Kian Abbott

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Education

Harvard University Cambridge, MA

S.B. in Electrical Engineering; ***GPA: 3.28/4.00*** *September 2019 – December 2023*

Coursework in Circuits and Transduction, Computer Architecture, Computing Hardware, Solid State Circuits, Systems Programming, Signals and Systems, Electronic and Photonic Devices, Nanofabrication, VLSI Circuits, Electromagnetism.

Skills

Hardware Design: Proficient in SystemVerilog, Altium Designer, LTSpice. Knowledge of Cadence Virtuoso.

Programming: Proficient in C, C++, Python, MATLAB, Arduino. Knowledge of: Git, Bash, SQL, GDB.

Web Design: Proficient in JavaScript. Knowledge of: HTML, CSS, Markdown, Jekyll.

Experience

Portal XR Remote

Founding Engineer *May 2022 – October 2025*

- Architected and implemented in SystemVerilog an Arty A7 based controller for a 30kHz resonant mode, two-axis scanning micro-electromechanical system (MEMS) mirror laser display.
- Engineered an analog front end to generate current controls and isolate a feedback signal for mirror actuation.
- Designed and assembled connecting PCBs including a 4-layer board hosting the analog front end, and interposing boards for mating with the MEMS mirror.

Second Order Effects Redmond, WA

Engineering Intern *June 2022 – December 2022*

- Executed the layout of a mixed-signal engine controller printed circuit board (PCB) for a client pre-preliminary design review, which achieved a component placement density of over 50%.
- Reduced processing system resource usage in a Zynq Ultrascale+ Multi-Processor System on Chip (MPSoC) by moving the SPI driver for a motor controller to programmable logic, and accordingly updating C++ drivers.
- Debugged and verified the functionality of a thermal control test unit in preparation for client demonstration.
- Soldered CAN bus harnessing and installed emergency stop switches on a prototype agricultural robot.
- Compiled flight controller (FC) market research, which contributed to acquiring an electric vertical takeoff and landing FC design contract.

Harvard University Cambridge, MA

Course Assistant *January – May 2021, 2022, 2023*

- Clarified course material and offered tutoring on problem sets for over 70 students in Engineering Sciences 50: Introduction to Electrical Engineering.
- Debugged circuits using standard bench-top equipment (oscilloscope, digital multimeter, power supply, function generator), and provided technical support in Arduino and MATLAB coding during weekly lab sessions.
- Advised teams of 2 to 4 students in the ideation and realization of final projects on topics including gesture-commanded robotics and feedback-controlled instrument tuning.

Edge Computing Lab Remote and Cambridge, MA

Project Assistant *May 2021 – December 2021*

- Tested deployment of a 2D convolution custom function unit which resulted in a 53% decrease in the number of cycles spent running inference on a field programmable gate array (FPGA).
- Optimized the performance of a depthwise convolution through software and hardware which resulted in a 47% decrease in the number of cycles spent running inference on an FPGA.

Projects

NASA JPL Europa Clipper: CaliPER CubeSat *December 2022 – December 2023*

- Designed a state-driven cube satellite (CubeSat) thruster and attitude controller system capable of orienting, guiding, and dumping accumulated momentum based on inertial measurement unit (IMU) readings.
- Evaluated the controller and state machine against 7 key specifications in a MATLAB/Simulink environment.
- Documented the research, specification creation, design, and test processes in a technical report and presentation.
- Worked in collaboration with 11 engineering students, interfacing primarily between the propulsion and guidance, navigation, and control (GNC) hardware design teams.

Multi-cycle Processor RTL *April 2021*

- Developed the register transfer level (RTL) description of a MIPS processor supporting 23 instructions in SystemVerilog and verified the design through a testbench executing test assembly programs.