

# SeokHyeon (Lucas) Kong

<https://lucasshkong.github.io/> | [linkedin.com/in/lucasshkong/](https://www.linkedin.com/in/lucasshkong/)

## RESEARCH INTERESTS

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

## EDUCATION

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### Sungkyunkwan University (SKKU)

*College of Information and Communication Engineering*

Bachelor of Science in Electronic and Electrical Engineering

Bachelor of Science in Advanced Semiconductor Engineering

**Seoul, South Korea**

*February 2026 (Expected)*

**GPA: 3.95/4.0 (4.37/4.5)**

System Architecture Track

### The Pennsylvania State University

*School of Electrical Engineering and Computer Science (EECS)*

Exchange Student in Computer Engineering

**University Park, PA**

*Fall 2024*

**Grade: 4.0/4.0**

## PUBLICATIONS

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**SeokHyeon Kong**, Dongwhan Kim, Kiwan Meang\*, Euseong 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

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### Research Mentee

*IonQ, Advised by Dr. Denny Dahl*

**Remote**

*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

*Arch Lab @ SKKU, Advised by Prof. Dongmoon Min*

**Suwon, South Korea**

*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

*Penn State CSE, Advised by Prof. Kiwan Maeng*

**University Park, PA**

*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.

## Curriculum Vita

- 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  $\text{Ca}^+$  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

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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

## TEACHING EXPERIENCE

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### 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

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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

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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