Matthew Esposito

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Education

William & Mary **Expected May 2026**

BS in Computer Science & BA in Philosophy - Concentration in Ethics for Data & Computing *Williamsburg, VA*

- Awards: 2x W&M Cypher Hackathon Award, Cyber NCL team placed **2nd** (Spring '25), **6th** (Fall '24) nationwide

Experience

Memfault **May 2025 – August 2025**

Software Engineering Intern *Boston, MA*

- Added features to high volume backend processing pipeline in Python, retaining performance and correctness
- Extended Linux SDK to support custom traces, allowing for more flexible error reporting, in Rust
- Created Python library to intercept unhandled exceptions and report them to Memfault platform, enabling plug-and-play error collection and observability for Python customers
- Implemented full unit and integration tests, extended BitBake recipes and QEMU test images to verify custom trace implementation
- Feature implementations in high-volume data ingestion pipeline

Memfault **May 2024 – August 2024**

Software Engineering Intern *Boston, MA*

- Designed and implemented new feature to parse and report stack traces in Rust and Python
- Trained a machine learning model to categorize embedded hardware's stack traces and core dumps into common fault categories, achieving >95% accuracy and helping customers more rapidly fix problems.
- Identified and resolved CI/CD bottlenecks, reducing run times and cutting costs.
- Created tool to integrate CRM tools with Algolia APIs to measure engagement in high-potential target accounts.

Geospatial Evaluation and Observation Lab **January 2023 – Present**

Software Developer, Team Lead *Williamsburg, VA*

- Productionized ICEBREAKER project, a wargaming evaluation tool backed by RAG-enabled LLM, with applications to political-military wargaming simulations
- Built SCOPE, a news info extraction/summarization tool with ML and LLMs.
- Led team and developed Kubernetes deployments and CI/CD pipelines.
- Implemented data ingestion pipeline for SCOPE, enabling real-time data processing and analysis via LLMs.

Pex (Remote) **December 2023 – April 2024**

Software and Hardware Developer

- Developed embedded IoT prototypes from inception to testing in 12 weeks
- Architected solutions with C++ embedded systems, sound protocols, and cellular modem development
- Wrote C++ library for integrating with SIM7600 cellular modem for sub-30ms latency HTTPS/MQTT communication

Trilium.cc **December 2021 – Present**

Founder

- Starting a Software-as-a-service business and Linux server management.
- Serving over 150 customers and maintaining 99.9% uptime while learning backend development.
- Automated system tasks including backups, updates, and new server deployments with Ansible.

Projects

Redlib | *Rust, Docker, CI/CD, Reverse Engineering* **Nov 2022 – Present**

- Maintainer of open-source Reddit frontend (2.5k+ stars, 1.7M+ container pulls/mo, 100k+ hits/day on large instances)
- Enabled public access for censorship-heavy regions, bulk academic research.
- Reverse-engineered Reddit mobile API for unthrottled data access for public benefit.
- Implemented peer-to-peer coordination protocol to handle instance blockages live, based on HyParView/PlumTree epidemic broadcast trees, as part of a project for my Cloud Computing class.
- Performant backend development for very high-traffic Redlib instances, with proper caching/compression/lazy loading, as well as best practices for lightweight webpages
- Code review, OSS leadership, mentoring contributors

FocusGuardian | *Rust, Vue, C++, PocketBase, Tailwind* **April 2024**

- Full-stack web & mobile app with hardware prototype (C++/LVGL).
- Rust-based backend handling DNS-over-HTTPS requests according to user-set schedule, 10k+ req/s.
- Built in 24-hour solo hackathon; won Best Hardware Hack.
- Wrote blog post about experience.

OccuMetrics | *C++, IoT, ESP32, Grafana, SQLite, ML* **Sep 2023 – Dec 2023**

- Campus occupancy prediction via BLE beacon counting IoT devices and serverless stack.
- 90+% accuracy in long-term trend forecasting using Prophet + time series ML.
- Writeup featured on Hackaday and cited in MIT Engineering courses.

Research

Vulnerability Testing Report **Sep 2024 – Dec 2024**

Volunteer Cybersecurity Researcher *Williamsburg, VA*

- Performed a volunteer full security assessment of a local business's public mobile app; authored 22-page CVSS report.
- Discovered six serious security vulnerabilities, from advanced side channel methods to basic authentication failures
- Recommended remediations led to complete patching and mitigation.
- Disclosure coordinated; redacted report available on request.

Relevant Coursework

- Algorithms
- Computer Organization
- Software Development
- Finite Automata
- Operating Systems
- Applied Cybersecurity
- Cloud Computing
- Computer/Network Security
- Ethics in Data Science
- Philosophy of Technology
- Linear Algebra

Leadership / Community Involvement

Linux/FOSS Club **Sep 2023 – Present**

Founding Member, DevOps Lead *Williamsburg, VA*

- Promoting tech literacy and writing FOSS user guides.

Speaker, "A Case for Rust" – W&M Cypher Hackathon **March 2023**

Sponsored by Rust Foundation *Williamsburg, VA*

- Delivered technical talk and workshop introducing Rust programming.

Technical Skills

Technical Areas: Backend Development, IoT, Embedded Systems, Systems Programming, DevOps, Docker, Git, Nginx, Prometheus, Grafana
Languages: Rust, C, C++, C#, Python, Bash, JavaScript
Interests: Open Source, Linux, Rust