Nicholas Johnson

nickmakaha@gmail.com ❖ nickdj.me ❖ (206) 930-2386 ❖ Los Angeles, CA

WORK EXPERIENCE

PolyArch   June. 2023 – Present
Researcher   *Los Angeles, CA*
- Research group at UCLA focused on development of novel ISAs, accelerator architectures along with their compilers, accelerator design-automation techniques, and developing open-source architecture frameworks.
- Achieved a 15% reduction in CPU cycles/iteration in sparse join operations by utilizing ternary implementations rather than branching in C code. This involved sparse matrix generation in Python, writing algorithms in C, benchmarking in GAP, and running simulated architecture with Gem5.
- The speed-up showed feasibility for implementing a new conditional step instruction to our simulated architecture. I then implemented said instruction while also adding further support for custom step amounts rather than simply stepping by 0 or 1.

Department of Defense   June 2022 – September 2023
Software Engineering Intern   *Layton, UT*
- Project 1 – Autonomous Ground Drones. Implemented object detection for an autonomous four-wheeled vehicle via an onboard camera. Leveraged PyTorch, Cascade Classifiers in OpenCV, Lidar, and ROS.
- Project 2 – Recruiting Robot, a humanoid robot capable of facial tracking and fully capable of conversation. Helped with issues relating to computer vision, solving issues within their TensorFlow implementation. Additionally provided support for a developing language model utilized by the robot to respond to individuals.
- Due to growing familiarity with AI and computer vision, I was outsourced to other teams to support implementation of AI in different projects.

Center for Quantum Science & Engineering   September 2021 – September 2022
Researcher   *Los Angeles, CA*
- Team focused on the simulation of quantum devices. Responsibilities included utilizing quantum mechanical processes such as Schrodinger's Equation and Poisson's Equation to determine potential energy and electron density in a simulated semiconductor device. Additionally, I briefly worked on back-end development, utilizing C++, Python, SQL, and CMake file development.

Bruin Tutoring (bruintutoring.com)   September 2022 – Present
Founder & CEO   *Los Angeles, CA*
- Bruin Tutoring focuses on teaching computer science fundamentals to high school students so that they may succeed in college as CS majors. Additionally, I provide tutoring services for active college students in all lower division Math, Physics, and CS coursework. This involves coursework development and requires a very strong foundation in Computer Science fundamentals.

EDUCATION

UCLA (graduated from High School at 15, attended CC from 15-17)   Graduating Early 2025
B.S. Computer Science & Engineering   *Los Angeles, CA*
- 3.86 GPA
- Member of UPE (Upsilon Pi Epsilon) – CS Honors Society
- Club Baseball, Surfing, Hackathons, ACM Cyber, UPE Tutor/Member

COURSEWORK & AWARDS

- **Courses**: <u>Algorithms and Complexities</u> (A+), <u>Data Structures and Algorithms</u> (A), <u>Linear Algebra</u> (A), <u>Computer Architecture</u> (A), <u>Discrete Mathematics</u> (A), <u>Diff EQ</u> (A), <u>Multivariable Calc</u> (A+), <u>Logic Design of Digital Systems</u> (A+)
- **Awards:** Valedictorian, Outstanding Graduate of Math and Science, President's Distinction, Dean's List