SAMUEL RYOO

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EDUCATION

University of California Irvine   *Irvine, CA*
Bachelor of Science, Computer Science and Engineering   *June 2027*
- GPA: 3.725; Deans Honor List (5x)
- *Relevant Coursework: Embedded Software, Circuit Analysis, Data Structures, Digital Systems, Systems Engineering*

SKILLS

Software: *C++, Python, Verilog, Arduino IDE, RNA-Seq analysis, ML Model development*
Hardware: *Embedded Systems, Circuit Design, KiCad, I2C, UART, Soldering, PWM timers*

PROJECTS

Bioinformatics Research Assistant, Thompson Laboratory   *Irvine, CA*
Department of Neurobiology & Behavior, UCI   *April 2025 – Present*
- Built ML models to **identify protein aggregates and malfunctioning cells** from brain-tissue data, improving triage of candidate regions for follow-up experiments.
- Process **RNA Seq datasets** and analyze cellular networks to **prioritize therapeutic targets** for restoring neuronal function and **slowing disease progression**.
- Support studies on **Huntington's disease, ALS, and X-linked Dystonia-Parkinsonism** using **patient-derived iPSCs** and **mouse models**; document analysis steps for reproducibility.

RISC-V Single-Cycle Processor CPU   *Fullerton, CA*
Designer   *March 2025 – June 2025*
- Integrated **controller, ALU control, and datapath** into a top-level design with correct **opcode/func decoding** and control signaling.
- Authored a **self-checking testbench** (20 ns clock) with instruction memory and automated pass/fail checks.
- **Verified 20 instruction cases** (R/I-type, **LW/SW**) with expected outputs and **waveform confirmation** of control signals and results.

ZotBotics at UCI   *Irvine, CA*
Electrical Systems Lead   *January 2025 – May 2025*
- Led **electrical design** for a 6-person team building a **3D printed robot arm**; owned motor drivers (**TB6560**), power distribution, and embedded control on an **Arduino Mega 2560/RAMPS** stack.
- Programmed **Arduino (C/C++)** control loops, integrating **GPIO/PWM**, limit inputs, and sensor feedback for stable motion.
- **Designed** the control/power circuitry and completed all **wiring & soldering**; added an **EMI-filtered IEC inlet** and **isolated 5 V logic** from **motor power** for safer, noise-resistant operation.

LEADERSHIP AND WORK EXPERIENCE

Private Academic Tutoring   *Fullerton, CA*
Private Academic Tutor   *June 2021 – Present*
- Tutored 15 students though a curated, individualistic approach to learning and studying to build self-confidence.
- Encouraged student interest with a focus in Science, Computer Science, Engineering, and Mathematics.

Making an Impact   *Los Angeles, CA*
Founder and President   *September 2020 – August 2025*
- Earned recognition as a certified non-profit organization aiming to build communities through homeless outreach, community clean ups, fundraising, and peer tutoring initiatives.
- Grew membership to over 200 members across 10 schools and 4 school districts.

INTERESTS

Ad Hoc Cooking, Golf (Varsity D1 Champion), Dodgers Baseball, Acoustic Guitar, Backpacking the San Gabriel Mountains