

# Junyoung Sim

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junyoung-sim.github.io

## Education

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**Cornell University** (B.S. Electrical and Computer Engineering\*) 2024 – 2028\* (GPA: 3.85/4.30)  
• Calculus I/II\*, Physics I/II, Engineering General Chemistry\*, Computing in the Arts, Introduction to Computing, Digital Logic and Computer Organization\*  
**Ithaca Senior High School** 2022 – 2024 (GPA: 4.33/4.00)  
**Korea International School, Jeju** 2020 – 2022 (GPA: 3.97/4.00)

\*: Intended, anticipated, or currently enrolled.

## Work Experience

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**Cornell SonicMEMS Lab (Undergraduate Researcher)** 05/14/2024 – 06/23/2024 (20 hrs/wk)  
• Specialized in PCB circuit designing to assist a solar microbot thesis project.  
• Reduced a 65 mm x 65 mm BQ25570-EVM nano power boost and buck converter to 8 mm x 13.5 mm.  
• Designed a MM101 high-voltage breakout board for performance diagnosis.  
• Designed an 8 mm x 11.5 mm HM01B0 camera payload.  
• Managed bill of materials to satisfy system requirements.

## Projects

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**Programmable Breadboard Computer:** Built a von Neumann 8-bit breadboard computer that can perform simple programs (e.g., arithmetic, counting, Fibonacci) using 16-bytes of RAM, 1 memory address register, 1 instruction register, 1 program counter, 2 general-purpose registers, 1 arithmetic logic unit, 1 flags register with 2 flags (carry and zero), 1 output register with 7-segment displays, and 16 microinstructions and 11 instructions (including conditional and unconditional jumps) managed by 2 EEPROMs.

**DeepCPP:** Implemented a deep learning framework in C++ from scratch for regression or classification tasks that may require efficiently configurable and deployable deep neural networks.

**Deep Deterministic Policy Gradient and Geometric Brownian Motion for Simulated Portfolio Optimization:** Implemented a deep deterministic policy gradient from scratch for portfolio optimization in a trading environment simulated via geometric Brownian motion.

## Publications

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Sim, J. & Kirk, B. (2023). Generalized Deep Reinforcement Learning for Trading. *Journal of Student Research*, 12(1). doi.org/10.47611/jsrhs.v12i1.4316

## Skills

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**Programming:** C/C++, Linux (WSL Ubuntu), Python, Java  
**Electronics:** PCB Design, Breadboard Circuits, Arduino, Raspberry Pi  
**Computer-Aided Design:** Fusion 360 (Eagle), LTSpice  
**Languages:** Korean & English (Native Bilingual)