

DRAKE BARTOLAI

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EDUCATION

University of Illinois at Urbana-Champaign

Champaign, IL

B.S. in Computer Engineering, Hoelt Technology and Management Minor

May 2027

Coursework: Data Structures, Algorithms, Operating Systems, High-Frequency Trading, Machine Learning, Formal Methods

TECHNICAL PROJECTS

Order Book Lab | C++, Python, WebAssembly, React, NASDAQ ITCH, CME MDP

Apr 2026 – Jun 2026

- Led development of a browser-based market microstructure platform replaying 500,000 exchange events across 10 NASDAQ equities and CME futures.
- Built a Python ingestion pipeline that streamed compressed packet captures, parsed Ethernet/IP/UDP, MoldUDP64 TotalView-ITCH, and CME MDP 3.0 messages, and normalized exchange updates to JSONL.
- Integrated a C++17 price-time-priority matching engine with React through Emscripten and WebAssembly, using ordered price-level maps, FIFO queues, and hash-indexed order IDs.
- Benchmarked the native C++ hot path at 2.3M+ insertions/sec and 4.0M+ matches/sec and validated matching, portfolio, and risk behavior with 64 passing unit and integration tests.

FPGA Multiplayer Tetris | SystemVerilog, C, FPGA, MicroBlaze, AXI4-Lite

Apr 2026 – May 2026

- Built a two-player Tetris system on a Spartan-7 FPGA, combining embedded C game logic on a 100 MHz MicroBlaze processor with a SystemVerilog rendering pipeline producing 640×480 video at 60 Hz.
- Implemented a 50-register AXI4-Lite memory map that transferred two game boards, scores, active and held pieces, ghost positions, and control state between software and custom hardware each frame.
- Verified collision detection, rotations, gravity, line clearing, shared piece generation, and winner logic with a host-side C test suite containing 60 assertions; synthesized the design with zero inferred latches.

Operating System | C, RISC-V Assembly, QEMU, CMake, GDB

Oct 2025 – Dec 2025

- Built a multiprocess, multithreaded Unix-like kernel in C and RISC-V assembly, implementing system calls, concurrency primitives, and process management.
- Implemented a read/write filesystem, block cache, and user-level shell, using GDB and QEMU to debug kernel-level concurrency, memory, and I/O behavior.

EXPERIENCE

West Monroe Partners

Chicago, IL

Technical Consulting Intern

Jun 2026 – Aug 2026

- Modernized a legacy workflow system and built 15 reusable workflows and JavaScript components, scaling client communications from one line of business to a firmwide deployment while preserving historical data.
- Automated the generation and configuration of 50+ employee training records with Python, eliminating several days of manual setup.
- Built reusable Python smoke tests and REST API validations to verify workflow correctness and data integrity during UAT and production go-live.

iD Tech Camps

Chicago, IL

Lead Instructor

May 2025 – Jul 2025

- Led a 12-instructor team serving 300+ students while teaching Python and C++ to 50+ students and coordinating camp operations and parent communication.

Acannability

Chicago, IL

Web Development Intern

Apr 2024 – Aug 2024

- Built and optimized interactive React visualizations for structured molecular datasets, consolidating frontend data to improve large client-side table performance.

SKILLS

Languages | C++, C, Python, JavaScript, TypeScript, SQL, Java, RISC-V Assembly, SystemVerilog

Systems | Linux, Multithreading, Low-Latency Systems, WebAssembly, REST APIs, NASDAQ ITCH, CME MDP

Tools & Frameworks | Git, CMake, GDB, Bash, Docker, QEMU, React, FastAPI, PostgreSQL, NumPy, PyTorch