Luca Bastone

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University of Waterloo — Waterloo, Canada
Bachelor of Computer Science — *Sept. 2021 – May. 2026*

Technical Skills

Languages: C++, C, Python, Java, HTML/CSS, Typescript/JavaScript, Rust, Go, Scala
Libraries/Frameworks: React, Vue.js, Django, .NET, gRPC, PyTorch, NumPy, SciPy, Pandas
Development Tools: Git, CMake, Linux, Docker, Kubernetes, Terraform
Databases: Redis, Firebase, SQL, MongoDB

Experience

Software Engineering Intern — May 2024 – Aug. 2024
X Corp. (prev. Twitter) — *San Francisco, United States*
- Built a platform to visualize service-to-service communication for security and data compliance
- Developed a **Scala** backend to parse **10000+** access control list files and store the dependency graph in a distributed database
- Architected a **GraphQL** schema and NoSQL data model for efficiently querying current and historical data
- Designed a **React** frontend with **D3.js** for network graph visualizations

Software Engineering Intern — Jan 2024 – Apr. 2024
Super.com — *Toronto, Canada*
- Infrastructure security engineer responsible for building, deploying, and monitoring microservice-based application handling **15k+ requests/second**
- Deployed and managed services with AWS, Docker, Kubernetes, Terraform, Helm, Vault, Okta, and Istio
- Designed **Datadog** dashboards to provide overviews of security and fraud prevention metrics
- Lead the deployment of automatic dependency updates for **200** repositories finding **50+ critical**/high risk vulnerabilities

Co-Founder — May 2023 – Jan 2024
Cosine Networks — *Waterloo, Canada*
- Co-founder of a software-defined networking startup deploying an MVP in the Velocity Digital space in Waterloo
- Managed **two** additional full-time developers following a Scrum framework
- Utilized modern networking protocols including **WireGuard** tunneling for mesh connections and **gRPC** for communications between microservices
- Built a REST API in **Go** using **Redis** for caching and **Postgres** for storage
- Gained valuable understanding of computer networking e.g. OSI model, TCP/IP, routing, OpenFlow, etc.

Hardware & Firmware Engineering Intern — Jan. 2023 – May 2023
Untether AI — *Toronto, Canada*
- Developed firmware in **C** for an ASIC AI inference accelerator card
- Enabled direct memory access through PCIe and debugged **SystemVerilog** code using **RTL** simulations
- Designed and implemented messaging protocol over **JTAG** for automated chip testing

Distributed Systems Research Assistant — Sept. 2022 – Jan. 2023
University of Waterloo — *Waterloo, Canada*
- Implemented performance optimizations on an atomic counter data structure that wear-levels persistent memory by spreading read and write operations over multiple memory addresses

Software Engineering Intern — May 2022 – Aug. 2022
Molex — *Waterloo, Canada*
- Developed a communications stack in **C** to enable remote procedure calls and file transfers over **WebSocket** connections
- Refactored codebase reducing code smells and security hotspots by >**90%**
- Utilized **event-driven architecture** to efficiently update **Vue.js** frontend components in real time

Projects

LendingClub Loan Analysis | *Python, Pandas, Seaborn, Statsmodels*
- Analyzed the real-world lending data of **25,000,000+** loan applications for the Citadel Summer Datathon uncovering a statistically significant(**p-value=0.036**) relationship between racial demographics and loan rejection rates

Blackhole Simulation | *C++*
- Implemented a raytracer in C++ with a gravitational lensing approximation to simulate the effects of black holes

FPGA Neural Network | *VHDL, Python*
- Collaborated to design and implement a multilayer perceptron as a digital circuit

ONPass | *TypeScript, React Native, Google Cloud Vision, Firebase, Magnus UI*
- Created a vaccine passport **React Native** application with optical character recognition to pull data from vaccine receipts

Networking Research
- Researching the use of formal methods to verify properties of computer networks