Sunwoo Kim

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Summary

Incoming ECE PhD student focused on computing system design with heterogeneous architecture.

Education

PhD **Cornell University**, Electrical and Computer Engineering — Aug 2025 – present

BS **Seoul National University**, Electrical and Computer Engineering, **cum laude** — Mar 2019 – Feb 2025

Publications

G^{3}SA: A GPU-Accelerated Gold Standard Genomics Library for End-to-End Sequence Alignment
Yeejoo Han*, **Sunwoo Kim***, Seongyeon Park, Jinho Lee (*equal contribution)
ACM ICS 2025 (to appear)

Awards & Honors

Fulbright STEM Graduate Studies Program (declined), $40k – US and ROK govs — Sept 2024

Presidential Science Scholarship, Full tuition and stipend – ROK gov — Mar 2019

Teaching & Leadership

Undergraduate Tutor — Mar 2022 – June 2024
- **Algorithms**: offered 4 office hours every week for ECE students for a semester.
- **Calculus**: offered 2 office hours every week for STEM students for 3 semesters.

President, College of Engineering Christian Society — Sept 2022 – Dec 2024
- Organized events for students and professors: international religious service, volunteer trip, club fair.

Squad Leader, Capital Corps, ROK Army — 2021

Research & Academic Experience

Accelerating Genomics Software with GPUs — Jan 2024 – Dec 2024
- Implementing BWA-MEM in CUDA then improve alingment throughput with algorithmic enhancements.

Analog Computing Fourier Series — Apr 2022 – June 2022
- Designed and implemented an op-amp differentiator based inverse Fourier transform unit on PCB.

Systems and Architecture Course Projects — Sept 2021 – Dec 2024
- Extending the xv6 kernel with ULE scheduler, Linux ZSwap, and full path-indexed file systems.
- Designed and implemented a pipelined MIPS-like CPU and a systolic array-based NPU on FPGA.
- Designed and implemented a syntax-directed sub-C compiler with Bison.
- Experiences in parallel programming with CUDA and pthread.

Technical Skills & Languages

Hardware Design: Verilog, FPGA, SPICE simulation

System Programming: C/C++, CUDA, Make, Python, Bash

Languages: English (Fluent: TOEFL R30 L29 S24 W26), Korean (Native)