Caden J. Milne

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Education

University of Pittsburgh — Pittsburgh, Pennsylvania
Bachelor of Science in Computer Science (GPA: 3.70/4.00) — *April 2026*

Technical Skills

Programming Languages: C, C++, Python, Go, Rust, Java, JavaScript, R, Haskell, Swift
Tools/Frameworks: Docker, TensorFlow, Spring Boot, Wireshark, Cargo, NodeJS, Express, Angular, React
Concepts: Artificial Intelligence, Machine Learning, Automation, Systems, Algorithms, Compilers, Operating Systems, Networks, Automation, Functional Programming

Experience

Bank of New York (BNY) — Lake Mary, Florida
Software Engineer Intern — *May 2025 – August 2025*

- Expanded enterprise Angular and Spring Boot software, improving usability for 5,000+ internal users.
- Increased test coverage by 20% via Python scripts leveraging internal AI tools, reducing production bugs.
- Shipped 20+ production features and bug fixes across frontend and backend with zero rollback incidents.

Software Engineering Institute @ Carnegie Mellon University — Pittsburgh, Pennsylvania
Software Engineer Intern — *May 2024 – May 2025*

- Automated software upgrades and delivery across 5 applications, reducing release time by 50%.
- Contributed expertise to SEI CERT C Coding standards, improving and clarifying secure coding policies in C.
- Developed and deployed a scalable automation tool for SSL certificate renewal, saving engineers 2 hours per cycle.
- Designed user-centric CLI interfaces, reducing log retrieval time by 70%.
- Established CI/CD pipelines for new and legacy software, reducing deployment time by 40%.
- Enhanced error handling in 90% more failure scenarios in a custom Rust software installer.
- Updated and refactored codebases across 60% of projects, improving maintainability and onboarding efficiency.

Projects

GPT-Style Encoder & Inference Engine | C, AI/ML, Linear Algebra

- Engineered a transformer-based encoder from scratch in C, capable of training on thousands of sentences.
- Implemented a custom inference engine for next-word predictions without external ML libraries.

Nintendo Entertainment System Emulator | Rust

- Implemented all 151 official and 105 unofficial MOS 6502 CPU opcodes achieving 100% instruction coverage.
- Ensured cross-platform compatibility on Windows, MacOS, and Linux using Rust.

Compiler for Subset of Java | C, C++, Yacc, Bison, Flex

- Developed a compiler capable of parsing/executing a subset of Java, passing 100% of custom test cases.
- Designed lexical and syntax analyzers with Flex and Bison, reducing parsing errors by 90%.

TCP Implementation in C | C, Wireshark

- Built a TCP protocol implementation in C with less than 2% packet loss in simulated networks.
- Validated functionality across multiple OS environments to ensure compliance with TCP standards.

TriviaTok.us | React.js, Express.js, Node.js, MongoDB

- Launched a social media web application using Google Gemini API to generate thousands of questions on demand.
- Architected a scalable backend RESTful API with Express.js and MongoDB, achieving 100% data accessibility.

Awards / Publications

Google Affiliated Hackathon Winner — SteelHacks XI 1st Place over 350+ participants

"A 5-Stage Process for Automated Testing and Delivery of Software Systems" — CMU SEI Blog