Connor Usaty

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Technical Skills

Languages: C++, C, Python, SQL, Bash
Libraries: GoogleTest, Google Benchmark, Boost, STL, PyTest, Polars, Pandas, Dash, Plotly, matplotlib
Other: Linux, Unix, Windows, CMake, GDB, Perf, Git, GitHub, Azure, Vim, VS Code

Work Experience

Pure Storage **May 2025 - Aug. 2025**
Software Engineer Intern | C++, Linux *Santa Clara, California*

- Worked with the FlashBlade Core Data team to optimize the decompression path of a persistent metadata store.
- Profiled the hot path and identified bottlenecks with **Linux Perf**. Removed bottlenecks with classic HPC techniques such as compile-time calculations, loop unrolling, and vectorization which **increased throughput by 407%**.
- Automated benchmark visualizations with **Bash**, **Python**, and **matplotlib** to save approximately 5 minutes per run.
- Developed a robust unit and performance test generation system with **C++20** template meta-programming and **GoogleTest** to validate the bit-level compression and decompression algorithms of the persistent metadata store.

MHI RJ Aviation **May 2024 - Apr. 2025**
Data Engineer Intern | Python, SQL *Mississauga, Ontario*

- Worked with the Sales and Operations Planning team to automate and optimize data pipelines and visualizations.
- Refactored **4 ETL Pipelines** from **Pandas** to **Polars** resulting in an average end-to-end runtime reduction of **71%**.
- Developed **3 full-stack web apps** in **Python** using **Dash**, **Plotly**, and **Polars** to dynamically display sales and backlog data from an **SQL** database which provided executives with a detailed oversight of **$10M+** total monthly revenue.

Projects

Redis Server | *C++, Linux, Concurrency, Networking (TCP)*

- Developed a **concurrent lock-free** event-driven server in **C++** using **Linux system calls**, non-blocking I/O, request pipelining, and a custom cache-friendly Buffer struct to achieve **68k+ requests/second** and **43µs latency**.
- Compared **multi-threaded** and **event-driven** server architectures using **Google Benchmark** and std::chrono.
- Utilized **Linux TCP** sockets with a custom message serialization protocol for reliable client-server communication.

Cache Profiler | *C++, Linux, Computer Architecture*

- Built a cache profiling tool in **C++** that uses cache warming, cache-aligned data structures, CPU core-pinning, and randomized pointer chasing to accurately estimate the size and memory access latency of the L1, L2, and L3 caches.

Market Order Book | *C++, Linux*

- Implemented a price-time priority matching engine in **C++** with aggressive order execution and partial fill support while maintaining FIFO semantics and allowing for **O(1)** order cancellations and modifications via std::list iterator caching.

Extracurriculars

McMaster Artificial Intelligence Society **May 2024 - Present**
President | Python *McMaster University*

- Led new educational and project initiatives resulting in a **record-high 1.3k+ member count.**
- Presented NLP, CNN, and neural network demos in **Jupyter Notebook** using **TensorFlow**, **Keras**, and **matplotlib** to further attendees' understanding of concepts such as data preprocessing, model validation, and model fine-tuning.

McMaster Competitive Programming Club **Sep. 2024 - Present**
Member | C++ *McMaster University*

- Placed **second** at the September 2024 **Intel-sponsored** McMaster Competitive Programming contest.
- **1900+** Leetcode contest rating **(Top 4% worldwide)**

Education

McMaster University **(Expected) Apr. 2027**
Bachelor of Computer Engineering, Minor in Statistics *Hamilton, Ontario*

- **Golden Key Distinction (Top 15%)** - CGPA: 3.8/4.0
- **Relevant Coursework:** High Performance Computing, Operating Systems, Computer Architecture, Computer Networking, Algorithm Design & Analysis, Data Structures & Algorithms, Advanced Probability & Random Processes