

Anton Melnychuk

+1 (475) 287 8907 • New Haven, CT, USA (F1 visa; OPT Work Authorization) • Ukrainian
anton.melnichuk@yale.edu • github.com/anton-mel • in/antonmelnichuk

EDUCATION

Yale University, B.S. in Electrical Engineering & Computer Science May 2026 (Senior)

- **Relevant Coursework (GPA 3.65/4):** Computer Architecture (EE)[†], Introduction to VLSI System Design (EE), Building Distributed Systems, Big Data Systems (Disaggregated Infra), Computer Networks, Building AI Infra Systems, Design and Implementation of Operating Systems[†], Principles of Computer System Design.

Osaka Gakuin University, Study Abroad Japan, Intermediate-Advanced Japanese. Jun 2023 - Aug 2023

Programming:	Rust; C; C++; SystemVerilog (VHDL; Python; Go; Bash; x86-64 asm; Systemd)
Technologies:	Linux; eBPF/LKM; Xilinx (Vivado, Vitis); Yocto; AWS/GCP; K8s; Terraform; git
Language Skills:	English; Ukrainian (Native); Russian; Japanese (Advanced); Polish (Limited)

RELEVANT WORK EXPERIENCE

Thesis, Brain Computer Interfaces (Prof. Bhattacharjee) July 2025 –Present (Ongoing)

- Reorganized pipeline and RTL/VLSI peripheral interfaces for the previously taped-out [HALO](#), a pipelined neural-processor BCI ASIC accelerating neural signal processing to 46 Mbps within an ultra-low-power budget.

Research Intern, Yale Efficient Computing Lab (Prof. Lin Zhong) [\[View\]](#) Jan 2024 - Present [1.5 year]

- Setup and implemented Vivado PS/PL design for a QEC decoding system that overcomes real-time 100 logical qubit decoding resource constraints using a distributed GTX Aurora SPF+ network of 5 Xilinx VMK180 FPGAs.
- Partnered with AMD to co-develop a scalable SoC management tool for remote VFS-based deployment of Xilinx Versal/UltraScale+ FPGAs, enabling Linux runtime reconfiguration (ConfigFS) and A/B fallback reboot full-swapping.

Rust Operating System, System Programming Course [\[View\]](#) Sep 2024 - Apr 2025 [8 month]

- Developed rWeensyOS (5k+ LOC), a minimal POSIX-compatible teaching-purpose microkernel written in memory-safe Rust with FFI bindings to a C/x86_64 assembly bootloader; adopted by Yale's core systems course (Spring '24).
- Assisted on a prototype Rust-based network driver for Theseus, experimental Rust operating system, with support for high-throughput NICs (e.g. 10GbE), integrating eBPF hooks for dynamic packet filtering and runtime safety analysis.

Embedded Engineer, Iron Flight (Ukraine Humanitarian Drone R&D) July 2024 - December 2024 [5 month]

- Partitioned drone DNN workloads from STM32 MCU to a remote host with onboard FPV goggles.

OPEN SOURCE CONTRIBUTOR

Rust for Linux Initiative, Open-Source Contributor [\[View\]](#) June 2024 –July 2024 [1 month]

- Contributed to open-source Linux kernel (Ubuntu 22.04) to allow kernel cross-compile Rust loadable kernel modules.

Fast Raft: Hierarchical Consensus, Performance-Based Study [\[View\]](#) Nov 2024 –Feb 2025 [3 month]

- Developed the first gRPC-based implementation of the Fast Raft (vs Raft) hierarchical consensus algorithm in Go.

PROJECTS

FPGA-Based HFT Accelerator, Personal Project (modeled after MIT 6.111) June 2025 –Present (Ongoing)

- Custom open-source FPGA high-frequency trading accelerator, achieving sub- μ s latency over NASDAQ ITCH.
- Pipelined architecture for real-time parsing, book-building, and MVP trading with scalable throughput.

Custom CPU with Speculative OoO Execution, Computer Architecture [\[View\]](#) March 2025 –May 2025 [2 month]

- Built a SystemVerilog CPU with speculative fetch, dynamic scheduling, reorder buffer, and in-order retirement.
- Achieved an average 33.2% speedup on SPEC-like benchmarks with robust handling of WAW hazards and data deps.

Yale Aerospace Association, CubeSat (Satellite) Lead Developer [\[View\]](#) Sep 2023 - Jan 2024 [4 month]

- Co-developed the core avionics system for a CubeSat 2U satellite planned to be deployed by NASA ISS.