Adam Brazda

331-998-1378 | adam.c.brazda@gmail.com | linkedin.com/in/adam-brazda-617976326 | github.com/MaythFall | abrazda.dev

Systems programmer specializing in high-performance C++ and applied cryptography, with experience building secure, low-latency backends from the hardware level up.

Technical Skills

Languages: C, C++ (C++17/20/23), Python, SQL
Systems & Architecture: Hardware-Level Optimization, SIMD (AVX2), Multi-threading, POSIX, Linux epoll
Protocols & Networking: TCP/IP, HTTP, WebSockets, Custom Binary Protocols
Security & Cryptography: Applied Cryptography, Web Crypto API, Libsodium, AES-GCM
Databases & Caching: PostgreSQL, Redis, MongoDB
Developer Tools: Git (GPG Signed), CMake, perf, Linux/WSL, FastAPI, NumPy, Dear ImGui, nlohmann/json

Projects

Myelin (High-Performance Serializer) | *C++23, boost::pfr* Apr. 2026

- Engineered a zero-copy, high-velocity serialization engine leveraging template metaprogramming and boost::pfr for compile-time reflection, achieving sub-12ns latencies for simple structures
- Optimized data-packing logic from $O(n^2)$ to $O(n)$ complexity using a bucket-sort-inspired algorithm and pre-calculated offsets, significantly reducing register pressure and cache misses
- Implemented cross-platform endianness support using C++23 std::byteswap to maintain near-native throughput (sub-25ns) across network use cases.

Divalia (Experimental Encryption Framework) | *C++20, AVX2, AES-NI/SHA-NI, CMake* Feb. 2026 – Present

- Engineered a high-performance cryptographic framework utilizing a Substitution-Permutation Network (SPN), achieving **350 MB/s** sustained throughput (SATA SSD saturation) on a Ryzen 9 3900X
- Shifted the system bottleneck from CPU execution to OS page fault handling (∼35% of runtime) by saturating hardware execution ports via aggressive SIMD pipelining
- Implemented a 32-lane Merkle Tree for deterministic cryptographic integrity across massively parallel work-stealing and barrier-based I/O pipelines
- Optimized a custom cryptographic kernel using Argon2 KDF and strategic instruction ordering to maximize IPC and minimize execution port stalls

Noiseblind (Senior Capstone) | *C++, CMake, Libsodium, nlohmann/json, Dear ImGui* Aug. 2025 – Present

- Developed a multi-threaded obfuscation pipeline using a work-stealing pattern and barrier-based consumer/producer model optimized for both static and rotational drives
- Engineered a custom AVX2 SIMD wrapper processing 32 bytes per clock cycle, achieving a **9x speedup** over scalar logic and saturating physical HDD write limits (120 MB/s)
- Designed a cross-platform build system for Windows and Linux with OS-specific memory management to ensure bit-wise restoration parity

Conclave (E2EE Chatroom) | *C++20, Python, Linux (epoll), FastAPI, Web Crypto API, AES-GCM* Mar. 2026

- Architected a high-concurrency messaging backend in C++20 using Linux epoll for $O(1)$ event-loop complexity across hundreds of concurrent socket connections
- Engineered a custom binary application-layer protocol eliminating 30–40% serialization overhead of JSON/WebSocket stacks via length-prefixed framing and fixed-width headers
- Built a cross-language bridge via FastAPI and HMAC-signed session tokens, translating stateless HTTP auth into stateful binary streams for the C++ backend
- Implemented client-side AES-256-GCM (Web Crypto API) for a zero-knowledge model — server handles only encrypted routing metadata

Experience

Program Director June 2025 – August 2025
Ma-Ka-Ja-Wan Scout Reservation | Northeast Illinois Council *Vernon Hills, IL*

- Directed a 36-person staff delivering week-long programs for 1,000+ participants, overseeing logistics, scheduling, and resource requisitions across 8 operational areas
- Facilitated administrative communication and conflict resolution while mentoring team members in leadership development and operational efficiency

Total Tenure: 6 Seasons (Counselor: 2019, 2021 | Asst. Area Director: 2022 | Area Director: 2023–2024)

Education

Southern Illinois University Carbondale, IL
Bachelor of Science in Computer Science *Aug. 2024 – Expected May 2026*

Waubonsee Community College Sugar Grove, IL
Associate of Science *Aug. 2021 – May 2024*

Achievements

Scouting America: Eagle Scout **Academic**: Dean's List 2023–2025