

Harris Song

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Education

B.S. Computer Science, *Concentration in Business*

University of California, Los Angeles (UCLA)

June 2027

3.82 GPA

Coursework and Activities: LA Hacks, ACM Board @ UCLA, Bruins in Finance & Banking, Bruin Algorithmic Insights OS (Threading/Processes in C++), GCP, Compilers, Comp. Sys Arch, Linux, Oscilloscopes/Signal Processing, CAD/PCB

Experience

Structures Computer Lab, UCLA, CA: *Embedded Systems Researcher*

Jan 2025 - Present

- Contributed **HiddenFruits**: Embedded/ML System finding fruits w/ Multi-modal CV; Visuals at harris-song.github.io
- Developed **Linux kernel drivers** and **C firmware** for FLIR Lepton thermal sensors on **NVIDIA Jetson Orin Nano**
- Implemented **SPI/I2C protocol**, **UART**, and **boot loader (extlinux.conf, DTB)** on Ubuntu 20.04/Linux Tegra

Leidos, Washington, DC: *Software Engineering Intern*

Sep 2024 - Dec 2024

- Worked on **Sea Archer**, a lightweight implementation of **Sea Hunter** that has already circumnavigated the world
- Converted server-grade **Kubernetes** DevOps to a light-weight **Docker, RHEL/Rocky 8**, enabling autonomous startup/stop
- Debugged **Ansible Playbooks** and **System C++ Architecture**, reducing GUI simulation, built on NVIDIA-like edge hardware

BANSHEE UAV (Lockhead Martin), Cal Poly Pomona, CA: *Embedded Systems Researcher*

Aug 2022 - May 2024

- Published Journal Paper on wireless communication, experience with & Hardware/Software In the Loop (HIL/SIL) systems
- Worked w/ Dr. Yu & MIT Engineer Lai to develop **VTOL, UAV** software for custom flight computer-vision autonomy stack
- Developed with the **Pixhawk, NVIDIA Jetson Nano, Arduino C** for flight-test validation, circuit design and landing automation

Office of Naval Research (US Navy), Crane, IN: *Software Engineering Intern*




Jun 2023 - Aug 2023

- Developed detection and defusal software for improvised explosive devices autonomously found in the Iraq War
- Used OpenCV, Python and CNN-based one-shot object detection algorithm for bomb detection, using depth-based SLAM
- Modernized fleet of Turtlebots from Astra Orbbec 3D to the ZED RGB-D based Camera on NVIDIA Edge-AI Jetson TX2

Activites/Projects

LA Hacks, UCLA, CA: *Marketing and Data Director*

Sep 2024 - Present

- Aggregating    marketing retention stats with internal application data; Check it out at data.lahacks.com/!
- Deployed with CI/CD on **AWS EC2** with **Docker and PostgreSQL** on **React/Next.js** and OAuth2 for data security
- Tableau-like custom-built alternative, RESTful API endpoints in **Python Flask** for **PyTorch, Pandas** integration

RISC-V Out-of-Order CPU, Los Angeles, CA: *Hardware Systems Engineer*

May 2025 Jun 2025

- Built an **RISC-V CPU** in C++, completing pipeline units including **RAT, ROB, and RS** for out-of-order execution
- Implemented register renaming, instruction scheduling for **dynamic execution** of the RV32I ISA for 32-bit architecture
- Debugged hazards and timing issues using **DEBUG** trace levels and verified correctness with `make test`

Pintos Operating System Kernel, Los Angeles, CA: *Embedded Systems Developer*

May 2025 - Jun 2025

- Developed **kernel-level system calls** in C for Unix-based OS, implementing file I/O and process management
- Performed system-level debugging using kernel traces to resolve kernel panics and memory violations
- Implemented **boot loader components** and kernel initialization routines for embedded system startup sequences

VeriDraw, UCLA, CA: *Software Engineer*

Apr 2025 - Jun 2025

- Built a painting application w/ Verilog HDL on **Bayes 3 FPGA**, pixel-placing multi-colored squares with L/R/Up/Down controls
- Used **VGA controller** to output graphics to a monitor, interfaced with onboard switches, **eight-segment displays** for UI
- Communicated w/ UART to a host computer, interfaced w/ **Verilog Wires and Registers** and used HDL for control logic

FIRST Robotics, Los Angeles, CA: *Team Captain and Mentor*

Aug 2019 - May 2023

- 1st in the Nation (of 7000+) teams *twice in 2021, 2023*, built reliable software to win the World Championships

Selected Publications

- Avi: A 3D Vision-Language Action Model Architecture generating Action from Volumetric Inference**
Harris Song, Long Le | *NeurIPS 2025 - Embodied World Models for Decision Making, 2025* | [Project Website](#), [PDF](#)
- HiddenObject: Modality-Agnostic Fusion for Multimodal Hidden Object Detection**
Harris Song, Tuananh Vu, Sanjith Menon, Sriram Narasimhan, M. Khalid Jawed | *Preprint, 2025* | [Lab Website](#), [PDF](#)