

# Aidan Prendergast

ASIC Design and AI Hardware Engineer

978.505.2645

[ajp@aidanprendergast.me](mailto:ajp@aidanprendergast.me)

[linkedin.com/in/aidanprendergast](https://www.linkedin.com/in/aidanprendergast)

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## EDUCATION

**Purdue University** — West Lafayette, IN

Aug 2020 — Present

**M.S. Electrical and Computer Engineering** — GPA 3.90/4.0

Anticipated Graduation May 2025

**B.S. Electrical Engineering** — GPA 3.92/4.0

Graduated Cum Laude May 2024

SystemVerilog, C, CUDA, Assembly — ASIC Design, Microprocessor Design, GPU Architecture

Questa, Design Compiler, Quartus, C++, Gem5 — NES Senior Design Project, Computer Architecture, ASIC Design

Python, Octave, Neural Network Arch — SCALE, AI Hardware, ML, Generative Models Coursework

Virtuoso, Transport Simulation Tools — VLSI, Semiconductor Devices, Research Work

Leadership, Mentorship, Communication, Technical Writing — Publications, Eagle Scout Award, Industry Positions

## EXPERIENCE

**Head Graduate Teaching Assistant** — Purdue ECE ASIC Design Laboratory

May 2024 — Present

- Instructing 150+ students per semester in hardware design and leading a team of 7 Grad TAs + 25 Undergrad TAs.
- Redeveloped course content, reinventing six teaching labs + retooling five advanced labs for clarity and impact.
- Introducing matrix compute content to expose students to current AI Hardware design needs and challenges.

**Microelectronics Intern** — L3Harris Technologies, Inc

May 2024 — Aug 2024

- Advised and oversaw development on a Python database for optical field hardware selection and delivery.
- Organized and documented pack-out procedures on mission-critical hardware for a 5-year top secret contract.

**Chip Design Teaching Assistant** — Purdue University STARS

May 2023 — Jul 2023

- Identified need for, developed, and presented supplementary lectures for 75+ Digital Design Students.
- Directed two project teams in designing custom multichannel digital synthesizer integrated circuit modules.

**Undergraduate Teaching Assistant** — Purdue ECE ASIC and Digital Design Labs

Jan 2022 — May 2024

- Reinforced SystemVerilog and digital design concepts and evaluated performance for over 600 students.
- Mentored fellow teaching assistants and facilitated hiring of 20+ TAs targeting team sustainability and longevity.

**Systems Engineering Intern** — Raytheon Intelligence and Space

May 2022 — Aug 2022

- Redeveloped RF engineering tools for military ATC system R&D, improving internal testing speeds by up to 20x.

## PROFESSIONAL ORGANIZATIONS & PROJECTS

**Team Lead and Compute Core Lead Engineer** — Project Chronomancer

Nov 2024 — Present

- Founded an Out-of-Order processor project team focused on RISC-V core design with advanced optimizations.
- Leading development of a SystemVerilog R10K processor and verification + benchmarking infrastructure.

**Research Assistant for AI Hardware Development** — Purdue SCALE

Sept 2024 — Present

- Creating two AI Hardware course modules and two accelerator design lab assignments for the Undergrad level.
- Linking hardware and education experts to create high-impact, comprehensive introductory-level modules.

**Team Lead and Hardware Design Engineer** — Hardware-Emulated NES Senior Design

Jan 2024 — May 2024

- Led a team of four to prototype in 4 months an FPGA-Based Nintendo capable of playing original cartridges.
- Reverse-engineered and verified a proprietary video coprocessor and custom VGA translator in SystemVerilog.

**Student Ambassador** — Purdue ECE Ambassadors

Jan 2022 — Present

- Serving as a Student Representative, interfacing with donors and alumni, vetted three new department advisors.

## PUBLICATIONS & AWARDS

- *Real-Time Generation of Hyperbolic Neuronal Spiking Patterns*. 1<sup>st</sup> Auth.  
<https://ieeexplore.ieee.org/document/9870915>.
- *An organic synaptic circuit: towards flexible and biocompatible organic neuromorphic processing*.  
<https://doi.org/10.1088/2634-4386/ac830c>.
- **2023-2024 Undergraduate Service Award**, Purdue University.
- **2023-2024 Senior Design Award**, for the Hardware-Emulated NES Project.
- **Eagle Scout**, Boy Scouts of America Troop 60.

Awarded Dec 2024

Awarded Dec 2024

Awarded Dec 2018