin, Seungwoo Lee, Junseo Lee, Mingyu Lee, Donghwa Ji, Hyeonjun Yeo, Kabgyun Jeong, “[Disentangling quantum neural networks for unified estimation of quantum entropies and distance measures](#)”, Physical Review A 110 (6), 062418 (2024)

Myeongjin Shin, Junseo Lee, Kabgyun Jeong, “[Estimating quantum mutual information through a quantum neural network](#)”, Quantum Information Processing 23 (2), 1-16 (2024)

RESEARCH TALKS

Optimal certification of constant-local Hamiltonians

[Invited] University of Edinburgh quantum software lab (Mar. 2026)
[Invited] KAIST Physics QIT Lab Seminar (Dec. 2025)

Near optimal quantum algorithm for estimating Shannon entropy

[Invited] Team QST Summer Workshop (Aug. 2025)

Resource-efficient algorithm for estimating the trace of quantum state powers

[Contributed] Annual Meeting of Korean Mathematical Society (KMS) (Oct. 2024)
[Poster] Annual Conference on Quantum Information Processing (QIP 2025) (Feb. 2025)

Disentanglement provide a unified estimation for quantum entropies and distance measures

[Contributed] Korean Physical Society spring meeting (Apr. 2024)
[Poster] Annual Conference on Quantum Information Processing (QIP 2024) (Jan. 2024)

Mutual information maximizing quantum generative adversarial networks

[Invited] North Carolina State University Triangle Quantum Computing Seminar (Nov. 2023)
[Poster] Annual Conference on Quantum Information Processing (QIP 2024) (Jan. 2024)

Estimating Quantum Mutual Information Through A Quantum Neural Network

[Invited] National Institute of Science Education and Research Bhubaneswar, India (Aug. 2023)
[Poster] Asian Quantum Information Science Conference (AQIS 2023) (Aug. 2023)
[Poster] Conference on the Theory of Quantum Computation (TQC 2023) (Jul. 2023)

PROFESSIONAL ACTIVITIES

Journal Reviewer
Quantum Information Processing Journal (QINP)

TEACHING EXPERIENCE

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

HONORS

KRAFTON AI Fellowship	Jul. 2023 – Aug. 2023
KAIST Presidential Fellowship (KPF)	Mar. 2021 – present

AWARDS & ACHIEVEMENTS

2024 Quantum Hackathon Korea <i>1st place. Ministry of Science and ICT prize.</i>	Jun. 2024
WorldQuant Brain Research Consultant	Sep. 2023
2023 Quantum Hackathon Korea <i>3st place. IonQ special prize.</i>	Jun. 2023
KRAFTON AI Fellowship	Jul. 2023
QHack Certificate of Achievement (Advanced)	Feb. 2023
Xanadu QHack Coding Challenges	Feb. 2023
Best Paper Award from Gyeonggi Science High School	Feb. 2021

SKILLS AND QUALIFICATIONS

Programming languages & Tools

Advanced skills: C/C++, Python

Basic skills: Qiskit, PennyLane, Pytorch, Tensorflow, JAVA, Javascript, Rust, React, Processing

Algorithms and problem solving skills

Codeforces | rating 1894 (Expert), max rating 1962 (Candidate master), [godthinkun](#)

Languages

Native | Korean

Fluent | English (TOEFL iBT 108)

Basic | German, Spanish

INTERESTS

- **Quantum Learning Theory:** Hamiltonian learning, testing and certification, Gibbs state learning, Agnostic tomography, Quantum memory-sample complexity tradeoff.
- **Quantum Algorithms:** Applications of quantum singular value transformation (QSVT), Decoded quantum interferometry (DQI).
- **Quantum Property Testing:** (Optimal) estimation of quantum entropies and distance measures, Estimation of nonlinear properties of the quantum state (such as trace of quantum state powers).
- Quantum Error Correction
- Machine Learning and its Applications.

Last updated: Jan, 2026.