

Caleb Hsu

206-372-8336 | iamcalebhsu@gmail.com | [linkedin.com/in/caleb](https://www.linkedin.com/in/caleb) | github.com/Hashu-CH

EDUCATION

University of Washington

Seattle, WA

Bachelor of Science in Computer Science

Sep. 2023 – Jun. 2027

Relevant Coursework: Data Structures, Algorithms, Distributed Systems, Networks, Machine/Deep Learning, Databases, Computer Vision, Hardware Software interfaces, Linear Algebra, Linear Optimization, Probability, Operating Systems

EXPERIENCE

Reinforcement Learning Research Assistant

Dec. 2025 – Present

Robot Learning Lab @ Paul G. Allen School

Seattle, WA

- Developing camera-based visual policies for autonomous navigation, evaluating sim-to-real transfer performance using NVIDIA Isaac Sim and real-world robotic deployments.
- Prototyping and benchmarking reinforcement learning algorithms inspired by frontier research, designing simulation pipelines to improve robustness, generalization, and sample efficiency.

Head Teaching Assistant

Sep. 2024 – Present

University of Washington

Seattle, WA

- Overhauled course materials and integrated interactive coding examples using Java and JavaScript, leading to a 25% boost in student satisfaction as reflected in evaluations.
- Managed an instructional team of 5+ assistants to create content for a high-enrollment probability theory course of 500+ students, leveraging git and Python-based tools to streamline collaboration.

Software Engineer

Jan. 2025 – Dec. 2025

Husky Satellite Lab

Seattle, WA

- Developed a modular testing framework to inject synthetic noise and occlusions into satellite imagery, enabling automated stress-testing of star-tracker software.
- Identified and reproduced mission-critical failure cases in the attitude determination system, revealing scenarios with <30% accuracy.

PROJECTS

One-Hot CNN AI detection | *Python, PyTorch, OpenCV, Jupyter, Numpy, Matplotlib*

- Built a lightweight framework for defining and training small CNN architectures to verify image authenticity.
- Led a team of four (no prior ML experience) to design a diverse ensemble of CNN architectures, achieving 95% validation accuracy on curated datasets.
- Evaluated robustness across multiple generative sources, identifying distribution-shift failures driven by differing artifact and noise signatures.
- Implemented Grad-CAM and gradient-based heatmaps to visualize learned features and improve debugging.

LED Flappy Bird | *System Verilog, ModelSim, FPGA*

- A flappy bird replica implemented from scratch on the DE1-SoC FPGA board, based on finite-state machines.
- Used ModelSim to conduct rigorous tests on digital signal timing, validating state transitions on the LED board.

KilterBoard Gen | *Python, SQL, OpenCV, HuggingFace*

- Generated novel indoor climbing routes by modeling sequences of physical holds on the KilterBoard using GPT-2.

Blog | *AWS, React, TypeScript, Figma, Git*

- Built a responsive frontend using React/TypeScript, featuring a markdown-based content managing system
- Infrastructure as Code, using OpenTofu to automate the provisioning of AWS Lambda functions and DynamoDB.

TECHNICAL SKILLS

Languages: Python, Java, C/C++, JavaScript, TypeScript, Bash, SQL, System Verilog, HTML/CS, R,

Libraries: Pytorch, Docker, ModelSim, Pandas, Matplotlib, Numpy, Scikit-learn, React, FastAPI, Flask, OpenCV

Tools/Infrastructure: OpenTofu, IsaacLab, Git, AWS (S3, Lambda, DynamoDB, CloudFront), Docker, Figma