

# Junyoung Sim

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[junyoung-sim.github.io](https://junyoung-sim.github.io)

## Education

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<b>Cornell University</b> (B.S. Electrical and Computer Engineering*)	2024 – 2028* (GPA: 3.85/4.30)
<ul style="list-style-type: none"><li>Calculus II/III*, Physics I/II, Engineering General Chemistry*, Introduction to Computing, Computing in the Arts, Digital Logic and Computer Organization*</li></ul>	
<b>Ithaca High School</b>	2022 – 2024 (GPA: 4.33/4.00)
<b>Korea International School, Jeju</b>	2020 – 2022 (GPA: 3.97/4.00)

\*: Intended, anticipated, or currently enrolled

## Work Experience

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<b>Cornell SonicMEMS Lab (Undergraduate Researcher)</b>	05/14/2024 – 06/23/2024 (20 hrs/wk)
<ul style="list-style-type: none"><li>Specialized in PCB circuit designing to assist a solar microbot thesis project.</li><li>Reduced a 65 mm x 65 mm BQ25570-EVM nano power boost and buck converter to 8 mm x 13.5 mm.</li><li>Designed a MM101 high-voltage breakout board for performance diagnosis.</li><li>Designed an 8 mm x 11.5 mm HM01B0 camera payload.</li><li>Managed bill of materials to satisfy system requirements.</li></ul>	

## Projects

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**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.

**Programmable Breadboard Computer:** Built an 8-bit processor that can perform simple arithmetic programs 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, 1 output register, and 2 EEPROMs for 16 microinstructions and 11 machine language instructions.

**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. 4-year long culmination of multiple quantitative trading projects.

## 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++, Python, Verilog, Linux (WSL Ubuntu)  
**Electronics:** PCB Design, Breadboard Circuits, Arduino, Raspberry Pi  
**Computer-Aided Design:** Autodesk F360 (Eagle), LTSpice  
**Languages:** Korean & English (Native Bilingual)