SeokHyeon (Lucas) Kong

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RESEARCH INTERESTS

Computer Architecture, Quantum Computer Systems and Architectures in the broadest sense, Fault-Tolerant Quantum Computers, Quantum Error Correction

EDUCATION

Sungkyunkwan University (SKKU) — **Seoul, South Korea**
College of Information and Communication Engineering — *February 2026 (Expected)*
Bachelor of Science in Electronic and Electrical Engineering — **GPA: 3.95/4.0 (4.37/4.5)**
Bachelor of Science in Advanced Semiconductor Engineering — System Architecture Track

The Pennsylvania State University — **University Park, PA**
School of Electrical Engineering and Computer Science (EECS) — *Fall 2024*
Exchange Student in Computer Engineering — **Grade: 4.0/4.0**

PUBLICATIONS

SeokHyeon Kong, Dongwhan Kim, Kiwan Meang*, Euiseong Seo*, *"*Characterizing the System Overhead of Discrete Gaussian Noise Generation for Differential Privacy*," IEEE Computer Architecture Letters*, 2025. (In Preparation)

SeokHyeon Kong and Ha-young Oh*, "Predicting Key Regional Real Estate Prices Using Machine Learning Technique: with an emphasis on Jeonsae system," *The Journal of the Korean Institute of Information and Communication Engineering*, Oct. 2023

RESEARCH EXPERIENCE

Research Mentee — **Remote**
IonQ, Advised by Dr. Denny Dahl — *08/2025-09/2025*

- Solved the Four Corners Map Coloring problem using a Variational Quantum Algorithm.
- Applied graph-theoretic approaches to the Instant Insanity problem on NISQ devices.

Undergraduate Research Intern — **Suwon, South Korea**
Arch Lab @ SKKU, Advised by Prof. Dongmoon Min — *07/2025-08/2025*

- Academically trained in the field of Quantum / Cryogenic Computer Systems; developed foundational expertise through presentations and defenses.
- Explored cryogenic computer architecture - processors, interconnects, caches, and memory - as well as quantum computer systems with a focus on superconducting qubits.

Undergraduate Researcher — **University Park, PA**
Penn State CSE, Advised by Prof. Kiwan Maeng — *08/2024-09/2025*

- Performed in-depth GPU profiling using Nsight Compute and Nsight Systems to analyze performance bottlenecks and system-level overhead in differentially private training.

- Conducted Differentially Private Stochastic Gradient Descent (DP-SGD) experiments on multiple models and datasets to characterize system overhead.

Undergraduate Research Intern **Pohang, South Korea**
POSTECH QCQN (Quantum Computing and Quantum Networks) *01/2025*

- Performed 397 nm fluorescence (Doppler) and 729 nm quadrupole spectroscopy on Ca^+ ions and enhanced system stability through targeted adjustments.
- Implemented micromotion optimization via 2D scanning with DC compensation rods to enhance ion trapping stability.

HONORS & AWARDS

Quantum Hackathon - Director's Award *2025*

President's List (Honor Society, **2 consecutive years**) *2024, 2025*

Dean's List (**5 consecutive semesters**) *SP2023, FA2023, SP2024, FA2024, SP2025*

Korea-U.S. Student Exchange Program *FA2024*
in the field of high-tech industry; Scholarship Award ($9,000)

Student Success Scholarship *2023*

TEACHIING EXPERIENCE

Academic Tutor **Suwon, South Korea**
Sungkyunkwan University (SKKU), Intro to Electromagnetism *09/2023-12/2023*

- Taught blue collar workers of Samsung Semiconductor, who study Material-Component Convergence Engineering, at SKKU.
- Primarily focused on problems not covered in class.

International Summer School Teaching Assistant **Seoul, South Korea**
Sungkyunkwan University (SKKU), Engineering Mathematics 2 *07/2023-08/2023*

- Worked as a teaching assistant during the international summer semester.
- Prepared and organized class materials, including exams.

TECHNICAL SKILLS

GPU Profiling (Nsight Systems, Nsight Compute), Circuit (Cadence Virtuoso, SoC, Verilog), Programming (C, Python, CUDA, MATLAB), Quantum Computing (Qiskit), Data Analysis (NumPy, Pandas, Matplotlib), Scientific Writing (LaTeX)

CERTIFICATIONS & TEST SCORES

Qiskit Global Summer School 2025 Quantum Excellence (IBM Quantum)
CS50's Introduction to Artificial Intelligence with Python (Harvard University)
CS50's Introduction to Cybersecurity (Harvard University)
TOEFL iBT – Score: 108